МВД России
Санкт-Петербургский университет

Н. В. Хисматулина, М. Р. Илакавичус

АНГЛИЙСКИЙ ЯЗЫК

Учебник

Санкт-Петербург
2023

План-график 2023, поз. 3

УДК 378: 372.881.111.1
ББК 81.1 Англ
Х51

Хисматулина Н. В., Илакавичус М. Р.

Х51 **Английский язык :** учебник / Н. В. Хисматулина, М. Р. Илакавичус**. —** Санкт-Петербург: СПбУ МВД России, 2023. — 176 с.

ISBN 978-5-91837-685-0

Учебник, в основу которого заложен принцип профессионально-коммуникативной направленности, соответствует программе дисциплины «Английский язык» по специальности 40.05.03 Судебная экспертиза. Целью учебника является формирование всех видов иноязычной речевой деятельности, а также развитие профессионально-коммуникативных компетенций, необходимых для академического и профессионального взаимодействия в данной сфере. Наряду с формированием иноязычных речевых навыков учебник вводит категориальный аппарат судебной науки, дает представление о деятельности криминалистической лаборатории в зависимости от её типа, об особенностях профессии судебных экспертов, алгоритме их действий при обработке места происшествия, типологии улик, а также о требуемых от специалистов знаниях, умениях и навыках при выполнении судебных (с акцентом на криминалистические) экспертиз.

Учебник построен по принципу «от теории к практике» и содержит богатый теоретический текстовый, аудио- и видео- аутентичный материал, дополненный интересными фактами и сведениями уточняющего характера, а также многочисленными иллюстрациями, несущими информативную нагрузку. Предлагаемая для освоения теоретическая база отрабатывается посредством комплексной системы языковых и речевых упражнений, заданий-тренажеров, моделирующих ситуации профессиональной направленности. Учебник снабжен многочисленными QR-кодами с активными ссылками на дополнительные информационные ресурсы, что реализует концепцию учебника как открытой динамичной образовательной среды, позволяющей осуществлять обучающимся самообразовательную деятельность.

Предназначен для иноязычной подготовки обучающихся образовательных организаций системы МВД России.

УДК 378: 372.881.111.1
ББК 81.1 Англ

Рецензенты:
Акенина А. В., кандидат педагогических наук, доцент,
(Дальневосточный юридический институт МВД России);
Кравчук Л. С., доцент,
(Белгородский юридический институт МВД России имени И. Д. Путилина);
Шашкова В. Н., кандидат филологических наук, доцент,
(Орловский юридический институт МВД России имени В. В. Лукьянова)

ISBN 978-5-91837-685-0

Contents

Contents

Contents

Contents

Предисловие

Традиционно учебник определяется как материальное средство обучения, предназначенное для расширения, углубления, усвоения знаний; как источник приобретения знаний для обучающихся и руководства по организации учебного процесса для педагога. Подобное общепризнанное толкование в контексте процессов, протекающих в современном образовательном пространстве (ориентация на непрерывность и открытость, гуманизация, цифровизация и т. д.), требует уточнения. Отвечая на запрос времени, современное методическое проектирование предполагает цифровую версию бумажного носителя, электронный учебник, онлайн-тренажеры, рабочую тетрадь, справочную литературу, технологические карты по работе с дополнительными информационно-образовательными ресурсами, тестовые задания и т.п. Всё это необходимо для активации мотивации обучающегося, индивидуализации его образования. Новая архитектура содержания обусловливает новые акценты в дидактической интерпретации понятия «учебник». Учебник XXI века — это уже не уникальный источник с закрытой системой знаний, а элемент динамичной, открытой информационно-образовательной среды.

Педагогическое проектирование учебника нового поколения для высшей школы основывается на анализе будущей профессиональной деятельности обучающихся, осмыслении ее базовых ценностей, содержания компетенций как отражения запроса общества и государства. Так, в разработке концепции данного учебника по иностранному языку для обучающихся образовательных организаций системы МВД России авторы основывались на том, что обучение:

— должно осуществляться в рамках компетентностного подхода, зафиксированного на уровне федерального государственного образовательного стандарта высшего образования: язык рассматривается как средство коммуникации в профессиональной сфере; обучение выстраивается по формуле «язык через профессию, профессия через язык»;

— должно согласоваться с мировыми ориентирами на процессы гуманизации и гуманитаризации образования, в центре которых находится сам человек, его личностный рост в рамках индивидуальной образовательной траектории; особое внимание — антропопрактике и ее принципу природосообразности;

— предназначено для целевой аудитории периода ранней взрослости, что обуславливает обязательный учет андрагогических принципов в построении обучения;

— имеет свою специфику; должно отвечать современным признанным подходам в преподавании иностранного языка (коммуникативному, деятельностному), быть методически логично и грамотно выстроенным на базе разнообразного аутентичного материала;

— должно органично вплетать в учебный процесс актуальные технологические достижения, задействовать разнообразные информационные ресурсы.

Анализ современных научных и методических представлений о проектировании учебных изданий позволил авторам определить для себя следующие основания для разработки учебника.

Мировые ориентиры на гуманизацию и гуманитаризацию высшего образования, заданные более 30 лет назад, продолжают быть актуальными для России. Общество нуждается в людях с аксиологическим мышлением, осмысленным отношением к своей профессиональной деятельности, принятием ответственности перед обществом и осознанием личностного вклада в построении будущего своего государства и мира в целом.

Сегодня в структуре любой профессиональной подготовки выделяется общепрофессиональная область, призванная создавать условия для формирования навыков самоорганизации и самообразования, умений продуктивно взаимодействовать с людьми иных культур. Эти задачи высшего образования значимы и для образовательных организаций системы МВД России, в которых в силу их специфики высок риск превалирования технократизации. Компетентностный подход, ориентированный на формирование «я функционального» — знатока своего дела, соответствующим образом выполняющего свои должностные обязанности, готового с наименьшими потерями адаптироваться к наличествующим условиям профессиональной деятельности, должен сегодня уравновешиваться гуманитарно-антропологическим, позволяющим создавать условия для развития человеческого потенциала.

Одним из факторов развития соответствующего данной целевой установке субъект-ориентированного образовательного пространства является учебно-методическое обеспечение, проектирование которого осуществляется на основах гуманитаризации познания — не на формальном приращении знаний, заучивании готовых ответов, ориентации на узкопредметный отбор содержания, а на принципах осмысленности, рефлексивности, индирективности, аксиологичности, вариативности и т. д. Данное утверждение в полной мере относится и к организации иноязычного обучения в образовательных организациях системы МВД России, актуальной целью которой видится модернизация дидактической базы учебных материалов. Их формальная и содержательная части должны не только отвечать направлению профессиональной подготовки по конкретным специальностям, а способствовать приращению личностного знания.

В результате разработка учебных материалов видится на основе, как минимум, трех подходов:

— *гуманитарно-антропологического* с соблюдением принципа «человекосообразности» как основного принципа антропопрактики, который предполагает соотнесенность содержательной, формальной, функциональной сторон дидактических материалов возрастным, психологическим, культурным особеннос-

тям целевой аудитории; обращение к самому человеку. В разработке учебных изданий данный подход реализуется посредством дробления темы на смысловые части, преподнесения материала разнообразными способами как ответ на сформированную ныне у современного поколения юношества клиповую, экранную культуру; посредством рубрики *What about you?* (дословно «Что насчет Вас?») как реализация возможности выразить личное мнение, проявить собственное отношение к предмету дискуссии, что, в свою очередь, требует глубокого осмысления вопроса.

— *андрагогического* как базового подхода во взаимодействии со взрослыми обучающимися. Данный подход проявляется посредством вариативности и избыточности заданий, ссылок на дополнительные информационные ресурсы (множество QR-кодов с прямым доступом к интернет-источникам). Построенный на андрагогических принципах дидактический материал позволяет избежать закрытой системы ограниченных знаний, трансформируя формат учебной литературы в открытую образовательную среду с инвариантным знаниевым ядром и множеством вариантов развития смыслов в зависимости от личностных мотивационных установок обучающихся. Подобная организация материала, в конечном итоге, позволяет развивать у целевой аудитории самостоятельность когнитивной деятельности, осознанность выбора дополнительных учебных ресурсов, принятие ответственности за проектирование и реализацию собственной индивидуальной образовательной траектории.

— *задачного* как образовательной технологии, позволяющей реализовать заложенный в федеральном государственном образовательном государственном стандарте компетентностный подход в рамках создания пакета практико-ориентированных заданий, направленных на решение квази-профессиональных задач. В данной учебном издании задачный подход реализуется многоуровнево: от рутинных не отнесенных задач, предполагающих выполнение заданий по определенному алгоритму (стереотипизированные задания для отработки языкового или тематического материала) до нерутинных отнесенных задач, запрашивающих от обучающего фоновых знаний, творческого подхода, принятия собственных решений в условиях осмысленности своего выбора и т. п. (в основном, реализуется в рубриках *Case study!, Check yourself!*).

Предлагаемый учебник по иностранному языку соответствует современным стандартам обучающей литературы и представляет собой существенный элемент открытой, многомерной информационно-образовательной среды. Осуществляется это требование, во-первых, за счет трансформации структуры учебно-методического обеспечения (рабочей тетради, контекстного словаря, видеокурса по изучаемому материалу, тестовых заданий и т. п.), а, во-вторых, посредством цифровых технологий и разнообразных информационно-образовательных ресур-

сов, что позволяет органично включить двухмерный формат учебника в структуру мобильной образовательной среды.

Учебник в данном случае не монополизирует знания в закрытой системе, а является навигатором индивидуальных образовательных маршрутов на базе гуманитарных принципов вариативности, индирективности, осознанности выбора, рефлексивности, принятия собственной ответственности за результат и т. д.

Базовое содержание учебника соответствует официальному тематическому плану рабочей программы, в котором определены конкретные темы профессиональной направленности и порядок их прохождения — отражение государственного стандарта. Следует отдельно отметить особенность построения содержательного компонента учебника по иностранному языку в неязыковой организации высшего образования — он выстраивается по формуле: язык через профессию, профессия через язык. Как следствие, основное содержание в учебнике выстраивается в двух направлениях — с одной стороны, материал отбирается тематический, профессионально ориентированный на основе принципов научности, актуальности, достоверности; с другой стороны, тщательно продумывается аутентичный языковой и речевой материал как форма выражения смысловой нагрузки тематического контента. Кроме того, с позиций гуманитарного образования значимо третье направление — обращение к личности самих обучающихся. В предлагаемой концепции авторы реализуют его как в содержании заданий по осмыслению пройденного материала, так и в отдельной рубрике *What about you?*, где предлагается осмыслить информацию, пропустить через себя, выразить и обосновать свое мнение по некой проблеме, затрагиваемой в основном материале. Четверное направление, в русле андрагогического подхода, реализуется в предлагаемых при помощи QR-кодов активных ссылок на дополнительный аутентичный текстовый, аудио- или видеоматериал, позволяющий составить в индивидуальном объеме и в собственном режиме знание об изучаемой теме, а также в рубриках *Let it up!* (Найдите информацию!) и *Who is who?* (О ком идет речь?), побуждающих целевую аудиторию к самостоятельному поиску материала, включению аналитического и критического мышления, осмысленности в познавательной деятельности.

Авторами предложена трехуровневая структура учебника.

Первый уровень представляет общий композиционный замысел. На этом уровне прослеживается четкая логика (древесная логика) в выстраивании тем, постепенное прохождение которых в определенной системе позволяет обучающимся безболезненно вникнуть в свою будущую профессию, осознанно раздвинуть ее границы при помощи иностранного языка. Основной раздел учебника «закрывается» англо-русским словарем с транскрипцией слов. Второй уровень — структура на уровне конкретной темы (раздела, юнита). Авторам представляется дискуссионной традиционно избираемая разработчиками текстоориентированная

структура преподнесения материала (предтекстовые упражнения, текст, послетекстовые задания), поскольку фокус внимания в такой структуре сцеплен исключительно с конкретным текстом (а не с темой!), что в корне противоречит принципам вариативности, индивидуальности и т. п. Авторы выступают за темоориентированную структуру, которая предполагает не формальное заучивание указанного текстового материала, а осмысление пространства всей темы. В этой связи архитектура темы-раздела выглядит следующим образом:

— глоссарий (*Glossary*), в котором как итог тщательной выборки представлены основные терминологические единицы раздела и их определения с аудиоозвучкой носителем языка, считываемой по QR-коду;

— рубрика *Word bank*, в которой в разных вариациях отрабатываются необходимые для прохождения темы языковые единицы, речевые шаблоны. Рубрика изобилует игровыми моментами в проработке лексики — отгадыванием загадок, кроссвордов, филвордов и т. п.;

— тематический материал, который предлагается к ознакомлению не единым текстовым монолитом, а разделен на блоки — информация подается очень дозировано, разнообразно, красочно (не только при помощи текста, но и при помощи инфографики, видео, аудиоматериала и т. п.) с моментальными заданиями коммуникативной направленности, предполагающими получение обратной связи (помощь в осмыслении материала, перевода его в личностную сферу);

— рубрика *Check yourself!* (Проверь себя!), с ссылкой на онлайн-тест с моментальной проверкой, решением квази-профессиональных задач (рубрика *Case study!*), на основе реальных фактов или смоделированных ситуаций, фрагментов из современных фильмов / сериалов, сюжета аутентичных комиксов и т. п.

Отметим, что в разработку структуры раздела встраивается многообразный дополнительный материал, о котором говорилось выше.

Третий уровень — структура страничного разворота учебника. Страница имеет рабочую зону и обязательные поля. Поля — пространство для дополнительных «заметок», количество и содержание которых зависят от тематического и языкового материала. Например, среди данных «заметок» реализуются рубрики: *Be attentive!* (транскрипция сложных для прочтения «рабочих» слов с цветовым выделением звуков или ударений, которые вызывают особые трудности); *Did you know?* (краткая заметка о неком научном событии, исторической личности, об этимологии слов и т. п.); *Be aware!* (краткое пояснение чего-либо в рамках будущей профессии — разница между смежными понятиями, некие правила и т. п.); *Interesting facts!* (интересные факты о предмете изучения); *Let's discuss!* (некий вопрос, цитата и т. п., которые следует осмыслить, совместно обсудить в ходе аудиторного занятия); *Join in!* (работа в группах — творческие задания проектного типа в рамках изучаемого тематического материала) и т. д.

Отметим, что материал на уровне страницы выстраивается в нелинейной логике — информация подается кратко, фрагментарно. Страница может выглядеть как набор разрозненных информационных единиц. Однако подобная презентация материала необходима для избыточности, позволяющей организовывать вариативность образовательного процесса, создавать условия для формирования у каждого обучающегося лично-ценностной картины мира, в которой его профессиональная деятельность является общественно значимой.

FORENSICS - what science is it?

UNIT 1

Glossary

1. 2.

* Audio Glossary

Fig. 1. Crime lab activities

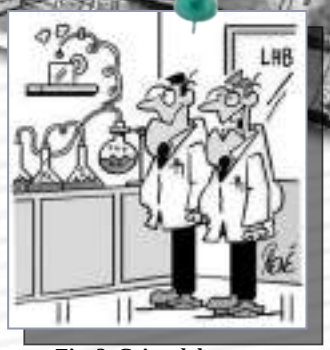


Fig. 2. Crime lab cartoon

Forensic science (n) =
Forensics (n) ≈
Criminalistics (n) -
the application of different sciences to solve the questions of the law, mainly during the criminal investigation

Crime scene (n) = locus delicti -
a place where a crime was committed

Crime scene investigation (n) -
a slow and hardworking process of revealing important clues (relevant evidence), gathering information, making a conclusion about a suspect's personality, his motive and his method of committing a crime (*modus operandi*)

Evidence (n) -
an item (items) from a crime scene that can prove the guilt or the innocence of a suspect

Crime laboratory (n) -
often shortened to ***crime lab (n) -***
a scientific laboratory, using basically forensic science to examine evidence from a crime scene

Forensic scientist (n) =
Forensic expert (n) ≈
Criminalist (n) -
a crime lab employee processing a crime scene, collecting and analysing forensic evidence to help an operational-investigative group in crime investigation and solution

Forensic analysis (n) =
Forensic examination (n) =
Forensic investigation (n) -
the process of studying the nature of evidence found at a crime scene

* ***Have you caught any differences in the audio glossary versions? What are they?***

Let's discuss!

How could **you** explain such differences in pronunciation?

UNIT 1 Forensics - what science is it?

Word bank!

What about you?

Think & answer. Why did **you** decide to become a forensic expert?

Did you know?

The term ***forensic*** is derived from the Latin word ***forensis*** which means ***before the forum***: in ancient Rome both the accused and the accuser involved in a judicial case had to present their arguments and evidence in front of a public forum (fig.4).

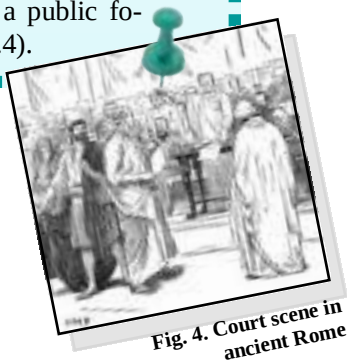


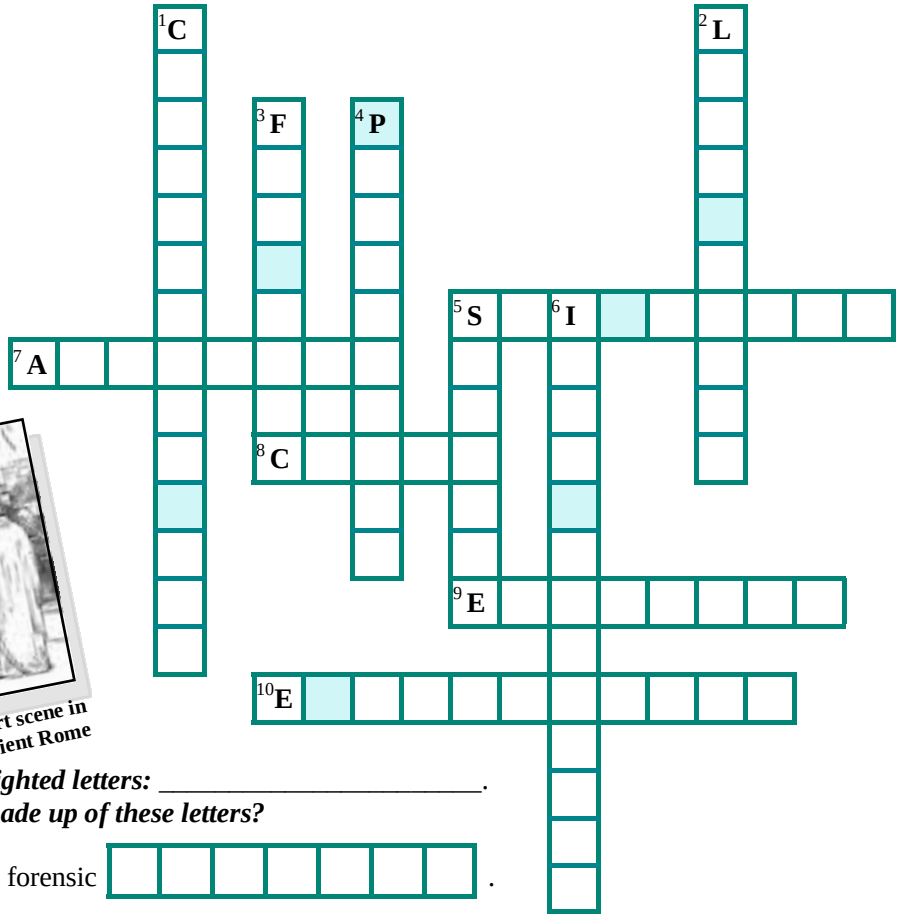
Fig. 4. Court scene in ancient Rome

1. Study the glossary and analyse the cartoons at pages 13 and 14. Answer the questions:

1. What are the depicted people?
2. Where are they working - in a lab or at a crime scene?
3. What are they doing?
4. What is the main aim of all of these specialists' work?

Fig. 3. Crime lab activities

2. Do the crosswords using the glossary:



Write down the highlighted letters: _____.

What is a key-word made up of these letters?

All of us will be super forensic _____ .

Across:

5. A crime laboratory employee studying evidence: forensic … .
7. The process of studying something
8. An illegal act of a criminal.
9. An item or items found at the crime scene that can be used in a court to prove the guilt or the innocence of a suspect.
10. Forensic analysis in other words: forensic … .

Down:

1. The application of scientific knowledge and methodology to legal problems and criminal investigations.
2. A special place where forensic scientists make their expertise.
3. A term derived from the Latin word *forensis.*
4. Crime scene examination in details and nuances.
5. A particular branch of scientific knowledge.
6. A slow gathering information about a suspect's personality, his motive and accurate process of examining the crime scene, and his method of committing a crime.

3. Match the synonyms:

1. forensic science	a) to study, to examine
2. forensic	b) to use
3. science	c) scientific discipline
4. forensic scientist	d) examination, study, investigation
5. method	e) clues from the crime scene
6. to analyse	f) technique
7. to apply	g) forensics, criminalistics
8. analysis	h) judicial, legal
9. evidence	i) criminalist, forensic expert

Be attentive!

analyse ['æn(ə)laɪz] *(v)*
analysis [ə'næləsɪs] *(n)*
analyses [ə'nælɪsi:z] *(n, pl)*
analyst ['æn(ə)lɪst] *(n)*
analytical [ˌæn(ə)'lɪtɪk(ə)l)] *(adj)*
expertise [ˌekspɜ:'ti:z] *(n)*

4. Change the given phrases using all possible synonyms of the underlined words and word combinations:

1. Forensic science applies different sciences.
2. Forensic scientists analyse evidence.
3. The analysis of clues from a crime scene gives findings needed for crime solution.
4. Criminalistics uses scientific principles and methods.

_____.
_____.
_____.
_____.

Look it up!

Is there any form of plural for the words ***evidence*** and ***expertise***?

Look them up. What variants are possible?

5. Complete the following words chains using the key-words. Translate them:

VERB	NOUN (NOTION)	NOUN (ACTOR)	ADJECTIVE
analyse	analysis	analyst	analytic/ analytical
...	...	examiner	—
...	...	...	investigative
...	act (act of a criminal) action	...	...
apply	…	...	...
make an expertise	...	expert	… (opinion)
...	collection	...	...
...	...	...	informative
...	solution	—	—
—	...	scientist	...

6. Translate the word combinations and make sentences with each of them:

Судебные эксперты, анализировать улики, преступное деяние, расследовать место преступления, информация о преступлении, применение научных знаний, экспертное мнение, собрать доказательства, осматривать место преступления, анализ доказательств, раскрытие преступления, делать экспертизы, криминалистическая лаборатория.

UNIT 1 Forensics - what science is it?

Introduction to forensics

1. Read the information about forensic science:

Forensic science is the application of different sciences to matters of the law. In practice, in the evidence analysis from a crime scene forensics uses physics, chemistry, biology, geology, mathematics, and other scientific disciplines and techniques. The main sciences that help forensic scientists in the forensic evidence examination are:

MATHS
- Measurements
- Ratios
- Formulas
- Graphing
- Distance

BIOLOGY
- Entomology (insects activity)
- Botany (plants identification)
- Zoology (animal hair/ blood/ skeletal remains, etc.)
- Anatomy (bones, teeth, hair, fingerprints, body fluids: saliva, blood, semen; etc.)
- Genetics (DNA profiling)

PHYSICS
- Speed
- Trajectory
- Light
- Sound (voice patterns)

FORENSIC SCIENCE

GEOLOGY
- Soil samples
- Rock samples

CHEMISTRY
- Organic/ Inorganic samples
- Toxicology (drugs/ poisons/ toxins)
- Mixtures
- Fire/ arson origin
- Explosives
- Fibres
- Paper and ink analysis

LINGUISTICS
- Communication (written: text types analysis/ oral: phonetics, dialectology)
- Reading skills

PSYCHOLOGY
- Human behaviour analysis
- Criminal profiling
- Mental health assessment
- Psychological assistance
- Graphology

Audio text

Fig. 5. Sciences that forensics deals with

Forensic science applies scientific testing methods and the latest technologies to collect, preserve, process, and analyse clues from a crime scene. The proof of the guilt or the innocence is frequently determined by the results of forensic evidence. Forensic scientists present their findings as expert witnesses in the court of law.

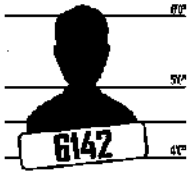
What about you?

What fields in forensic examination will **you** deal with after **your** professional training?

Which one would **you** like to work in? Why?

Forensics covers different fields in forensic examination, some of which have existed, however primitive, for centuries. These include **fingerprinting**, **chemical identification**, **document analysis**, **ballistics**, **trace evidence analysis**, etc. Two newer disciplines that have become major components of the twenty-first century crime laboratory are **DNA analysis** and **explosives investigation**.

2. What is this text about? Read the statements below and choose 4 of them which can be items of the text content plan. Put these items in a logical way and make up the right plan of the text:



1. The scientific disciplines that forensics deals with.
2. Different directions in the evidence analysis.
3. The methods of a crime scene examination.
4. The importance of the results of forensic evidence examination.
5. The crime laboratory activity.
6. The definition of the forensic science.
7. The details of the crime laboratory scientists work.

3. Each statement given below contains a mistake. Correct the sentences:

1. Forensic science uses only biology, anatomy, chemistry in evidence examination.
2. Forensic science doesn't use the latest technologies to collect, preserve, process, and analyse clues from a crime scene.
3. Forensic scientists don't have any rights to present their findings as expert witnesses in the court of law.
4. Fingerprinting, chemical identification, document analysis, ballistics, trace examination fibres are the newest methods in evidence analysis.
5. The twentieth century is marked by two newest forensic disciplines – DNA analysis and explosives investigation.

Look it up!

Find the information on any high-profile criminal case. Write down ***all possible relevant pieces of evidence***.

What sciences can be involved in their forensic examination? Explain your choice.

4. What sciences help make analyses of the following different crime scene clues?

EVIDENCE	BIOLOGY	ANATOMY	BOTANY	PHYSICS	CHEMISTRY	MATHS	GEOLOGY	PSYCHOLOGY	LINGUISTICS
1. Stopping distance of the suspect's car				+		+			
2. Some fibres on the victim's dress									
3. Mud on the criminal's boots sole									
4. An accent of the perpetrator									
5. A fingerprint on the cup									
6. DNA of the suspect									
7. The minuscule marks on the fired bullet									
8. The serial killer's signature									
9. A handwritten note of the suicide									
10. Herbal tea in the victim's glass									

E.g. Stopping distance of the suspect's car will be analysed with the help of physics and maths. Physics studies speed and trajectory, maths gives calculations.

5. Read an extract from the internet article:

Articles FACTORY

HOME | REGISTER | ALL CATEGORIES | TOP AUTHORS | SUB

FORENSIC SCIENCE vs CRIMINALISTICS

People often mistake forensic science for criminalistics. However, it's important to keep in mind the difference between these terms. Forensic science involves any scientific specific discipline that can be applied to evidence. Criminalistics is just one of the subdivisions of forensic science.

So, some of the disciplines that fall under the umbrella of "forensic science" are: Digital Forensics; Forensic Linguistics; Forensic Pathology; Forensic Psychology; Criminalistics, etc.

In a word, criminalistics deals primarily with crime scene evidence collection and analysing most of them.

Audio text

Tell if the statements are true or false. Correct the false ones:

1. In ordinary people's mind forensic science and criminalistics are the same terms.***(T/F)***
2. Forensic science is just a part of criminalistics. ***(T/F)***
3. Forensic science houses a lot of specific disciplines used for evidence examination. ***(T/F)***
4. Forensic Linguistics and Forensic Psychology fall under the umbrella of criminalistics. ***(T/F)***
5. Fingerprints collection and weapons examination are the field of forensic science. ***(T/F)***
6. Criminalists analyse the criminal's motives, his modus operandi and make his psychological profile. ***(T/F)***
7. Forensic Pathology deals with alive victims. ***(T/F)***
8. Forensic science deals with more "scientific" evidence analysis, criminalistics is primarily used in the crime scene processing. ***(T/F)***

Who is who?

This Austrian criminal jurist introduced the term ***criminalistics***. He considered it as an applied science in the practice of crime investigation.

Fig.6. Father of criminalistics

He was an advocate of professional ethics, objectivity, careful inspection of the evidence, use of the scientific method, and accurate crime reconstruction.

He was ***the first to describe crime scene processing in details***.

Who is he?

_____.

6. Answer the questions:

1. What is the definition of forensic science?
2. What notions does forensics deal with? (the glossary of Unit 1, p.13)
3. What is the term "forensic" derived from?
4. Is there any difference in the terms "forensic science" and "criminalistics"? (ex.5, p.18)
5. Who was the first to introduce the term "criminalistics" and to describe crime scene processing in details?
6. What principles of a crime scene investigation were highlighted by this Austrian criminalist? Are they valid nowadays?
7. What sciences do forensic scientists apply in the evidence examinations? Give some examples (ex.4, p.17)
8. What is the role of forensic science results?
9. What is the role of forensic scientists in the court of law?
10. What are the main fields in forensic examination?

7. Sum up all the information studied in this unit, make up a plan for speaking on forensics:

_____
_____
_____
_____
_____
_____
_____
_____ .

Forensics - what science is it? UNIT 1

Check yourself!

1. What are your associations with the term "forensic science"? Write them down:

_____
_____
_____
_____
_____
_____ .

Test on-line!

2. Give all possible word combinations with the key-word "forensic":

_____
_____
_____
_____ .

3. Look up and write down the derivations from the given words. Translate them:

Crime: _____ .
To analyse: _____.
To investigate:_____.
To examine:_____.

What about you?

Dive into the statement: "Forensic science is said to offer great potential, as it draws on almost every discipline and, in doing so, creates widespread opportunity for searching for innovations".

What do **you** think - forensics is a static or dynamic science?

Why? Explain **your** point of view.

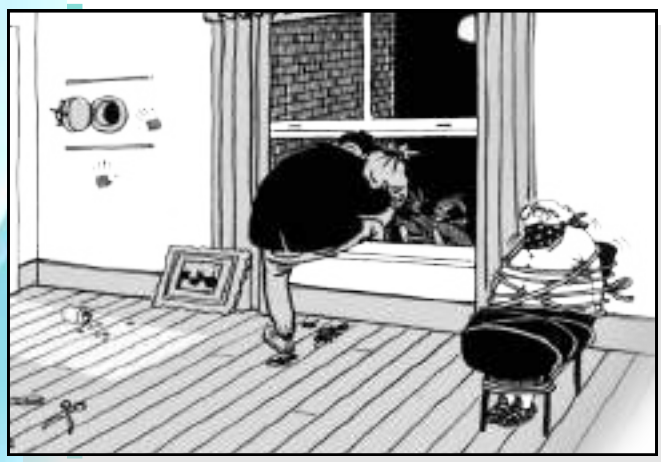
4. Give the terms for the following definitions:

1. A criminal act.
2. A place where a crime was committed.
3. This science deals with toxicology, mixtures, explosive substances, etc.
4. A clue from a crime scene.
5. A scientific laboratory where evidence from a crime scene is analysed.
6. A crime lab employee processing a crime scene and examining evidence in a crime lab.
7. The application of different sciences to solve the questions of law.
8. A science which helps in studying body fluids, a human body, teeth and hair.
9. A slow and hardworking process of revealing important clues, gathering information, making a conclusion about a method and a motive of a suspect.
10. This science deals primarily with crime scene evidence collection and processing most of them.

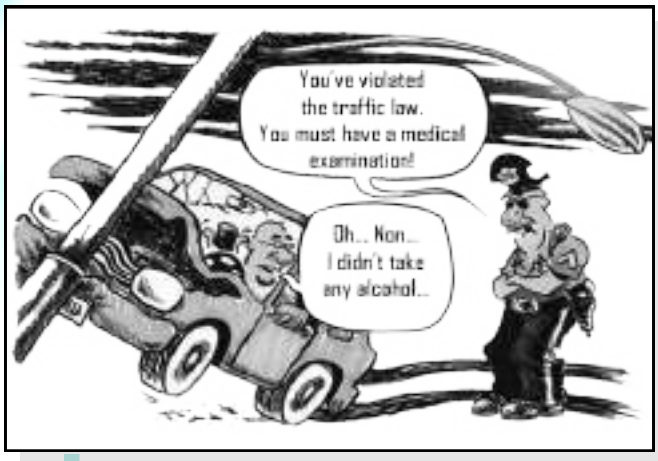
5. What sciences help criminalists analyse the following evidence. Give some arguments:

EVIDENCE	SCIENCE(S)
1. Traces of the poisonous plant in the food	
2. Insects feeding on the dead body	
3. A suspect's dirty footprints near the body	
4. Telephone calls records with the criminal's threats	
5. A crime weapon with some fingerprints	
6. Some bones found after the fire	

6. Study the cartoons. What crimes are depicted? What evidence could be found there? What sciences can help forensic scientists analyse these pieces of evidence? Give some arguments:



1. Crime(s):_____
_____.
Evidence: _____
_____
_____
_____
_____.
Sciences which can help in the evidence investigation: _____
_____
_____
_____
_____
_____.



2. Crime(s):_____
_____.
Evidence: _____
_____
_____
_____
_____.
Sciences which can help in the evidence investigation: _____
_____
_____
_____
_____
_____.

Fig.7-8. Crime cartoons

7. Complete the sentences:

1. Forensic science is the application of … .
2. Forensics deals with a lot of notions such as … .
3. The term "forensic" is derived from … .
4. People often mistake forensic science for … . However, it's important to keep in mind the difference between these terms.
5. In a word, criminalistics is just one of the subdivisions of … and deals primarily with … .
6. The term "criminalistics" as … was introduced by H. Gross who was an advocate of … .
7. In the evidence analysis, forensic scientists apply a lot of scientific disciplines such as … .
8. Physics helps with the examination of … . Chemistry helps with the investigation of … .
9. Anatomy and zoology offer knowledge about living beings and help with the analysis of … .
10. Geology helps with … .
11. Forensic results can prove the guilt or … .
12. Forensic scientists can present their findings as … .
13. The main fields in forensic examination are … .

CRIME LABORATORY activity

UNIT 2

Audio Glossary

Glossary

Public crime laboratory (n) - a state-financed laboratory functioning as a part of law enforcement agencies. It mainly deals with a crime scene processing, collecting relevant evidence and analysing most of them

Private crime laboratory (n) - a crime lab which typically doesn't respond to crime scenes to collect evidence. Commonly it employs civilian scientists specializing in a particular field of forensic evidence examination

Body farm (n) - an outdoor crime lab, a sort of scientific research center which focuses on the examination of dead bodies changes during the stages of decomposition under different environment conditions

Field analysts (n pl) - investigators who arrive at a crime scene, reveal and collect evidence and process the scene

Laboratory analysts (n pl) - scientists or other personnel who run tests on the evidence brought to the lab

Prelab activities (n pl) - actions of field analysts at a crime scene which cover some kind of detective work - revealing important pieces of evidence and using proper means of their collecting

Lab activities (n pl) - actions of laboratory analysts in a crime lab which cover scientific analysis of the forensic evidence found at a crime scene

Fig.9. In a crime lab

"WORKING IN A CRIME LAB IS GREAT! USING DNA EVIDENCE, I KNOW NOW WHO'S BEEN STEALING MY TUNA SALAD FROM THE BREAK ROOM FRIDGE..."

Let's discuss!

What other pieces of evidence could **you** imagine involved in this "crime"?

What sciences would help in their examination?

Microscope

UNIT 2 Crime laboratory activity

Word bank!

1. Read and translate the international words:

Laboratory, crime lab, public lab, private lab, personnel, analyst, specialist, criminalist, criminalistics, lab activity, criminal, criminal activity, detective (work), technology, to collect, collection, to process, test, to test, expertise, analysis, microscope, microscopic materials, identification, body farm, facts, results, print, latent print, trace materials.

Who is who?

This person created the ***world's first crime lab***.

He is known as the ***French Sherlock Holmes*** as being a medical examiner in World War I, he was able to identify causes and locations of death by looking at stains and trace evidence on soldiers' uniform.

Fig.10. Father of the world's 1st crime lab

In 1910, he rented a two-room attic in Lyon and transformed it into what's considered the ***first crime lab***.

Who is he?

_____.

Make the infocard of the world's first crime lab:

Creator: _____
Year: _____
Country: _____
City: _____
Type of evidence in the focus in the crime lab activity:
_____

2. Read and translate the following words chains:

1. Forensic – forensic kit – forensic artist – forensic science – forensic scientists – forensic science results – forensic science results prove the guilt or the innocence of a suspect.
2. Crime – crime scene – crime scene kit – crime scene tape – to examine a crime scene – to search (to comb) a crime scene – to protect (secure) a crime scene – to investigate a crime scene – crime scene investigation – crime scene investigator – crime laboratory – crime lab activity.
3. To collect – collected – evidence collected – evidence collection – to collect evidence at a crime scene – to collect all pieces of evidence accurately at a crime scene.
4. Print – fingerprint – to take fingerprints – types of fingerprints – to compare fingerprints – footprint – voice print – palm print – lipstick print – visible print – latent print – print examination.
5. To analyse – analysed – analysed evidence – to analyse evidence – analysis – evidence analysis – scientific analysis – samples analysis – analyst – laboratory analyst – field analyst.

Make up your own word chains using the following key-words:

To examine _____.
To investigate _____.

3. Decypher the phrase:

D	E	T	E	C	T	I	V	E	W	O	R	K	A	N	D
S	C	I	E	N	T	I	F	I	C	A	N	A	L	Y	S
E	S	P	E	R	F	O	R	M	E	D	B	Y	A	C	R
I	M	E	L	A	B	T	E	A	M	H	E	L	P	I	N
C	R	I	M	E	S	O	L	U	T	I	O	N	.		

_____
_____.

4. Match the words from two columns. More than one variant is possible:

1. to collect	6. crime scene	a. laboratory	f. analyst
2. to analyse	7. forensic	b. scene	g. examiner
3. to examine	8. laboratory	c. investigation	h. kit
4. to investigate	9. field	d. evidence	i. a dead body
5. to run test on	10. crime	e. fingerprints	j. trace materials

5. Forensic science deals with a crime scene. Who can we see at a crime scene? Match the words with their definitions:

1. a forensic scientist	a) a person possessing a very important information about the crime or the person having committed the crime
2. a criminal	b) a person who suffers from harming actions of anybody
3. a victim	c) an employee of a crime laboratory
4. a witness	d) a person who commits a crime or does something considered wrong

1.	
2.	
3.	
4.	

6. Who is who? Read the sentences and reveal all possible synonyms for the key-words. Fill in the table:

A WITNESS

A CRIMINAL

A VICTIM

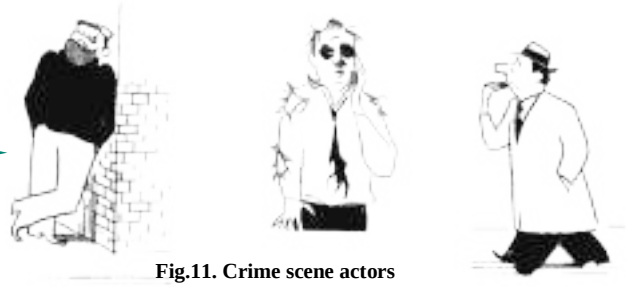


Fig.11. Crime scene actors

Look it up!

Get a complete table by looking up **all kinds** of synonyms in the dictionaries.

A CRIMINAL	A VICTIM	A WITNESS
...	...	...
...	...	...
...	...	...

1. Police found a wounded man unconscious next to his car.
2. A medical examiner has confirmed that there are 6 dead and 30 injured people.
3. A hurt woman was still alive when she was discovered by a casual passer-by.
4. The perpetrator is armed and very dangerous!
5. Eye-witnesses testified that a law-breaker had escaped in the crowd.
6. Police officers secured a crime scene from bystanders.
7. An offender tried not to leave any evidence, but criminalists managed to find some traces.
8. Forensic pathologist examined the corpse - the dead body had 3 bullet holes.
9. Forensic analysts' results proved the guilt of a suspect.
10. A violator threatened innocent casual onlookers.

Be attentive!

wounded ['**wu**:ndid] *(p.p.)*
injured ['ɪn**dʒəd**] *(p.p.)*
hurt [h**ɜ**:t] *(p.p.)*

perpetrator ['p**ɜ**:pɪtreɪtə] *(n)*
violator ['v**aɪə**leɪtə] *(n)*

What people (from the exercise) are involved in the forensic team?

7. Guess who is described. Give all possible names:

One day I saw a man stealing a video camera in the shop. This man was a _____. He hurt some people standing on his way. They were _____. Fortunately, there was no _____ there. The shop director called the police station and soon _____ came at the crime scene. I was a _____ of this crime as I saw how everything had happened.

UNIT 2 Crime laboratory activity

Prelab and lab activities

1. Give the definition of a crime laboratory. Use the glossary of Unit 1 if you need:

A crime laboratory, also called a forensic laboratory, is _____

_____ .

2. Study the information on activities of a typical crime laboratory:

Fig.12. Prelab activities

A typical crime laboratory has two sets of personnel: field analysts who perform **prelab activities** at a crime scene and laboratory analysts whose work is focused on **lab activities** connected with evidence examination, expertise, tests.

In other words, crime laboratories **combine detective work with scientific analysis** to reveal details about a crime that would otherwise go unnoticed.

Crime laboratories often have employees who specialise in specific areas, such as collecting clues at a crime scene or using forensic analysis techniques in the laboratory to learn more about the gathered evidence.

Fig.13. Lab activities

3. Divide different actions of a forensic team into prelab and lab activities:

PRELAB activities	1,
LAB activities .	

Audio text

1. to detect and collect evidence;
2. to run tests on the evidence brought to the lab;
3. to make a scientific analysis of a crime weapon;
4. to take fingerprints of a suspect;
5. to make a mold of an offender's footwear impression;
6. to perform a lab examination of bloodstain found at the crime scene;
7. to take lipstick prints from a cup of tea;
8. to take photographs of the found clues;
9. to make a handwriting expertise;
10. to use forensic analysis techniques.

Be attentive!

personnel [ˌpɜːs(ə)'nel] *(n)*

employ [ɪm'plɔɪ], [em-] *(v)*
employee [ˌɪmplɔɪ'iː], [em] *(n)*
employment [ɪm'plɔɪmənt], [em-] *(n)*

4. Give your own examples of prelab and lab activities of crime lab employees:

Prelab activities cover a good deal of actions of forensic detective work at a crime scene. In this area, field analysts _____

_____

_____.

Lab activities are connected with scientific analysis of forensic evidence. In this field, laboratory analysts _____

_____

_____.

Case study!

7. Read about a car accident and work with the information:

Suppose you've just been an eyewitness of a car accident. A ***sport utility vehicle (SUV) slammed into*** a little sedan at high speed. After the impact, the sedan spun around before crashing into a telephone pole. Luckily, no one apparently was seriously hurt, but the SUV ***sped away*** before anyone had a chance to see its ***licence plate***. What would you do?

Fig.14. A car crash

You'd probably call the police and an ambulance to take the hurt driver to the hospital to get checked out. Meanwhile, law enforcement officers would arrive at the scene. They'd talk to witnesses while a forensic team would examine skid marks, make measurements, take photographs, and collect shards of glass and other scraps like paint chips, particles of both vehicles that came off after a crash contact. Then forensic scientists would analyse the data for clues that could lead to the vehicle (and the driver) that hit the little sedan.

Look it up!

Look up these word combinations in **English-English** dictionaries.

What do the word combinations in italic mean?

A sport utility vehicle (SUV) - _____.
To slam into - _____.
To speed away - _____.
A licence plate - _____.

Who is who? What are their actions in the story?

a PARTICIPANT in the story	SYNONYMS	a PERSON in the situation	ACTIONS
a criminal	a perpetrator; a law-breaker; ...	a driver of the sport utility vehicle	– slammed into a little sedan at high speed; – sped away from the accident scene
a victim	...	...	...
a witness	...	...	...
a med team	...	——	...
police	...	——	...
forensic scientists	...	——	– …; – …; – collect evidence; – analyse the data for clues that could lead to the suspect.

What pieces of evidence are in the focus of the forensic team in this car crash case? List them:

_____.

Make a conclusion.
What actions at this crime scene do forensic scientists perform in the frame of prelab activities?
What actions do they plan to perform as lab activities?

UNIT 2 Crime laboratory activity

Public and private labs

Did you know?

In 1932 only ***one*** special ***agent*** started the FBI Laboratory in ***one room with a borrowed microscope*** and a few other pieces of equipment.

Fig.15. FBI's Crime Lab in 1940s

Today, the FBI Laboratory:

• is one of ***the largest*** and ***most comprehensive*** crime labs in the world;

• employs more than 650 forensic examiners who make about ***one million forensic examinations*** each year. Items of evidence may be as large as the fuselage from an aircraft or as small as the cells of a person's skin.

• covers a multitude of disciplines dealing with fingerprints, chemical substances, biological evidence and DNA, trace evidence, questioned documents, ballistics objects, tools marks, explosives, and many other unique forensic fields such as forensic geology, forensic metallurgy or forensic cryptanalysis.

Audio text

1. Study some more details about crime laboratory activity:

In different countries crime labs **can be organised in a public or private way**.

Public crime labs are funded and administered by federal, state or local government. They primarily deal with a crime scene processing, collecting relevant evidence and analysing most of them. There is a standard practice if a law enforcement agency doesn't operate its own crime lab - in this case it has free access to a higher level laboratory for analysis of their evidence.

Private forensic labs typically don't respond to crime scenes to collect evidence. Commonly they employ civilian scientists who are engaged in a specialised field of expertise such as DNA analysis, forensic entomology, toxicology, archaeology, etc.

Audio text

2. What is the difference between public and private crime labs?
Tick ✔ the box that best corresponds to the feature of a crime lab type:

FEATURE	PUBLIC LABS	PRIVATE LABS
1. They are funded and administered by governmental authorities.	✔	
2. They are privatised and paid for making forensic expertise.		
3. They primarily employ law enforcement officials who deal with processing a crime scene, gathering clues.		
4. They make forensic analysis of most of found pieces of evidence which are standard for a common crime scene.		
5. They typically don't respond to crime scenes to collect evidence.		
6. They employ civilian scientists who are specialised in a unique field of forensic expertise.		

3. Answer the questions:

1. What way can forensic labs be organised in?
2. What is the difference between public and private crime laboratories? (use ex.2, p.26)
3. What is a standard practice if a law enforcement agency doesn't operate its own crime lab?
4. What laboratory is considered as one of the largest crime labs in the world? Is it a public or a private one?
5. What are the statistic data about forensic examiners it employs and forensic analyses it makes?
6. What are the examples of typical and specialised fields of forensic examinations in the FBI and other crime labs?

4. Study the names of different crime lab units.
What units are standard departments of public crime labs?
What units deal with specialised forensic fields, as a rule, in private crime labs? Can you continue these lists?

Standard departments of public crime labs are _____
_____
_____ .

Specialised units, usually in private forensic labs, are _____
_____
_____ .

5. Guess what units are described:

1. This unit analyses documents in dispute and restores documents that are damaged or have faded over time.
2. This unit studies microscopic materials or larger evidence, commonly hairs and fibres.
3. This unit investigates the components used to build and detonate bombs as well as undetonated explosive devices.
4. This unit identifies the nature of most solids or liquids from a crime scene.
5. This unit examines skeletal remains and the physical "makeup" of humans through millions of years.
6. This unit deals with bodies post mortem.

6. What piece of evidence is under the crime lab examination?
What kind of forensic lab units deals with it?

Be aware!

Crime labs ***can be composed of several units***. Among them you can find:
- biology unit;
- prints unit;
- entomology unit;
- trace evidence unit;
- cryptanalysis unit;
- chemistry unit;
- archaeology unit;
- ballistics unit;
- geology unit;
- explosives unit;
- DNA unit;
- toxicology unit;
- pathology unit, etc.

What about you?

What type of a crime lab and what unit would **you** like to work in? Why?

Fig.16-24. Different forensic examinations

E.g. In the first picture we can see different soil samples. The forensic scientist is using a soil-colour chart to determine their composition and to get clues about the area where these samples are taken from. This evidence is analysed in a geology unit of a crime lab.

UNIT 2 Crime laboratory activity

Body farms

1. Study the information about outdoor labs and their activities.

Outdoor forensic labs deal with ***anthropology research***. They are colloquially called "***body farms***". At these labs, scientists primarily study the process of ***human decomposition*** using ***donated bodies***. The corpses are placed in situations resembling common crime scenes, from being buried in shallow graves to being hidden away in vehicles. Scientists watch the bodies closely to see what happens to them over time ***at the hands of*** weather (temperature or humidity), bugs, and other disturbances.

Fig.25. A body farm plate

Understanding decomposition helps the analysts answer the 'Wh' questions:

- Who's the victim?
- What happened?
- When did the victim die?
- Where did he die?

Audio text

Did you know?

The number of people choosing ***to donate their remains*** to this research program is increasing.

More than 5,000 donors are ***pre-registered*** at present!

2. Explain the highlighted word combinations:

Body farms are _____.
Anthropology research is _____.
Human decomposition is _____.
To donate bodies means _____.
"At the hands of" means _____.

What about you?

What is **your** attitude to such a personal input (remains donation) into scientific research? Are you for or against it? Why?

3. Agree or disagree. If the statement is false, make it correct:

1. Body farms are indoor crime labs dealing with archaeology research. ***(T/F)***
2. Outdoor forensic laboratories are named "body farms" as they deal with dead bodies in various phases of decay. ***(T/F)***
3. Scientists work with corpses at the final stage of skeletonisation, they study only skeletal remains, bones, skulls. ***(T/F)***
4. Understanding decomposition provides the analysts with the information about different stages of skeletonisation. ***(T/F)***
5. The corpses are placed in situations resembling common crime scenes to see what happens to them over time in different environment conditions, such as weather, bugs and other disturbances. ***(T/F)***
6. The corpses under examination are unidentified dead bodies from different crime scenes. ***(T/F)***

Interesting fact!

The ***first*** of its kind in the world, the original outdoor forensic research center was founded in 1981, in Tennessee, the USA.

Nowadays this is a unique "body farm" with the 2-acre plot of land, which is hilly and full of trees. Inside, more than 140 bodies lie ***in various phases of decay*** to provide scientists with the information about different stages of skeletonisation.

To read more!

4. Sum up the information:

1. Outdoor forensic labs deal with … .
2. They are colloquially called … .
3. At these labs, scientists … .
4. The number of people choosing to donate their remains … .
5. The corpses are placed in situations … .
6. Scientists watch the dead bodies closely to see … .
7. They try to answer the questions: … .
8. The 1st body farm was founded in … .
9. Nowadays it is … .

5. Video " 'BODY FARM' COMING TO WESTERN COLORADO".

a) Before watching choose the key-terms you think body farms deal with:

skeletons	victims	fingerprints	donated dead bodies
poisons	DNA analysis	ballistics	forensic anthropology
corpses	death	decomposition	questioned document
graves	detonated bombs	impressions	a hidden research facility
chemical liquids	decay	bones	simulated crime scenes

On body farms specialists deal with _____
_____
_____.

Video study!

b) Watch the video up to 0:45.

Complete the remark of Mark Stewart, 7 News reporter, about the atmosphere at the body farm.

IT'S A VERY _____ ATMOSPHERE!

Why is Mark Stewart so excited?
You can use the following phrases and word combinations from the video for your answer:

to be inside a body farm
a place the public never gets to see
a hidden research facility
beyond the razor wire
a laboratory that is both scientific and sacred
bodies are left to decompose in the elements

Fig.26-27. Video freeze-frames. Mark Stewart at a body farm

Mark Stewart, 7 news reporter, is so excited as _____
_____
_____.

What about you?

What would **you** feel before visiting a body farm? Why?

c) Watch the video to the end. Choose the right variant:

1. Ordinary people *are regular visitors of body farms / are not allowed there*.
2. Tennessee body farm *is an outdoor lab model to be followed in other states / is unique of its kind*.
3. There are anywhere from about *150 to 190 / 190 to 250* human bodies at any one time.
4. The bodies decay is observed *in indoor labs or morgues / in simulated crime scenes: on the ground, in a car, even in a noose*.
5. Studying changes that take place after death *has no matter for real crimes investigation / can help investigators to determine the time and causes of found corpses*.
6. Colorado body farm is *like / unlike* Tennessee one.
7. Once the donated bodies decompose, their skeletons *are buried / are used to teach medical and anthropology students*.

To read more!

d) Study the physical map of the USA. Find Tennessee and Colorado states:

Fig.28. Physical map of the USA

Guess what state is it:

1. _____ is notable for its diverse geography, which includes alpine mountains, high plains, deserts with huge sand dunes, and deep canyons.
2. _____ is characterised by the geographic diversity as it lies on mountains, plateaus, hills, valleys, and plains.

Join in!

Work in groups. Study the physical map of the Russian Federation.

How many body farms would **you** create in Russia? Where would **you** design them if **you** had the decision-making power?

e) Watch the video again. What natural features are noted for the Tennessee and Colorado body farms? Complete the table:

	TENNESSEE body farm	**COLORADO body farm**
1. a dry desert		
2. a hilly territory		
3. forested land		
4. the lack of humidity		
5. the intensity of the sun		
6. proximity to the river		
7. high altitude		

f) Why are Tennessee and Colorado body farms constructed in so entirely different environments?

Crime labs in a pop culture

1. Crime lab activity in a pop culture:

The term "crime lab" has become a part of popular culture, largely due to the TV series.

Read some information about some of the most famous world's shows and guess what series is meant:

Fig.29-30. Crime drama TV series

a) This is an American crime television series that was aired from 2005 until 2017. It has 246 episodes over twelve seasons. The show is based on forensic anthropology and forensic archaeology, with each episode focusing on a FBI case file concerning the mystery behind human remains.

b) This is an American forensics crime drama television series which ran from 2000 to 2015, spanning 15 seasons. The main characters are crime scene investigators that use physical evidence to solve murders.

Let's discuss!

Choose one episode of one of the series, give its plot summary. ***Tell about the victim, the suspect*** and ***the forensic team***.

What type of a crime lab is presented in the series (a public or a private one)?

What ***pieces of evidence*** could help analysts solve the case?

2. Recall some Russian crime television series, where we can see a crime lab teams work. Make the card for one of them:

Photo

_____
_____
title

Show period: _____

Plot summary: _____
_____
_____

Main characters:_____
_____
_____
_____

Join in!

Work in groups.

If **you** wrote a screenplay for some crime TV series, what kind of a crime lab and which of its units would be presented in **your** show? Why?

Do **you** have any idea for the title, plot, main characters and their professional activities?

Answer some questions on one episode of the chosen TV series:

1. What idea does the title give? What is this TV show about?
2. What type of a crime lab is presented in the show (a public or a private one)?
3. How many people are there in the forensic team?
4. What is the field of their professional activity - crime scene clues collecting or forensic evidence analysis? (speak about prelab and lab activities)
5. Do the forensic analysts deal with all kinds of evidence or are they specialised in the specific forensic area (fingerprinting, voiceprinting, cryptanalysis, anthropology, etc.)?

UNIT 2 Crime laboratory activity

Check yourself!

1. Give the definition of a crime laboratory.

_____

_____

_____

_____.

2. Word search puzzle. Find all the words given below:

L	A	B	O	R	O	R	Y	P	R	E	I	S	C
A	I	N	C	A	T	O	E	V	I	L	A	B	E
N	N	V	R	I	M	E	A	E	D	E	N	N	N
A	S	E	S	C	I	E	N	C	E	S	C	E	E
L	T	A	N	Y	S	I	C	L	U	A	N	I	T
Y	I	G	A	L	X	S	E	T	E	C	H	Q	S
S	I	A	T	T	E	S	T	F	O	N	S	U	E
T	T	E	I	O	N	E	X	P	R	E	I	C	S
D	E	C	T	I	O	N	M	E	R	T	I	S	E

laboratory	investigation	detection	evidence	prelab
science	expertise	analysis	clues	crime
forensics	test	analyst	techniques	scene

Make up as many word chains with these given words as possible:

1. Crime laboratory, forensic laboratory, laboratory activity, laboratory analysts, private laboratory, public laboratory, outdoor forensic laboratory, etc.
2. _____.
3. _____.
4. _____.
5. _____.
6. _____.
7. _____.
8. _____.
9. _____.
10. _____.
11. _____.
12. _____.
13. _____.
14. _____.
15. _____.

Test on-line!

Write down the unused letters: _____.

What is a key-word made up of these letters?

Any activity of a crime lab is targeted at the evidence | | | | | | | | | | | | .

3. Divide the actions of forensic experts into prelab and lab activities:

Forensic experts ...	PRELAB activities	LAB activities
1. search a crime scene to reveal all relevant clues	+	
2. take photos of the found pieces of evidence		
3. use a microscope to analyse fibres		
4. make measurements of the stop distance		
5. determine the composition of the soil sample		
6. extract DNA from a cell of a person's skin		
7. make a ballistics expertise of the fired bullets		
8. collect a footwear impression of a suspect		
9. restore a documents in dispute that is damaged		
10. examine the nature of the drink that killed the victim		
11. analyse the components of the paint chips		
12. document all the found evidence		

4. Study the forensic lab vocabulary. Tick ✔ different pieces of evidence:

What unit of a forensic lab deals with each of them?

E.g. An animal's hair is analysed in a biology unit of a crime lab.

VOCABULARY:

- ✔ animal's hair
- bloodstain
- body farm
- bomb
- bones
- cell of a person's skin
- chemical solids
- collect evidence
- crime lab
- crime weapon
- decay
- detective work
- DNA
- explosive devices
- faded document
- field analyst
- fingerprints
- fired bullet
- footwear impression
- human decomposition
- lab analyst
- make an expertise
- outdoor lab
- paint chips
- poison
- private crime lab
- process a crime scene
- public crime lab
- run tests
- scientific analysis
- skeletal remains
- soil sample
- technique
- teeth fragments

5. Answer the questions:

1. What is a crime laboratory?
2. How many sets of personnel are there in a typical forensic laboratory? What are they?
3. What duties of forensic experts are connected with prelab activities?
4. What actions fall under lab activities?
5. What way can forensic labs be organised in?
6. What is the difference between public and private crime laboratories?
7. What is the largest public lab in the world?
8. What units are typical for public crime labs? And for private ones?
9. What pieces of evidence does each of these units deal with?
10. What do outdoor laboratories look like?
11. What is these body farms functioning targeted at?

UNIT 2 Crime laboratory activity

6. Study the photos.
What crime laboratory activities (lab or prelab) are depicted here?
What are your ideas on the type of the crime lab involved - is it public or private? Why?
What are forensic scientists doing?
What pieces of evidence are in the focus of their attention?
What crime lab unit should deal with them?

1. Prelab / lab activities: _____
_____.
Public / Private crime lab:_____
_____
_____
_____.
Depicted actions: _____
_____
_____.
Evidence: _____
_____.
Crime lab unit: _____
_____.

2. Prelab / lab activities: _____
_____.
Public / Private crime lab:_____
_____
_____
_____
_____.
Depicted actions: _____
_____
_____.
Evidence: _____
_____.
Crime lab unit: _____
_____.

Fig.31-32. A crime lab activities

What about you?

7. What type of a crime lab and what unit would you like to work in? Why? Give some arguments:

As for me, I would like to work in _____
_____
_____
_____
_____
_____
_____
_____
_____
_____.

UNIT 3

Profession of a FORENSIC EXPERT

Audio Glossary

Glossary

Forensic expert (n) - a crime laboratory employee properly handling a crime scene, collecting and analysing forensic evidence to help the operational-investigative group in crime investigation and solution

Crime scene unit (n) - a skilled forensic team responding to and processing a crime scene, collecting evidence and analysing most of them. It involves field analysts

Field analysts (n pl) - investigators who arrive at a crime area, reveal, document and collect evidence, and in general process the scene

Laboratory analysts (n pl) - scientists or other personnel who run tests on the evidence brought to the lab

Crime scene kit (n) =
Forensic kit (n) - a forensic case which provides all tools (such as a magnifying glass, tweezers, cotton swabs, dust for fingerprinting, etc.) which are necessary to detect, collect and document forensic evidence

Forensic outfit (n) - protective clothing (full-body suit with a hood, a face mask, shoe covers/ booties, gloves) which is worn over regular clothes to protect a forensic expert himself and prevent evidence contamination

Crime scene vehicle (n) =
Forensic investigation vehicle (n) - a special vehicle designed to respond to any crime scene

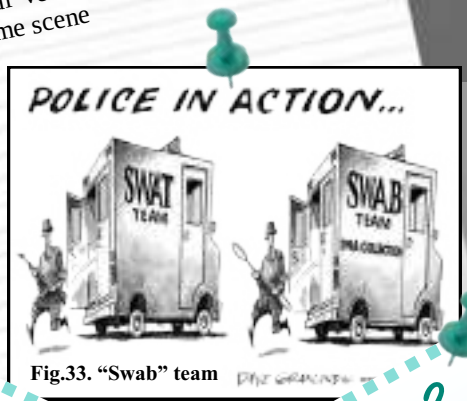


Fig.33. "Swab" team

Evidence flags

Look it up!

SWAT team or **SWAB** team? ☺ Look up what SWAT stands for. What does SWAB mean?

What about you?

Reflect on why forensic team can be called a "swab" team. Think up **your** own name for it. Explain **your** choice.

Crime scene tape

UNIT 3 Profession of a forensic expert

Word bank!

Look it up!

What about ***zoology***, ***geology***, ***psychology***, ***archaeology***, ***pathology***? What is the meaning of their Greek and Latin roots?

Choose 5-10 any other sciences, analyse their meanings.

Be attentive!

anthropology [ˌænθrə'pɔlədʒi] *(n)*

serum ['sɪərəm] *(n)*

Be aware!

There is a difference between two terms.

Criminalistics is the study of evidence to investigate crimes.

Criminology is the study why crimes occur, how they can be prevented and what are the effects they have on a society.

1. Profession of a forensic scientist covers different scientific fields. Study the meanings of the Greek and Latin words and offer the simple definitions for the given sciences:

Logos - science, study
Anthropos - human beings
Toxicos - poisons
Serum - serum (of blood)
Éntomon - insect
Odontos - a tooth (teeth)

Toxicology → study of poisons
Anthropology →
Serology →
Entomology →
Odontology →
Criminology →

2. Word search puzzle. Find all the words given below:

A	N	T	E	N	T	O	M	O	L	O	G	Y	C
S	M	Y	A	C	A	I	H	C	S	Q	B	S	O
W	P	T	T	F	N	C	U	L	E	R	E	J	D
B	A	J	O	I	T	H	B	V	R	I	M	V	O
A	T	E	X	R	H	E	L	S	O	M	J	W	N
L	H	N	I	E	R	M	O	D	L	P	U	U	T
L	O	K	C	A	O	I	O	O	O	R	X	S	O
I	L	U	O	R	P	C	D	C	G	E	P	E	L
S	O	P	L	M	O	A	T	U	Y	S	O	R	O
T	G	Y	O	N	L	L	R	M	P	S	I	U	G
I	Y	H	G	Y	O	S	M	E	Y	I	S	M	Y
C	N	P	Y	S	G	F	K	N	F	O	O	I	S
S	T	C	N	Y	Y	G	J	T	D	N	N	H	T

anthropology, chemicals, impression, serology, blood
entomology, document, odontology, serum, pathology
ballistics, firearm, poison, toxicology

3. What can be in the focus of the following crime laboratory departments? Distribute the examples, translate them:

TOXICOLOGY | ENTOMOLOGY | ANTHROPOLOGY | BALLISTICS
ODONTOLOGY | DOCUMENT EXAMINATION | PRINTING | SEROLOGY

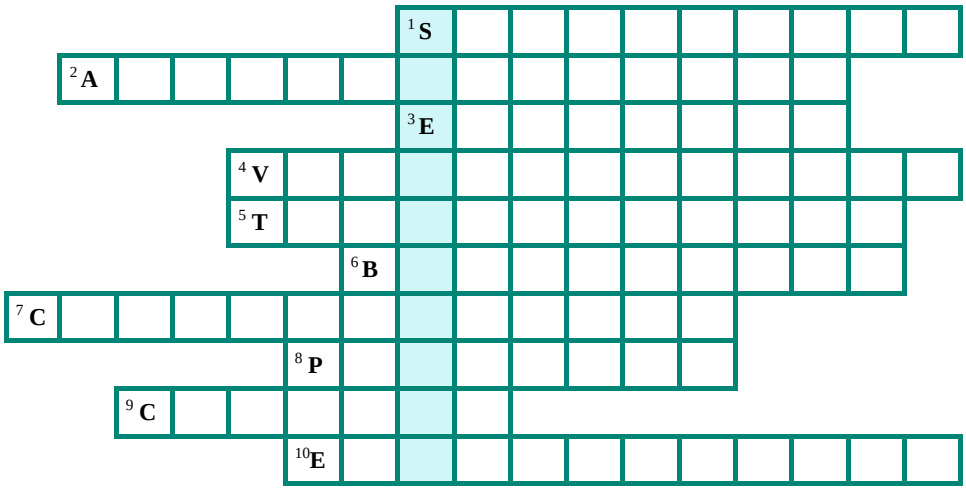
poison	suicide note	blood	arsenic	bullet
firearm	impression	blow flies	ransom letter	skeletal remains
teeth fragments	chemicals	projectile	human skull	sweat
saliva	explosive device	serum	fingerprint	insects

4. Each statement is wrong. Make the sentences correct:

1. Anthropologists study insects appearing in the process of decomposition.
2. Voice prints analysis is the field of printing specialists' research.
3. Chemists study the handwriting in documents in dispute.
4. Criminalists study why crimes occur, how they can be prevented and the effects they have on a society.
5. Criminologists collect and study the evidence from the crime scene .
6. Serologists deal with different firearms and projectiles.
7. Fingerprints, palmprints are examined by ballistics experts.
8. Toxicologists study skeletal remains of human beings.
9. Poisonous substances are investigated by document examiners.
10. Entomologists deal with different chemical substances, mixtures, organic and inorganic samples analysis.
11. Body fluids (blood, serum, semen, sweat , etc.) are analysed by voiceprinting experts.
12. Human being's teeth fragments, bite-marks are in the focus of a printing specialist.

5. What are these people?

1. A scientist who studies different body fluids.
2. A scientist who studies human beings and their skeletal remains.
3. A scientist who studies documents in dispute - a document … .
4. A person who understands different nuances of voice prints - a … expert.
5. A scientist who studies poisonous substances.
6. A specialist who deals with different firearms and projectiles - a … expert.
7. A scientist who studies why crimes occur.
8. A person who deals with fingerprints - a … specialist.
9. A scientist who deals with chemical substances.
10. A scientist who deals with insects found in decomposing remains.



What is the key-word?

Each person in a forensic team is a _____ .

Be attentive!

ballistics [bə'lıstıks] *(n)*
bullet ['bulıt] *(n)*
projectile [prə'ʤektaıl] *(n)*

Did you know?

The term ***ballistics*** is derived:

- from the Latin word ***ballista*** which means ***ancient military machine for hurling stones***:

Fig. 34. Roman ballista

- from Greek ***ballistes*** (ballein) - ***to throw so as to hit***.

Be aware!

Printing covers not only fingerprints or footprints, but also impressions.

All ***prints*** are taken from ***a solid surface***.

Impressions are taken from ***a soft surface***, such as sand, soil or snow.

UNIT 3 Profession of a forensic expert

Job titles

1. Study the information about the personnel of a typical crime lab:

A typical crime lab has **two sets of personnel**.

Field analysts (**crime scene unit**) - investigators who go to crime scenes, collect evidence and process the scene. Job titles include:

- Crime scene investigator - CSI (= criminalist);
- Sketch artist;
- Photographer, video operator.

Laboratory analysts - scientists or other personnel who run tests on the evidence brought to the lab (e.g., DNA tests, or bullet striations).

Job titles include:

- Forensic technician (performs support functions such as making reagents);
- Forensic scientist (performs scientific analyses on evidence);
- Specialists in different scientific disciplines (forensic document examiner, forensic entomologist, forensic serologist, forensic psychologist, forensic anthropologist, forensic pathologist, forensic linguist, etc).

Audio text

What about you?

Will **you** be a field or lab analyst after **your** professional training?

Did you know?

There are some interesting job titles in the profession in a crime lab personnel:

Forensic accountants interpret the financial evidence.

Digital forensic analysts investigate material found in digital devices, often in relation to computer crime.

Forensic engineers identify the fault lines in a construction accident or catastrophe.

Forensic astronomists analyse criminal data on the basis of information from the constellations.

Look it up!

Look up other non-standard forensic job titles.

Be attentive!

damage ['dæmɪʤ] *(v), (n)*
contaminate [kən'tæmɪneɪt] *(v)*
contamination [kənˌtæmɪ'neɪʃn] *(n)*

2. Study the photos and answer the questions given below:

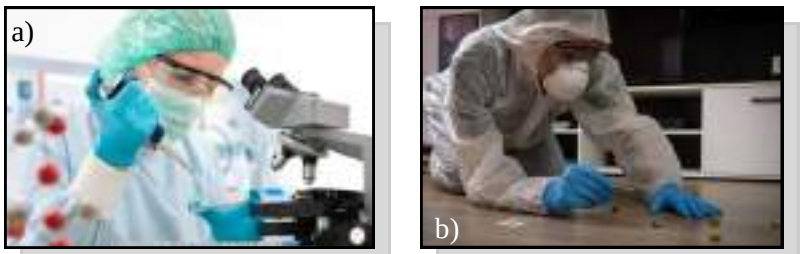


Fig.35-36. Forensic scientists at work

1. What kind of specialist is shown here - a field analyst or a laboratory analyst?
2. Where is he/she working - at a crime scene or in a crime laboratory?
3. What is his/her job title?
4. According to his/her job title, what does he/she have to do?

He/ She has to…

- accurately search/ comb a crime scene
- make the evidence examination/ run tests on the evidence
- sketch a crime scene with all the relevant details
- collect evidence, such as fingerprints, bullets or bloodstains
- know how different lab machines/ devices work
- make reagents

5. The expert is wearing protective clothing. Why is he/she so careful?

This specialist is very careful…

- not to contaminate/ not to damage the evidence
- as he/she doesn't want to get dirty with the evidence
- as his/her work is very dangerous
- to try to preserve the initial state of the evidence
- not to leave his/ her own traces

3. Forensic scientists' job titles. Match them with their activities:

JOB TITLES	ACTIVITIES
1. Forensic pathologists	a) make dental examination, bite-marks analysis, identify human remains using dental records
2. Forensic engineers	b) investigate computer-based internet crimes
3. Forensic serologists	c) interpret the financial evidence
4. Forensic document examiners	d) answer the questions about a disputed document, deal with forgery, counterfeiting, handwriting and ink analysis, etc.
5. Forensic odontologists	e) deal with human or animal remains
6. Forensic anthropologists/ archaeologists	f) identify the fault lines in a construction accident or catastrophe; make basic fire and explosion investigation
7. Forensic entomologists	g) perform an autopsy, examine the corpses, analyse fluids taken from the body
8. Forensic psychologists/ psychiatrists	h) make a clinical expertise of a mental health of a perpetrator, a criminal profile or a crime scene assessment to determine the offender's motives
9. Forensic accountants	i) analyse criminal data on the basis of information from the constellations
10. Digital forensic analysts	j) analyse insects found in decomposing remains
11. Forensic astronomists	k) make blood testing, analyse other body fluids such as semen, saliva, sweat, etc

1	2	3	4	5	6	7	8	9	10	11	12
g											

4. Study the photos, give your ideas about the occurred events. What forensic scientists have to take part in these crime scene investigations:

1.

2.

3.

Fig.37-39. Forensic scientists at work

Be attentive!

identify [**aɪ**'dentɪf**aɪ**] *(v)*
identification
[**aɪ**ˌdentɪf**ɪ**'keɪʃ(ə)n] *(n)*
forgery ['fɔː**dʒ**(ə)rɪ] *(n)*
financial
[f**aɪ**'nænʃ(ə)l] *(adj)*
autopsy [**'ɔ**ːtəpsɪ] *(n)*

Keep in mind!

Back in the XIXth century ***H. Gross*** (see p.18) highlighted ***objectiveness***, ***diligence***, ***perseverance***, ***knowledge of human nature*** and ***love for veracity*** as the most important characteristics of any forensic scientist.

Be attentive!

diligence
['dɪlɪ**dʒ**(ə)ns] *(n)*
perseverance
[ˌpɜːsɪ'vɪər(ə)ns] *(n)*
nature ['neɪ**tʃ**ə] *(n)*
veracity [və'ræsətɪ] *(n)*

Let's discuss!

What qualities do **you** think a forensic scientist should have? Why?

UNIT 3 Profession of a forensic expert

Forensic scientists training

1. Video "UNLOCKING CRIME: FORENSIC SCIENCE AT KINGSTON UNIVERSITY".

a) Before watching, read the video title. What are your ideas about what "unlocking crime" means? What is the role of forensic scientists in this process?

_____

_____.

Video study!

b) Work with some notions from the video:

1. a crime scene house	a) a practice for fresh employees to understand how real things work; this is an additional training to master skills needed to a concrete company
2. an analytical lab	b) a specially created fake locus delicti to train field analysts' competences in crime scene processing
3. a bones room	c) an educational scientific laboratory with a range of different machines for forensic tests running
4. internship	d) an educational scientific laboratory with an incredible collection of skeletal remains

1.	
2.	
3.	
4.	

c) Watch the video and choose the correct answer:

1. Kingston University is located in:
   a) the USA
   b) the UK
   c) Australia

2. The interviewed girls are trained in:
   a) operational detective activity
   b) forensic science
   c) judicial process

3. The interviewed girls are:
   a) the University graduates
   b) the University students
   c) both answers: 2 of them are the actual students and one girl is a real forensic scientist graduated from the University

4. To train their forensic skills they:
   a) use the University crime scene house, analytical lab, bones room, etc.
   b) process real crime scenes
   c) read a lot of theoretical books but they have no practice

5. To process a fake crime scene the students:
   a) can wear their casual suits
   b) must put on protective clothes
   c) are allowed to put on only latex gloves

6. The analytical lab of the University:
   a) offers an incredible collection of bones
   b) has a whole range of different machines for making forensic tests
   c) deals only with counterfeiting

Look it up!

HPLC and **GCMS** are mentioned in the video as different forensic examination techniques.

What do they stand for?

d) Agree or disagree. If the statement is false, make it correct:

1. Kingston University forensic science course is extremely varied. ***(T/F)***
2. Kingston University offers no possibility to get real work experience in analysing and collecting evidence from the crime scene. ***(T/F)***
3. There is no positive relationship between the staffs and the students. ***(T/F)***
4. The University analytical lab is full of different machines that can be used for all kinds of experiments. ***(T/F)***
5. The students of the University use the same techniques as those which are used in real crime laboratories. ***(T/F)***

6. The facilities at Kingston University are far from fantastic. ***(T/F)***
7. The collection of bones that were donated at the University is incredible. ***(T/F)***
8. The knowledge, the experience and the support the students gain from the lecturers at the University help them open the door in the future career. ***(T/F)***

e) Tick ✔ the information mentioned in the video:

1. Kingston University has a lot of facilities such as:
   - ☐ a body farm
   - ☐ an analytical lab
   - ☐ a bones room
   - ☐ a crime scene house
   - ☐ scenes of real crimes
   - ☐ a forensic team vehicle
   - ☐ a real forensic laboratory

2. The fields of forensic science application stated in the video are:
   - ☐ insects identification
   - ☐ blood samples analysis
   - ☐ a criminal profiling
   - ☐ DNA extraction
   - ☐ bones analysis
   - ☐ bullets trajectory identification
   - ☐ counterfeits identification
   - ☐ bite-mark analysis
   - ☐ soil samples expertise
   - ☐ drug detection

Analyse the University facilities and forensic fields stated in the video. What kinds of forensic specialists does Kingston University train?

What about you?

What kinds of forensic specialists will **you** be after **your** professional training?

f) Study the freeze-frames from the video and try to answer the questions. Sum up the information you'll get:

BONES ROOM

1. Are these prelab or lab activities that students master in the bones room?
2. What objects are in the focus of the their studying?
3. What knowledge and professional skills do the students get practicing here?
4. What forensic specialty can they get training here?

Fig.40. In the bones room. Video freeze-frames

Use these questions to describe the opportunities that other facilities give:

CRIME SCENE HOUSE **ANALYTICAL LAB**

Let's discuss!

g) Is your training in forensics at your University like one shown in the video? What are the similarities and differences?

_____

_____ .

SIMILARITIES	DIFFERENCES
_____	_____
_____	_____
_____	_____
_____.	_____.

UNIT 3 Profession of a forensic expert

Professional equipment

1. Study the protective clothes of forensic scientists. Match them with the pictures:

Fig.41-42. Forensic scientists' equipment

1.	Protective overall (full-body suit/ outfit)
2.	Lab coat
3.	Mask
4.	Latex gloves
5.	Protective cap
6.	Protective hood
7.	Shoe covers (booties)
8.	Safety glasses

2. Sum up the information about the protective clothes of different kinds of forensic analysts. Give the strict instructions for them. You can use the following word combinations or phrases for your answer:

Must wear, not to contaminate and damage the evidence (as the evidence must not be damaged and contaminated), as the evidence must be carefully preserved, to protect themselves (in case of evidence dangerous for health), forensic specialists, the protective clothes, the basic equipment of a field analyst includes, the basic uniform of a laboratory analyst consists of.

Forensic specialists _____

_____

_____

_____

_____

_____

_____.

What about you?

Is the professional outfit of forensic scientists in **your** country like the studied one?

What does **your** basic equipment look like?

3. Complete the remark according to the depicted situation:

Fig.43. Crime scene cartoon

Analyse the crime scene and try to answer the questions:

1. Where was the crime committed - indoors or outdoors?
2. Is the victim alive or dead? Give some arguments in support of your point of view.
3. Could you imagine this crime plot?
4. What pieces of evidence could be revealed at the crime scene?
5. What kinds of forensic specialists would be involved in your scenario?

4. Read the instruction how to collect the evidence and write down the things you will need: → Audio text

To collect evidence field specialists need:
gloves, _____
_____
_____ .

5. Divide these things into three categories:

PROTECTIVE CLOTHES	FORENSIC KIT TOOLS	CONTAINERS
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____.	_____.	_____.

6. Study the forensic kit tools:

1. Chalk
2. Tweezers
3. Magnifying glass
4. Cotton swabs
5. Scissors
6. Dust for fingerprinting
7. Tape lift
8. Flashlight
9. Brushes
10. Mirror
11. Measuring tape
12. Containers (plastic and paper bags, test tubes)
13. Evidence flags / cones
14. Crime scene tape

Audio text

Fig.44. Forensic kit

Fill in the gaps with the tools that field analysts need:

Field analysts use
1. _____ to protect the crime scene and to mark the evidence.
2. _____ to collect some fibres or hair.
3. _____ to collect saliva for DNA testing.
4. _____ to collect the casings from the fired bullets.
5. _____ to collect blood spatters from the floor.
6. _____ to collect latent fingerprints.
7. _____ to collect some patterns with some dirty stains from the victim's skirt.
8. _____ to collect broken window glass.

Be aware!

Here is some kind of ***instruction for crime scene investigators***:

1. Secure and preserve the crime scene. Before any evidence can be collected, the scene must be secured from further contamination. Establish a crime scene perimeter and allow only necessary personnel to enter. Photograph the scene before evidence is collected.

2. Put on gloves and other protective clothing, if needed (such as plastic overalls, hoods and shoe covers), to make sure you don't contaminate the scene, then conduct a systematic search of the area.

3. Use cotton swabs to gather liquid bodily fluids or some substance evidence.

4. Collect hair, fibres and threads using tweezers. Each piece of evidence should then be placed individually in a sealed tube, plastic or paper bag.

5. Dust for fingerprints. Special dusting powder is used that adheres to the body oil found on human fingers. Once a print is detected it can be "lifted" using a special tape. The tape is then placed on a glass slide, marked and transported in a sealed plastic evidence bag.

6. Pick up larger pieces of evidence, such as a firearm or clothing, while wearing latex gloves so as not to contaminate the evidence. Place each piece in a separate marked bag or box.

UNIT 3 Profession of a forensic expert

7. Analyse the photos and tell what evidence field analysts deal with, what forensic tools and containers they need to collect the clues:

	EVIDENCE	FORENSIC TOOLS	CONTAINERS
1.			
2.			
3.			
4.			
5.			
6.			
7.			

Fig.45-51. Evidence that field analysts deal with

8. Study the real photos from the crime scenes. What are the criminalists doing? Are they wearing the right outfit? What should they wear?

Fig.52-53. Real crime scenes

1. _____
_____
_____.

2. _____
_____
_____.

Forensic team vehicles

1. Study the advertisement for crime scene vehicles. Reveal the synonyms for "crime scene vehicles":

Fig.54. EVI's logo

Emergency Vehicles, Inc. (EVI) has been building *emergency response vehicles* since 1971.

Our Crime Scene Vans can be designed and built to fit your departments' specific needs.

Crime Scene Trucks can cut down the setup time at scene sites while providing staff with a comfortable work area to process evidence on site.

EVI Crime Scene Units can be designed with generator, water supply, fuming chamber with exhaust fan, copy stand for photography, computer work stations, portable lighting sources, outside compartments for equipment, stainless steel countertops and diamond plate flooring for easy cleaning, additional stations for processing items for fingerprints, and much more.

Audio text

Fig.55-56. Crime scene vehicle

Crime scene vehicles: _____
_____.

Do you understand the term "emergency response vehicles"?
What are they for? What other emergency response services do you know?

Write down all mentioned devices of crime scene vans:
Crime scene vehicles can be equipped with _____
_____
_____
_____.

Be attentive!

emergency [ɪ'mɜ:dʒ(ə)n(t)sɪ] *(n)*
vehicle ['vi:ɪkl] *(n)*

design [dɪ'zaɪn] *(n)*
exhaust [ɪg'zɔ:st] *(n)*
lighting ['laɪtɪŋ] *(n)*
diamond ['daɪəmənd] *(n)*

2. Match different devices equipping crime scene trucks and their functions:

1. A generator	a) are necessary if CSIs need some extra lighting
2. A water supply	b) has an anti-slip effect and is easy for cleaning
3. A copy stand	c) has non-porous surface, is resistant to any damage
4. A stainless steel countertop	d) is an ergonomically designed area of an office that accommodates a desktop computer and all of its peripherals
5. A computer work station	e) is a source of water at hand if it's needed
6. Portable lighting sources	f) is used to get digital pictures of evidence
7. A fuming chamber (see p.114)	g) provides CSIs with electricity source
8. A diamond plate flooring	h) helps reveal latent fingerprints

1.	
2.	
3.	
4.	
5.	
6.	
7.	
7.	

UNIT 3 Profession of a forensic expert

Video study!

3. Video "SCIENCE QUEST: CRIME SCENE UNIT_VEHICLE".

a) Before watching, think about the opportunities that crime scene vans give. Use the advertisement from ex.1, p.45 for help. Your own ideas are welcome:

_____
_____
_____
_____
_____
_____.

Watch the video up to 0:20. What pros of crime scene vehicles did Trevor speak about?

_____
_____
_____.

Keep in mind!

To speak about ***advantages*** or ***disadvantages*** you can use the following:

👍 & 👎

pluses and minuses,
pros and cons,
highs and lows.

b) Watch the video to the end. Tick ✔ forensic tools and items you've seen or heard:

☐ a measuring tape	☐ brushes	☐ a photo camera
☐ evidence flags	☐ a video camera	☐ plaster for taking impressions
☐ tweezers	☐ lights	☐ a magnifying glass
☐ cottons swabs	☐ a trace evidence kit	☐ blood test tools (for Kastle-Meyer test)
☐ scissors	☐ a crime scene tape	

c) What 2 forensic actions at a crime scene were shown in details? Exercise 3(b) can help you.

d) Look at the freeze-frames. What processes are depicted here? Watch the video once again and try to fill in the gaps with the words given below:

1. _____ can tell us that's blood but it doesn't differentiate between animal and human blood.
To run this test at a crime scene field analysts have to:
- put some _____ on the swab to pick up the item to be tested;
- add _____;
- use _____ to get a chemical reaction.

A _____colour of reaction proves that there is _____ there.

Fig.57. Video freeze-frame

hydrogen peroxide	*alcohol*	*bright pink*	*Kastle-Meyer test*	*blood*	*pheno (phenolphthalin)*

2. _____ is needed when footprints or shoeprints are left in a _____ surface like _____, dirt or _____.
To take them field analysts:
- use _____ first to consolidate the bonds of impressions;
- add water to _____, mix them;
- pour the _____ right over the impressions;
- let it dry (from 10 to 20 minutes).

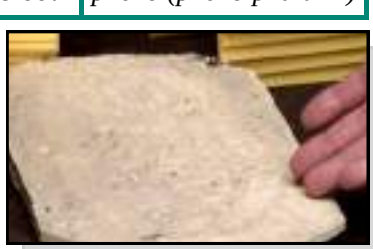


Fig.58. Video freeze-frame

mixture	*sand*	*hairspray*	*soft*	*plaster*	*snow*	*taking impressions*

4. Video "SCIENCE QUEST: CRIME SCENE UNIT_ FORENSIC INVESTIGATIONS VEHICLE".

a) Before watching the video study the vehicle on the freeze-frame:

Fig.59. Video freeze-frame

Answer the questions:

1. What details in the exterior of the vehicle tell us that this is a van of field analysts' team?

_____.

2. What are your ideas about technical devices in the equipment of this van?
   Use ex.1,2,3 (Pp.45-46) for help.
   I predict this van is equipped with _____
   _____
   _____
   _____ .

b) Watch the video. Has your prediction come true?
What devices have you seen in the video? Tick ✔ their names:

□ a generator	□ a water supply	□ a fax machine	□ drones
□ a stainless steel countertop	□ a vacuum cleaner	□ a refrigerator	□ a scanner
□ an electrostatic dust print lifter	□ a 3D printer	□ a photo printer	□ extra lights

c) What devices is Anndee Kendrick, a crime scene supervisor, speaking about?

1. "We use it to scan items and email them to the identification section so they can go ahead and look at them while we are still out working the scene".
2. "We use it if we have no source of electricity out of scene".
3. "We use it to get trace evidence such as dry sediments, hairs, fibres".
4. "We use it to print pictures at a scene".
5. "We use it if we need fax capability. We can hook our laptops up and fax items".
6. "We use them to have some extra lighting".
7. "We use it if some pieces of evidence must be kept cold".
8. "We use it with a pad which acts as a magnet if we have dusty shoe prints left on a solid surface".

Video study!

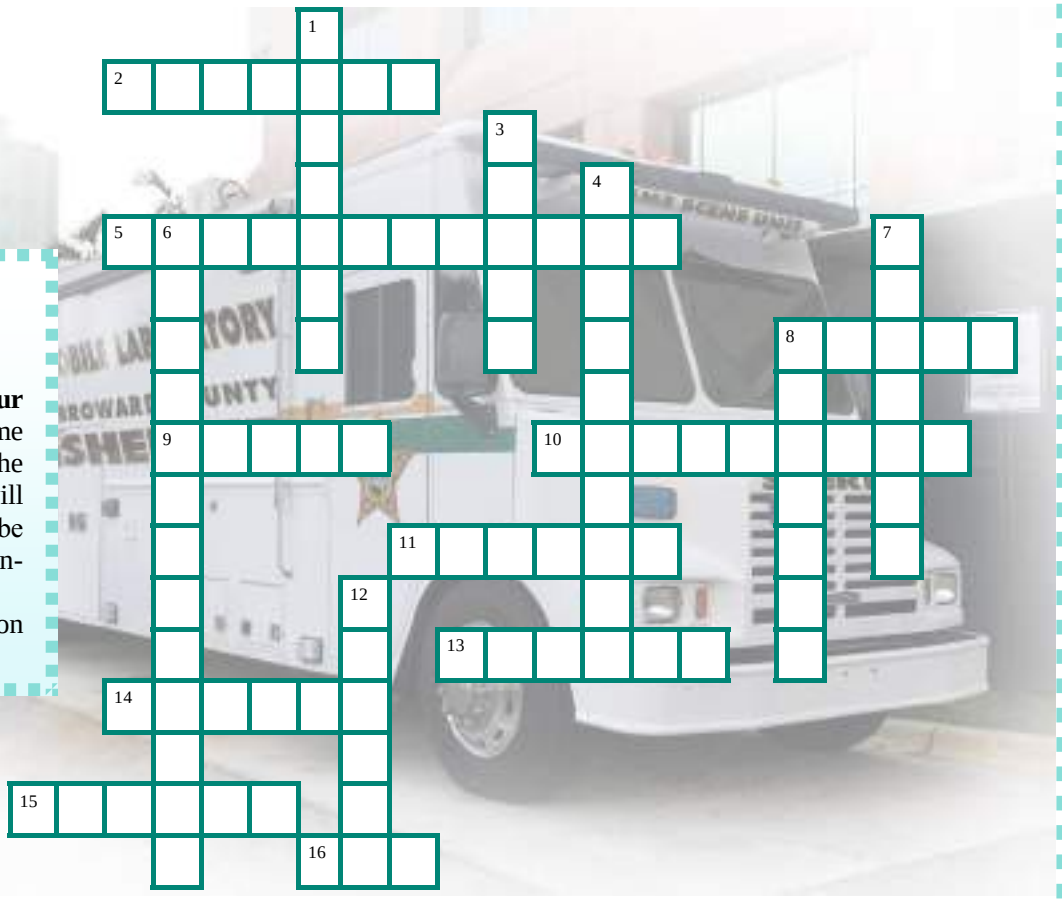
Did you know?

A word ***sheriff*** which means a governmental official with law enforcement duties refers immediately to the USA counties, but it originated in Great Britain and Ireland.

Historically ***sheriff*** is derived from ***shire reeve*** - a royal official (reeve) responsible for keeping the peace throughout a shire on behalf of the king.

UNIT 3 Profession of a forensic expert

5. Check your knowledge on the equipment of crime scene vehicles. Do the crosswords:



Join in!

Work in groups.

What are **your** ideas on the crime scene vehicles of the future? What will they be like? Don't be shy in imagining fantastic things!

Do a presentation of **your** draft.

Across:

2. It's used use to print pictures at a scene.
5. It's used use if some pieces of evidence must be kept cold.
8. It's used to get digital pictures of evidence - a copy … .
9. A synonym for a forensic team *van*.
10. It's used if there is no source of electricity out of scene.
11. They are used to get some extra lighting at a scene.
13. A water … provides with a source of water at hand.
14. A … cleaner is used to get trace evidence such as dry sediments, hairs, fibres.
15. A … chamber is one of the method of revealing latent fingerprints.
16. It's used if fax capability is needed.

Down:

1. A computer work … is an ergonomically designed area of an office that accommodates a desktop computer and all of its peripherals.
3. They are used to mark pieces of evidence at a crime scene.
4. A stainless steel … has non-porous surface, it's resistant to any damage.
6. This kind of dust print lifter works by using a magnet effect to take dusty shoe prints left on a solid surface.
7. This kind of plate flooring has an anti-slip effect and is easy for cleaning.
8. It's used to scan items and email them to the identification section so they can go ahead and look at them while field analysts are still out working the scene.
12. It can be photo or video.

Check yourself!

1. Continue the chains of the words and word combinations given below:

Forensic - forensics - forensic science - forensic analyst - _____
_____
_____ .

Crime - crime scene - crime laboratory - _____
_____
_____ .

To analyse - to analyse evidence - evidence analysis - _____
_____
_____ .

2. Study the job titles of a crime lab given below. Divide them into 2 groups:

FIELD ANALYSTS	LAB ANALYSTS
	1,

1. forensic pathologist
2. CSI
3. forensic serologist
4. forensic technician
5. a member of a crime scene unit
6. forensic entomologist
7. forensic toxicologist
8. forensic engineer
9. photographer
10. ballistic expert
11. sketch artist
12. forensic odontologist
13. forensic psychologist
14. criminalist
15. forensic document examiner
16. forensic anthropologist
17. forensic astronomist
18. crime scene investigator
19. digital forensic analyst
20. forensic psychiatrist

Test on-line!

Which set of personnel includes more job titles?
Why? Give some arguments.

_____.

3. What are these speakers?

1. "I interpret the financial evidence. I'm a forensic … ."
2. "I perform an autopsy, examine the corpses, analyse fluids taken from the body. I'm a forensic … ."
3. "I make dental examination, bite-marks analysis, identify human remains using dental records. I'm a forensic … ."
4. "I analyse insects found in decomposing remains. I'm a forensic … ."
5. "I take pictures of a crime scene in details. I'm a … ."
6. "I make blood testing, analyse other body fluids such as saliva, sweat, etc. I'm a forensic … ."
7. "I make a sketch of a crime scene. I'm a sketch … ."
8. "I investigate computer-based internet crimes. I'm a digital forensic … ."
9. "I make a clinical expertise of a mental health of a perpetrator. I'm a forensic … ."
10. "I identify the fault lines in a construction accident or catastrophe. I'm a forensic … ."
11. "I analyse criminal data on the basis of information from the constellations. I'm a forensic … ."
12. "I deal with human or animal remains. I can be a forensic … or a forensic … ."
13. "I comb a crime scene and collect evidence. I'm a … ."
14. "I sketch a criminal profile. I'm a forensic … ."
15. "I deal with toxins and poisons. I'm a forensic … ."
16. "I make reagents in a crime lab. I'm a forensic … ."

UNIT 3 Profession of a forensic expert

4. Word search puzzle. Find all the words-answers from ex.3:

A	C	C	O	U	N	T	E	P	P	S	Y	C	H	I	E	T	O	X
T	E	C	H	N	I	C	R	A	R	T	I	S	T	A	T	R	I	I
A	S	O	O	E	M	I	A	N	A	R	C	H	A	E	O	L	S	C
N	E	C	D	N	T	O	M	O	L	O	G	I	S	S	T	O	T	O
A	R	R	O	P	S	Y	C	H	O	L	O	G	T	I	A	G	T	L
L	O	I	N	T	O	L	O	G	I	S	P	I	L	G	S	I	S	O
Y	L	M	E	P	H	O	T	O	G	T	A	S	T	O	T	S	I	G
S	O	I	N	A	L	I	S	T	R	A	T	H	O	L	R	T	M	I
T	G	E	N	G	I	N	E	E	R	P	H	E	R	Y	O	N	O	S
E	I	S	T	A	N	T	H	R	O	P	O	L	O	G	I	S	T	T

Write down the unused letters: _____.
What is a key-word made up of these letters?

Each of these people is a crime lab | | | | | | | | | .

Fig.60. Forensic scientist at work

5. What kind of forensic scientists (field or lab) is depicted in the picture? Name all the items in his equipment. What things can he use in the crime scene examination?

This is _____ .
His basic crime scene equipment includes _____
_____
_____
_____
_____ .
In his forensic kit we can find such things as _____
_____
_____
_____
_____.

What protective clothes do lab analysts need to perform their duties?

_____
_____ .

6. What forensic tools and containers do criminalists use to pick up and to collect … ?

1. some fibres
2. fired bullets
3. a handgun
4. latent fingerprints
5. saliva for DNA testing
6. fragments of teeth
7. paint chips
8. skeletal remains
9. blood stains
10. broken glass
11. credit cards
12. bones
13. casings
14. a footprint in sand
15. poison in a glass
16. hair
17. a mobile phone
18. a forged passport

7. Read the true story that became known as "ONE OF THE LARGEST MANHUNTS IN CALIFORNIA'S HISTORY":

Case study!

Fig.61. G. Mason in court

On the 22st of July, 1957, four teenagers parked near oil fields Hawthorne, California.

A man walked up to the car and pointed a gun at the driver. He robbed the teens and raped one of the girls. Then he stole the car. About 30 minutes later, he was pulled over for running a red light. As the two officers were walking away, he shot them. Both officers were killed.

Mason later recalled, "I thought, 'If I don't get them, they're gonna get me.'

So when the officer turned away from me, I shot both officers, got back in the car and drove away".

Police, a crime scene unit and medical personnel arrived on the scene to find Curtis dead in his patrol car, with Phillips lying mortally wounded on the ground. Both had been shot three times.

Meanwhile, Mason, who had been wounded by a bullet from Officer Phillips, dumped the car and fled through numerous backyards before hitchhiking his way to safety. Several hours later, an abandoned 1949 Ford was found.

A forensic team took all possible evidence, but, unfortunately, *the case went cold*.

Forty-five years later the case was reopened and detectives arrested Gerald Fit Mason for rape, murder, and robbery. On March 21, 2003, Mason confessed.

45 years after he had committed these crimes, Mason was sent to prison to serve two life sentences. He died in prison in 2017.

Fig.62. G. Mason's pictures of 1957

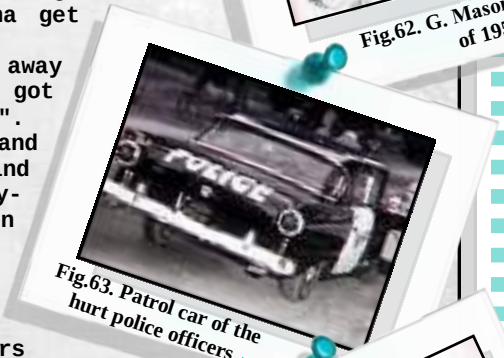


Fig.63. Patrol car of the hurt police officers

Fig.64. Milton Curtis (left), Richard Phillips (right)

a) Collect the crime data:

1. Crimes	1. _____ 2. _____ 3. _____
2. Geography of the crimes	
3. Date of the crimes	
4. Victims	Alive:_____ _____ Dead (indicate the cause): _____ _____
5. Criminal's name	
6. Year of the criminal's arrest	
7. Sentence	

b) Explain the phrase in italic:

"The case went cold" means _____
_____ .

c) Study the additional information about G. F. Mason and fill in his criminal card:

To read more!

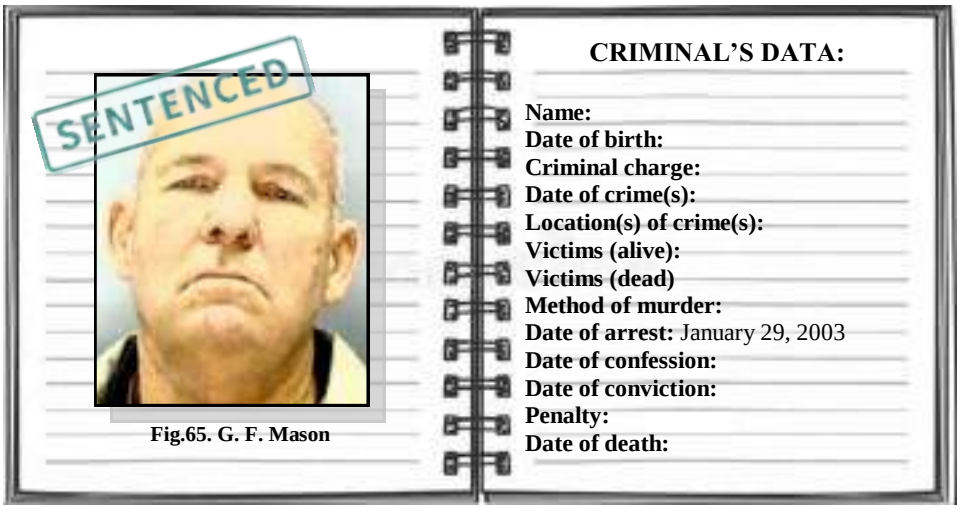


Fig.65. G. F. Mason

d) Think of the pieces of evidence that could be revealed at the crime scenes. How could they be collected and packaged? What forensic scientists could be involved in their analysis:

PIECES of EVIDENCE	TOOLS and CONTAINERS	FORENSIC SCIENTISTS
1. casings from the fired bullets	tweezers, paper / plastic bag	ballistics expert
2. …		
3. …		
4. …		
5. …		
6. …		
7. …		
8. …		
…		

Look it up!

e) Find the information about another real crime.

Collect the crime data (see ex.7(a), p.51), make and fill in the criminal's card (criminals' cards) (see ex.7(c), p.52), imagine what pieces of evidence could be revealed, what tools and containers you would need to collect them, what forensic scientists would be involved in the clues analysis (see ex.7(d), p.52).

UNIT 4

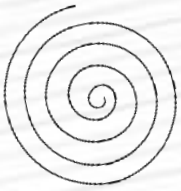
Crime scene INVESTIGATION

Audio Glossary

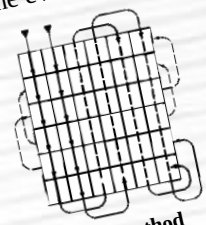
Glossary

First responder (n) - a police officer who is the first to arrive at a crime scene to provide initial police actions: he protects the area, restricts the entry, keeps a log of visitors, collects initial information, requests additional manpower

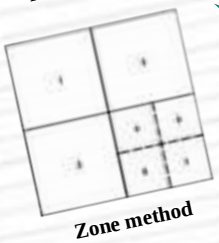
Crime scene search method (n) - a method for searching an area which criminalists should follow in a systematic way not to contaminate the evidence



Spiral method



Grid method



Zone method

Fig.66. Some examples of search methods

CSIs (n pl) =
Crime scene investigators (n pl) =
Criminalists (n pl) =
Field analysts (n pl) - forensic scientists, members of a crime scene unit, whose responsibility is to process a crime scene step by step, on a basis of clear rules not to contaminate the integrity of the area and the relevant evidence

CSIs can be called
- ***Searchers*** when they search the scene;
- ***Photographers*** or ***Camera operators*** when they fix all crime scene elements on photo or video cameras;
- ***Sketch artists*** or ***Sketchists*** when they make a rough diagram of a crime scene;
- ***Collectors*** when they collect evidence.

Cross-contamination (n) of evidence - the unwanted transfer of material between two or more sources of evidence. For example, improperly collecting clues can lead to mixing one sample with another and contaminating both

Medical examiner (n) - an official trained in pathology who is responsible for examining bodies post mortem to determine the cause, manner and time of the death

Chain of custody (n) - the chronological documentation of different stages in the forensic evidence transfer from a crime scene to the crime lab

Look it up!

Look up other search methods. What are they?

UNIT 4 Crime scene investigation

Word bank!

Keep in mind!

To preserve the integrity of a crime scene is a priority task of CSIs.

Combine the following synonyms when speaking on it:

- to keep / to protect / to maintain

+

- the authenticity / the original state / the intact state / the pristine state

E.g., "to maintain the pristine state of a crime scene".

1. Complete the following words chains using the key-words. Translate them:

VERB	NOUN (NOTION)	NOUN (ACTOR)
investigate (a crime scene)	crime scene investigation	crime scene investigator
...	...	examiner
...	protection	...
search	...	...
...	photography	...
...	...	sketch artist / sketchist
...	collection	...
process	...	—
contaminate	...	—

2. Study the Glossary. Look up the definition for the following concepts:

"Manpower" means _____.
"The integrity of a crime scene" is _____.

3. Write down all the actions of police and CSIs at a crime scene:

POLICE SHOULD …	CSIs SHOULD …
1. protect the area 2. restrict the entry 3. … 4. ... …	1. process a crime scene step by step, on a basis of clear rules 2. preserve the integrity of a crime scene 3. search the scene 4. … 5. … …

What about you?

4. Study the cartoon and answer the questions:

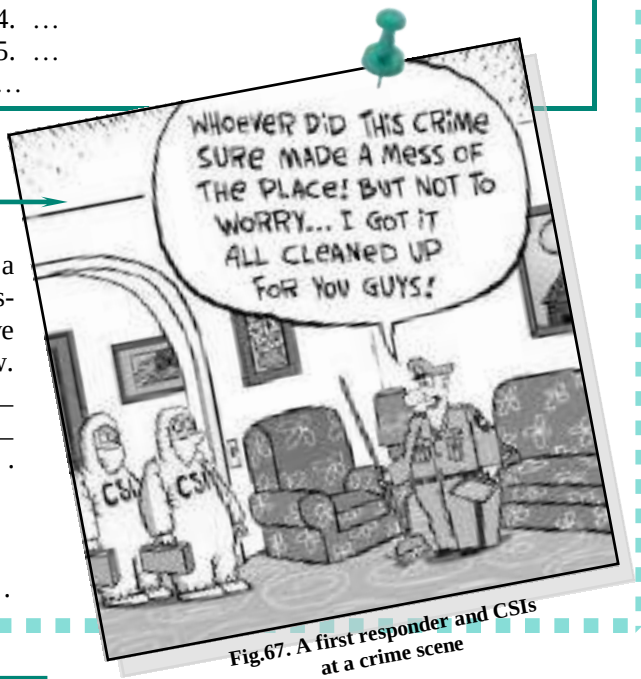


Fig.67. A first responder and CSIs at a crime scene

1. What would **your** reaction as a CSI be to a situation like this? Has the first responder mishandled his duties or done a good thing? Give some arguments to support **your** point of view.

_____
_____
_____.

2. What was the first responder supposed to do?

_____
_____
_____.

5. Guess who or what is described, then find the words-answers in the puzzle.

1. A chronological documentation of evidence transfer.	chain of C _ _ _ _ _ _ (7 letters)
2. A CSI whose duty is to make a rough diagram of a crime scene.	S _ _ _ _ _ _ _ _ (9)
3. A police officer who is the first to arrive at a crime scene.	first R _ _ _ _ _ _ _ _ (9)
4. A field analyst or a CSI in other words.	C _ _ _ _ _ _ _ _ _ _ (11)
5. A hardworking process of revealing and collecting clues from a crime scene.	crime scene I _ _ _ _ _ _ _ _ _ _ _ _ (13)
6. Taking photos of a crime scene is called photography; video recording is … .	V _ _ _ _ _ _ _ _ _ _ (11)
7. CSIs who comb a crime scene.	S _ _ _ _ _ _ _ _ (9)
8. Transfer of material between two or more pieces of evidence.	C _ _ _ _ - _ _ _ _ _ _ _ _ _ _ _ _ (18)
9. A CSI who collects evidence.	C _ _ _ _ _ _ _ _ (9)
10. An official record of all visitors of a crime scene.	L _ _ (3) of visitors
11. A criminal act.	C _ _ _ _ (5)
12. A specialist in forensic pathology.	medical E _ _ _ _ _ _ _ (8)
13. Evidence relating to the case.	R _ _ _ _ _ _ _ (8) evidence

E	X	A	M	I	N	E	R	I	V	I	D	E
I	S	E	T	R	E	L	E	V	A	N	T	O
N	R	A	R	C	N	C	R	I	M	I	N	G
V	E	S	P	H	E	R	S	C	U	C	A	R
E	S	K	O	N	D	E	R	R	S	R	L	A
S	E	E	T	C	H	I	S	T	T	I	I	P
T	I	G	A	T	I	O	N	I	O	M	S	H
C	C	O	L	L	E	C	T	O	D	E	T	Y
R	G	L	O	G	N	T	A	R	Y	T	I	O
O	S	S	-	C	O	Y	M	I	N	A	T	N

Write down the unused letters: _____ . ***Make up a key-word from them:***

The main task of CSIs is not to contaminate the | | | | | | | | | | | of the crime scene and the relevant evidence.

Be aware!

There is a difference between the two terms - crime scene investigation and crime investigation.

Crime scene investigation, the responsibility of CSIs, is considered as a slow and hardworking process of documenting all details of an area; revealing, securing, and collecting all relevant evidence.

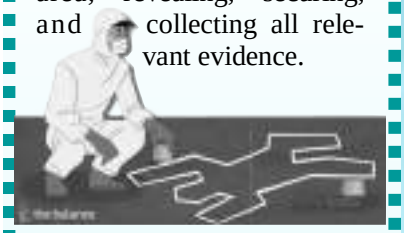


Fig.68. A crime scene investigation

Crime investigation, performed by criminal investigators, involves the study of facts, searching, interviews, interrogations, analysis of forensic evidence examination. It aims to end up with a crime solution and bringing criminals to justice.

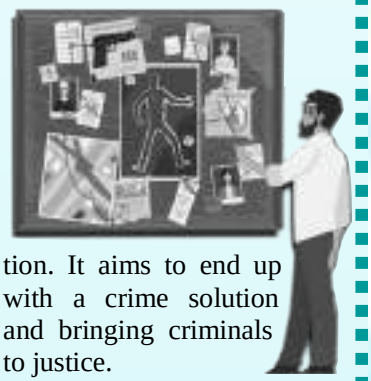


Fig.69. A crime investigation

UNIT 4 Crime scene investigation

6. The INTEGRITY of a crime scene.

Keep in mind!

A crime scene is really only ***pristine*** when whoever committed the crime leaves it and before the first person discovers it.

a) What tips for preserving it can you give? Use the Glossary, ex.3, your own knowledge and imagination:

To minimise contamination of a crime scene and to try to keep it pristine police / CSIs should:

1. know the ABCs of handling a crime scene and follow the protocol;
2. protect the area;
3. _____;
4. _____;
5. _____;
6. _____.

b) Are there any difficulties in preserving the integrity of the areas of mass death scenarios such as terrorist attacks, plains or trains crashes?

Study the photos and say why it is practically impossible to maintain the intact state of such crimes scenes.

Use some questions for your help:

1. What is the territorial scope of the tragedies? Do the crimes scenes cover large or small areas?
2. How many people are involved in the crimes?
3. Is it easy to protect so large territories like those, restrict the entries, get people out of the crimes scenes?
4. What about the emotional and psychological state of involved hurt people and eye-witnesses? Can they really control their actions in shock and panic?

Fig.70-73. Terrorist attacks.

1. **The Twin Towers of the World Trade Center burning (USA, 11.09.2001, 2,977 victims, 25,000 injured people)**
2. **Boston Marathon bombing (USA, 15.04.2013, 3 victims, 264 injured people)**
3. **Saint Petersburg Metro bombing (Russia, 03.04.2017, 15 victims, 64 injured people)**
4. **Domodedovo International Airport bombing (Russia, 24.01.2011, 37 victims, 173 injured people)**

Join in!

Work in groups.

Look up other examples of mass death scenarios.

Analyse their scope, number of victims, related evidence, difficulties in preserving the integrity of the area.

c) Make a conclusion.

There is a famous phrase in forensic scientists' community:

"YOUR VICTIM DIES ONCE,
YOUR CRIME SCENE DIES A HUNDRED TIMES".

Let's discuss!

How do **you** understand this statement? Don't forget the arguments.

Introduction to a crime scene

1. Video "INTRODUCTION TO CRIME SCENES".

Video study!

a) Before watching the video, translate the word combinations given in the 1st column. Match them with their synonyms:

1. to link the crime with the criminal	a) to fix all details
2. not to disturb the crime scene	b) to protect the evidence
3. to set up a cordon	c) to build temporal hiding-places
4. to use the common approach path	d) to contaminate the evidence
5. to obtain the evidence	e) to photograph the evidence
6. to preserve the evidence	f) to get to the evidence
7. to take photographs of exhibits	g) to use powerful torches
8. to take notes	h) not to damage the crime area
9. to be conscious of environmental factors	i) to be aware of nature factors
10. to compromise the evidence	j) to use the common search way
11. to erect temporal structures	k) to secure the crime scene with a barrier tape
12. to use powerful lighting rigs	l) to connect the offence with the perpetrator

1	2	3	4	5	6	7	8	9	10	11	12
l											

b) Watch the video. Try to determine the main video parts. Choose only 5 from the plan items given below. Put them in a logical order according to the video content:

1. A dead body examination.
2. The crime scene definition.
3. The role of the time of day in the crime scene processing.
4. A crime scene sketching.
5. The influence of the environment factors on the evidence contamination.
6. The full crime scene suit.
7. The crime lab pathologist's activities.
8. The stages in crime scene processing.

2

Fig.74. The crime scene suit. Video freeze-frame

c) Fill in the chart with the equipment pieces mentioned in the video: →

Why is the crime scene suit also called "a bunny suit"?

_____
_____
_____
_____.

d) What new forensic tool have you seen in the video? →
Fill in the gaps:

These are s_____ p_____. They are used *to / not to* _____
_____.

Fig.75. Video freeze-frame

e) Read and translate the statements in the table. Then watch the video again. Agree or disagree. Note if the information is not stated in the video:

STATEMENT	TRUE	FALSE	NOT STATED
1. The location where a crime took place can be full of physical evidence.			
2. When speaking to a victim, CSI's should have good communication skills.			
3. Crime scenes can be anywhere - indoors, outdoors, in a business premises, domestic dwellings or vehicles.			
4. When CSIs enter the crime scene they don't use the common approach path.			
5. Natural factors may not compromise the evidence.			
6. In the rainy, snowy or windy weather field analysts collect evidence as fast as possible - they quickly place them into one big evidence bag.			
7. When natural light is not available, forensic team waits for the next morning to process the crime scene.			
8. At the vehicle crime scene CSIs focus their efforts on the point of entry such as broken window.			

Let's discuss!

What do **you** think about the role of forensic scientists in a crime investigation? Is it a key or support role? Why?

f) Try to remember - what evidence have you seen in the video? List as many pieces as you can:

_____
_____
_____
_____
_____ .

g) Write down all the pieces of evidence from the video. What should forensic analysts use to collect them:

	PIECES of EVIDENCE	FORENSIC TOOLS	CONTAINERS
1.			
2.			
3.			
4.			
5.			
...			

2. Study the RULE of SEVEN S's of the crime scene investigation:

Arriving at a crime scene, crime scene investigators should process it accurately. There is the so-called **rule of SEVEN S's** that should be respected in the crime area examination:

1. **S**ecuring the scene
2. **S**eparating the witnesses
3. **S**canning the scene
4. **S**earching for evidence
5. **S**eeing the scene
6. **S**ketching the scene
7. **S**ecuring and collecting evidence

Audio text

Fig.76. A crime scene example

Rule of seven S's

Did you know?

Crime scene investigation teams ***don't clean up*** the scene. This dirty job often falls to the victim's family.

Professional crime-scene cleaners can be hired in many places to do this job.

3. Match the 7 S's with their definitions:

THE RULE OF SEVEN S'S	WHAT DOES IT MEAN?
1. Securing the scene	a) This rule must be performed to determine a primary crime scene and a secondary crime scene (i.e., a murder may have taken place at one location (primary scene) and the corpse is found at another (secondary scene)).
2. Separating the witnesses	b) This rule means that an accurate rough sketch of the crime scene is made, noting all details of the crime scene perimeter (doors, windows, trees, vehicles), the position of the body (if any) and any other evidence.
3. Scanning the scene	c) This is the responsibility of the forensic team. Field analysts comb the crime scene in a systematic way not to miss and contaminate the evidence.
4. Searching for evidence	d) This is the responsibility of the first responder (the first police officer arriving at the crime scene). His priority tasks are: crime scene protection, safety of all individuals, preservation of evidence.
5. Seeing the scene	e) This rule means that all the evidence should be properly collected, placed in the individual evidence container, sealed, and labeled.
6. Sketching the scene	f) This is the responsibility of the video- and photographer. A view of the crime scene should be taken from different angles and distances. Photos and video of the overall area, close-up photos of any evidence and bodies should be taken.
7. Securing and collecting evidence	g) This rule is respected to avoid witnesses working together to create a story.

1	2	3	4	5	6	7

4. Which "S's" will be your responsibilities at a crime scene?

What about you?

Scanning the scene

Searching for evidence

5. Study the crime scene picture and the found evidence:

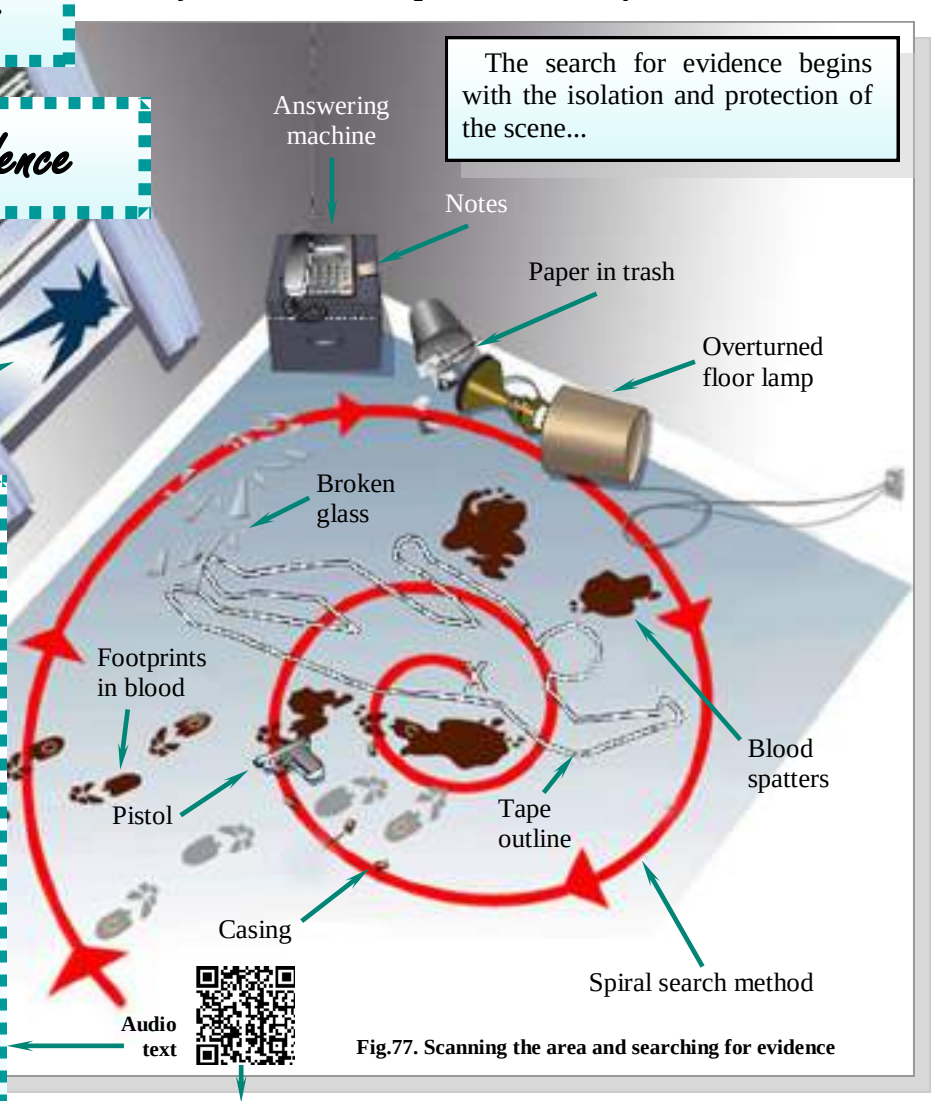


Fig.77. Scanning the area and searching for evidence

Be aware!

There are ***6 universally accepted methods*** for searching an area. Specialists should follow one of them in a systematic way ***to avoid the contamination of evidence***.

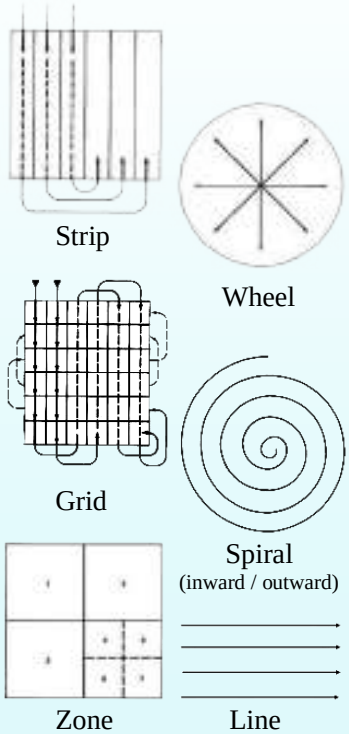


Fig.78-83. Search methods

Strip method is effective if the area is large and open. It is relatively quick and simple to implement and may even be performed by a single investigator in a limited area such as a room.

Wheel method needs a team of searchers who gather at the center of the scene and move outward. The drawbacks are the possibilities of ruining evidence at the center and running evidence with the increasing distance between searchers.

Grid method is the best procedure to cover a large area with a number of searchers.

Spiral method, also called the **circle method**, is effective in a small area. However, as the circle widens, evidence can be overlooked.

Zone method is effective for indoor locations. The area is divided into sectors, each searcher is assigned to each zone.

Line method is the quickest and easiest when outdoors crime scenes are difficult to search due to vegetation or topography.

6. Analyse the picture at page 60 and answer the questions:

1. Where was the crime committed - outdoors or indoors?
2. Can you determine if this is a primary or secondary crime scene? Give some arguments to prove your idea.
3. What formula of search is used here? Why?
4. Is the victim alive or dead? What makes you think so?
5. What weapon was used? How many shots were made?
6. Did the criminal wear shoes?
7. What evidence can field analysts collect at this crime scene? List all the pieces:

_____

_____ .

8. Could the searchers find fingerprints, voice prints, DNA, handwriting? Where could they reveal them?

Keep in mind!

All scenes are ***three dimensional***, never forget to ***look up*** too!

7. What field analysts speak about this crime scene?

Field analyst №1	"This crime was committed in the park"
Field analyst №2	"This crime was committed in a private house room"
Field analyst №3	"The victim was a young woman. She was found strangled in her bed"
Field analyst №4	"The victim was a man killed in the middle of his living-room"
Field analyst №5	"The search of the crime scene was done with the Grid formula"
Field analyst №6	"This crime is an assassination; the sniper shot through the window and didn't leave any evidence"
Field analyst №7	"There were a lot of blood spatters near the dead body as the victim was murdered with the knife"
Field analyst №8	"The criminal has left some evidence such as footprints in blood, casings, and a pistol"
Field analyst №9	"Following the Spiral formula the criminalists started searching the crime scene with the dead body"

To read more!

8. Agree or disagree. Make the wrong sentences correct:

1. Line method is effective in a small area. ***(T/F)***
2. A single investigator can use a strip method at a limited crime scene such as a room. ***(T/F)***
3. Grid formula is the best procedure to cover a large area with a single searcher. ***(T/F)***
4. Wheel method has no drawbacks. ***(T/F)***
5. Wheel method is also called the circle method. ***(T/F)***
6. Zone search formula is effective for indoor location. ***(T/F)***
7. If the outdoors crime scenes are difficult to search, a forensic team use a wheel method. ***(T/F)***
8. A method where the area is divided into sectors each of which is combed by an assigned searcher is called a zone method. ***(T/F)***
9. In large and open areas field analysts use a strip method, a grid method, or a line method. ***(T/F)***

Be attentive!

method ['meθəd] *(n)*
formula ['fɔ:mjələ] *(n)*
wheel [wi:l] *(n)*
spiral ['spaɪər(ə)l] *(n), (adj)*

UNIT 4 Crime scene investigation

Seeing the scene

Fig.84 CSI photographer at work

9. *What is seeing the scene? Study a bit of information:*

As a rule, **seeing the scene** is realised thanks to photographers and camera operators. They use high-tech cameras to fix all crime scene elements, not to miss any details. This **traditional** crime scene documentation **method** typically **involves** using **traditional tools for measuring things at a crime scene** such as measuring tapes, measuring wheels for the further scene mapping.

Audio text

Laser scanners offer an innovative approach to processing and documenting a crime scene. Laser scanners **can measure and photograph virtually everything at a scene**, not just what investigators think important at the time.

What about you?

Which method will **you** use in **your** future practice? Which method would **you** like to use? Why?

10. *Tick ✔ the characteristics of each of crime scene seeing methods. More that one variant is possible:*

	TRADITIONAL METHOD (cameras using + manual measuring)	INNOVATIVE METHOD (3D laser scanning)
1. … fixes the clues and the spatial relationships between items and evidence	✔	✔
2. … takes out the human factor of any type of error		
3. … automatically captures details at the scene down to the millimeter in some minutes		
4. … is at hand in any crime laboratory		
5. … involves documentation of the conditions of the scene		
6. … digitalises data which can be accessible at any time on any digital device		
7. … provides an accurate crime scene reconstruction over a long time period		
8. … doesn't miss any details, even those to that investigators pay no attention		
9. … helps later verify witness testimony and evaluate a possible hypothesis of the investigator		

To see more!

"CRIME SCENE VIDEOGRAPHY"

Which method (traditional or digital) has more positive characteristics? Why? Give some arguments to prove your idea:

_____

_____

_____.

11. Video "SCIENCE QUEST_SEEING THE SCENE".

a) Before watching the video, study the freeze-frame and answer the questions:

1. Is the demonstrated crime scene real or mock?
2. Is it an indoor or outdoor (exterior) crime scene?
3. What could happen? What could be the scenario of the crime?
4. Who is "the victim"? Is he hurt? How?
5. What pieces of evidence can be collected? List them:

_____
_____.

Fig.85. Video freeze-frame

b) Watch the video and check your answers. Were you right?

c) What methods of seeing the scene were illustrated in the video? Can you give some characteristics of them? (use ex.10, p.62 for help)?

_____
_____
_____.

d) What words and word combinations have you heard in the video? Underline and translate them:

interviewing	distant object	(it) revolves 360 degrees	search method
filming	portable scanner	crime scene protection	phase shift
laser beam	document (*v*)	(it) compiles the data	position of evidence
first responder	desktop scanner	crime scene perimeter	safety of victims

e) Watch the video again and fill in the description of the technical specifications of the 3D laser scanner with the words and word combinations from ex.11 (d):

The 3D laser scanner is a _____ scanner that helps crime scene investigators _____ a crime scene with measurements.
It also helps record the condition of the scene and _____.
The laser scanner uses a _____ which is reflected back to the scanner by a _____. The distance is measured by the _____ between the sending and receiving beams.
The distance of objects that can be measured anywhere from ____ (?) centimeters to ____ (?) meters. The laser scanner also _____ 360 degrees horizontally.
The scanner program _____ and saves it to an SD card.
The finished product details the condition of a crime scene, accident reconstruction, individual pieces of evidence.

Video study!

Keep in mind!

When photographing the exterior of an indoor scene or an exterior scene it's important ***to take photos of the spectators*** who are standing around watching the activities. Many times ***the perpetrator returns*** to observe the actions of the police or fire personnel. This seems to be especially true in arson cases.

Additionally, photos may help ***fix eyewitnesses*** who can be identified and interviewed at a later time.

Fig.86. Spectators at a crime scene

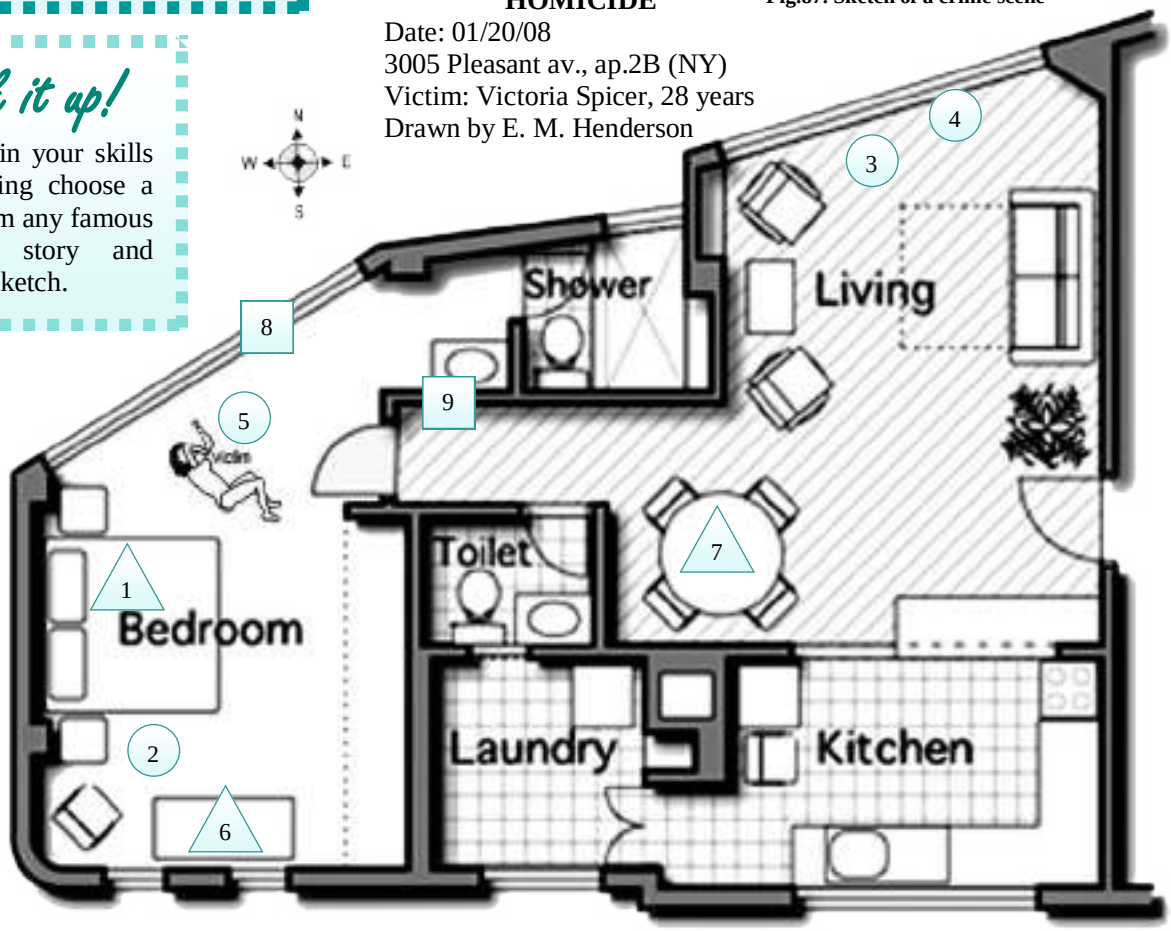
UNIT 4 Crime scene investigation

Sketching the scene

12. Study the crime scene sketch:

HOMICIDE
Date: 01/20/08
3005 Pleasant av., ap.2B (NY)
Victim: Victoria Spicer, 28 years
Drawn by E. M. Henderson

Fig.87. Sketch of a crime scene



LEGEND:		
floor level horizontal evidence	elevated horizontal evidence	elevated vertical evidence

Look it up!

To train your skills in sketching choose a crime from any famous detective story and make its sketch.

Be aware!

The rough sketch is ***the first*** pencil drawn outline of a scene and the location of objects and evidence within this outline.

Sketch is drawn ***after photographs are taken*** and ***before anything is moved***.

Found evidence:

1. Some hair on the victim's bed
2. A small plastic bag of marijuana
3. Footprints with some amount of dirt and soil
4. Broken window glass
5. A wallet with $190 and credit cards
6. Documents and paperwork
7. Apartment keys
8. Small bloodstains on the curtains
9. Latent fingerprints

What information should be marked in the sketch?

_____
_____
_____
_____
_____
_____.

13. Look at the crime scene sketch at page 64 and analyse the given information. Say if the statements below are true or false:

1. The victim's name is E. M. Henderson. ***(T/F)***
2. The crime was committed in the open area. ***(T/F)***
3. The crime was committed in summer that is why the windows were open. ***(T/F)***
4. Forensic searchers found no evidence. ***(T/F)***
5. The suspect is supposed to come into the apartment through the living-room window. ***(T/F)***
6. The most of evidence was found in the kitchen. ***(T/F)***
7. The sketch artist's name is E. M. Henderson. ***(T/F)***
8. The evidence in squares is elevated vertical evidence. ***(T/F)***
9. The evidence in triangles is floor level horizontal evidence. ***(T/F)***

What about you?

A sketch is said **to be worth 1000 words**.

How do **you** understand this statement? Give some arguments.

14. Who tells the truth?

Witness №1	"My flat is situated in the southern part of Victoria Spicer's apartment. Yesterday through my window I saw a suspicious criminally-looking man breaking the Victoria's living-room window"
Witness №2	"I knew Victoria very well. It was a nice woman, rather pretty for her 50 years"
Witness №3	"Yesterday, on the 20th of February, I heard a loud noise in the Victoria's apartment and saw a stranger leaving her flat"
Witness №4	"My apartment is above the Victoria's one. Yesterday I heard the sound of the broken glass in the area of the living-room and the cries (even shrieks) in her bedroom"
Witness №5	"Victor Spicer was an idler, his flat was always crowded with strangers… That's why it's no wonder that he was killed by one of them"

15. Study the list of the evidence marked in the sketch. What things do field analysts need to collect the found clues:

PIECES of EVIDENCE	FORENSIC TOOLS	CONTAINER(s)
1. Some hair on the victim's bed	Gloves, tweezers	A plastic bag
2. A plastic bag with some drug		
3. Footprints		
4. Some amount of dirt and soil		
5. Broken window glass		
6. Wallet with $190 and credit cards		
7. Documents and paperwork		
8. Apartment keys		
9. Bloodstains on the curtains		
10. Latent fingerprints		

UNIT 4 Crime scene investigation

Securing and collecting evidence

Be aware!

After completion of the crime scene documentation, the collection of evidence with ***the strict preservation methods*** can begin.

1. Field analysts should wear protective clothing and use forensic tools in a proper way. They have to ensure that the evidence is collected, packaged, marked, sealed, and preserved in a consistent manner.
2. It is a good idea to have ***a variety of packaging containers*** (envelopes, packets, canisters, cans, paper and plastic bags, test tubes), ***sealing materials*** and ***markers*** available at a crime scene.
3. There is no rigid order for collecting the evidence, but some types of clues, by their nature, should be given some priority of order. ***Transient***, ***fragile***, or ***easily lost*** evidence should be collected first.
4. ***Solid*** evidence can be easily preserved, collected and stored.
5. ***Volatile*** and ***liquid*** (non biological) items should be placed in airtight, unbreakable containers.
6. ***Wet***, ***moist***, or ***living biological*** evidence can be temporarily packaged in non-airtight containers. It should then be allowed to air dry in a controlled environment and be repackaged with the original containers in new non-airtight containers.
7. Each item should be packaged separately to ***prevent cross-contamination.***
8. The used containers should be marked with all the relevant information about the evidence contained and its collector.

Audio text

16. Study the information in the page margin and divide the items into different categories of evidence. More than one variant is possible.

TRANSIENT (EASILY LOST) EVIDENCE	1,
VOLATILE EVIDENCE	
LIVING BIOLOGICAL EVIDENCE	1,
LIQUID (NON BIOLOGICAL) EVIDENCE	
WET (MOIST) EVIDENCE	
SOLID EVIDENCE	

1. blood stain in the rain
2. a dead body temperature
3. a knife
4. a cigarette smoke
5. some drink in the glass
6. tire tracks in the snow
7. coffee temperature in the victim's cup
8. smell of gas
9. casings
10. footwear impression in the sand
11. broken window glass
12. teeth marks in perishable foods
13. a mobile phone
14. a wet tie on the neck of the corpse
15. burnt document
16. a wallet with credit cards
17. vomit on a victim's clothes
18. a handgun
19. a moist handkerchief in the suspect's pocket
20. coins

17. What should CSIs use to preserve and collect the pieces of evidence from ex.16, p.66. Fill in the table

FOUND CLUES	FORENSIC TOOLS	CONTAINER(s)
1.		
2.		
3.		
4.		
5.		
...		

18. Analyse the crime scene depiction and answer the questions:

1. Is the crime scene secured?
2. What is used to secure the crime scene? Can you read the writing on the crime scene tape?
   _____.
3. Scan the crime scene: where was the crime committed - indoors or outdoors?
4. Who is the victim? Is he only hurt or killed?
5. What formula of search could be used by criminalists here? Why? Prove your opinion:
   _____
   _____
   _____
   _____.
6. What pieces of evidence were found at the crime scene?
   How are these clues marked?
   _____
   _____
   _____
   _____
   _____
   _____.
7. What order of collecting the found evidence can you apply? Why? Prove your opinion:
   _____
   _____
   _____.

Fig.88. Example of a crime scene

Keep in mind!

People make mistakes… So if forensic scientists make mistakes, how can they make up for mishandled, contaminated or unrecovered evidence?

They **CAN'T**!

What about you?

Do **you** feel **your** future crucial responsibility in crime investigation? Share **your** ideas.

19. What should field analysts use to secure and collect the revealed evidence:

FOUND CLUES	FORENSIC TOOLS	CONTAINER(s)
1.		
2.		
3.+ 4.		
5.		
6.		
7.		
...		

Keep in mind!

Some pieces of evidence because of their location ***may have to be moved*** or ***repositioned***. If items are moved and new evidence is discovered, ***documentation must be proceed immediately***.

UNIT 4 Crime scene investigation

20. Audio study.
Let's train. How would you handle and package each of the following pieces of evidence?

Audio study!

a) Listen to the audio file.
Put the pieces of evidence in the order you hear them (from 1 to 5):

A revolver	
A white cotton T-shirt with dark hairs on it	
A glass with lipstick on the rim	
A wall to wall carpet with a 1-ft diameter blood stain	
A fuming, noxious rag from an arson scene	

Translate the evidence.

Did you know?

British and US customary systems of measurements comprise ***inches***, ***feet*** and ***yards***.

- 1 inch = 2,54 cm
- 1 foot = 30,48 cm
- 1 yard = 91, 44 cm

b) What are your ideas about handling and packaging these pieces of evidence?

1. _____ .
2. _____ .
3. _____ .
4. _____ .
5. _____ .

c) Read the speaker's advice on packaging the pieces of evidence under the question.
Put down a plus (+) if your answers are similar, and a minus (-) if not. Analyse the results:

DEALING with the EVIDENCE	+ / -
1. "You can't really take the whole carpet, but you could cut out a section of that, package it in a porous envelope, seal it up with a ***tamper-evident tape*** and then put a ***biohazard sticker*** on it".	
2. "For a white cotton T-shirt with dark hairs on it we would try to remove the hairs from the T-shirt and we could package that up in either a non-porous or preferably a ***porous container***".	
3. "If we have a noxious fuming rag from an arson scene we'd want it to be in an airtight container".	
4. "A revolver ought to be picked up very carefully as we don't know if there are still ***live rounds*** in it. It can be secured with ***zip ties*** perhaps in a cardboard container (a box)".	
5. "Glass with lipstick on the rim is potentially a biological sample, so porous container sealed with a tamper-evident tape would be preferable".	

Look it up!

How can you translate "a tamper-evident tape", "a biohazard sticker", "a porous container", "a zip tie", "a live round"?

21. Study the example of a crime scene:

Fig.89. Example of a crime scene

Answer the questions:

1. Is it an indoor or outdoor crime scene?
2. Is the area secured in a proper way? What is used for it?
3. What stage of a crime scene investigation is depicted in the photo?
4. What is the CSI using to fix the crime scene details? Is it a traditional or innovative method of a crime scene documentation?
5. What is used to outline the dead body?
6. Do you have any idea about the causes of the victim's death? Sketch a little scenario of what could happen:

_____
_____
_____
_____
_____
_____
_____ .

7. How many relevant pieces of evidence are revealed here? What are they?

_____
_____ .

8. How would you collect and package all of these clues? Speak in details.

22. Study the evidence label:

Choose any piece of evidence from the crime scenes depicted on pages 60, 64, 67, 69, and try to fill in the evidence label form.

You can imagine all the information needed.

Did you know?

Chain of custody is the chronological documentation of different stages in the forensic evidence transfer to the crime lab.

EVIDENCE

Agency _____
Collected By _____
Item # _____ Case # _____
Date _____ Time _____
Description _____
_____
Location _____
_____
Remarks _____
_____

CHAIN OF CUSTODY

Received from _____
By _____
Date _____ Time _____

Received from _____
By _____
Date _____ Time _____

Received from _____
By _____
Date _____ Time _____

Fig.90. Example of an evidence label

UNIT 4 Crime scene investigation

Check yourself!

1. Give the definition of a crime scene investigation.

_____
_____
_____.

2. What is the difference between "crime scene investigation" and "crime investigation"?

_____
_____
_____.

3. Analyse the actions of field analysts given below. Are they presented in the right order? Make the rule of SEVEN S's correct:

1. **S**ketching the scene
2. **S**ecuring the scene
3. **S**ecuring and collecting evidence
4. **S**eparating the witnesses
5. **S**canning the scene
6. **S**earching for evidence
7. **S**eeing the scenes

4. What stage of the SEVEN S's rule can the following events occur at?

1. A photographer fixes all the details of the crime scene.
2. A first responder provides a wounded victim with the first aid.
3. A forensic team determines the primary and the secondary crime scenes.
4. The witnesses are separated not to testify together.
5. Field analysts start combing the crime scene in a systematic way.
6. A sketch artist notes all the details of the crime scene on the schema.
7. Criminalists accurately collect, pack and label the evidence.

5. Study the depicted crime scene and the CSIs' activities:

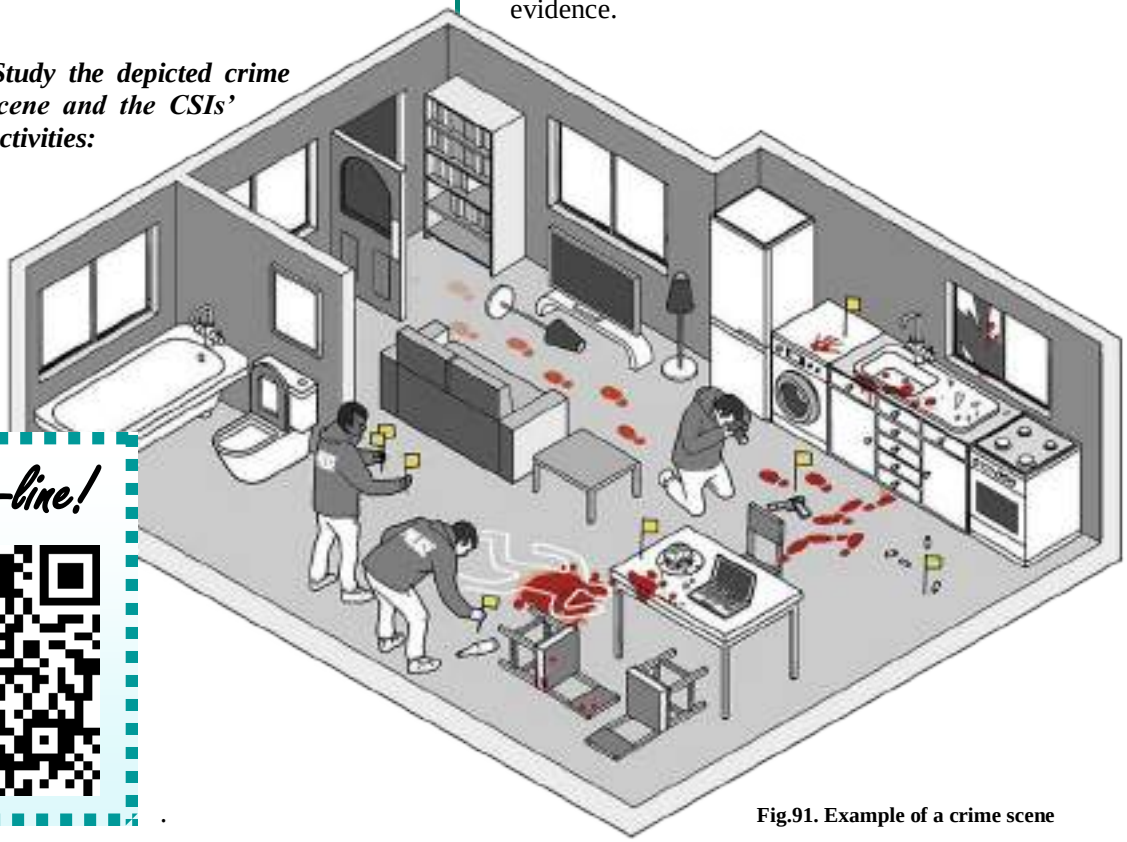


Fig.91. Example of a crime scene

Test on-line!

a) Answer the questions:

1. Is it an indoor or outdoor crime scene?
2. Is the integrity of the area preserved? Give some arguments.

_____
_____.

3. How many CSIs are working at the scene? What are they doing?

_____
_____.

4. What stages of a crime scene investigation have been already completed?

_____
_____.

5. What search method could be used in combing the scene?
6. What stages of a crime scene investigation are proceeding at the moment?

_____
_____.

5. What relevant pieces of evidence can be revealed at this crime scene? List them:

_____
_____.

SKETCH

b) Try to sketch the area.

c) How would you collect and package all of the found clues?

PIECES of EVIDENCE	FORENSIC TOOLS	CONTAINER(s)
1.		
2.		
3.		
4.		
…		

d) Choose any piece of evidence from the crime scene and fill in the evidence label.

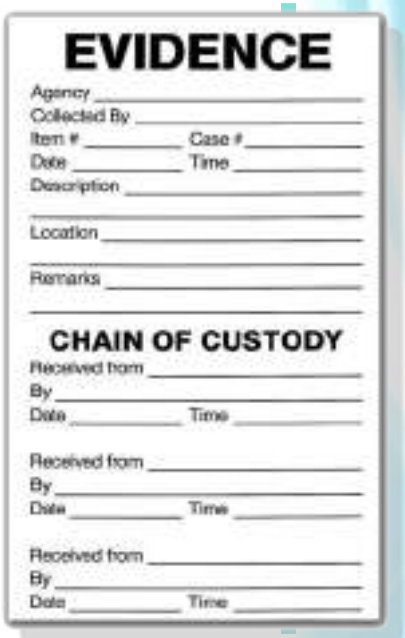


Fig.92. Evidence label

e) Do you have any idea about the causes of the victim's death? Sketch a little scenario of what could happen:

_____
_____
_____
_____
_____
_____.

UNIT 4 Crime scene investigation

Case study!

6. Analyse the crime scene examination, pay attention to the forensic team members, their actions and the found pieces of evidence.

The 19, June at 10 p.m. field analysts arrive at the crime scene and discover a murdered star singer Tim Roller in a car. They start examining and searching the crime area…

a) Find the names for all the people from the crime scene:

	a criminalist - printing specialist
	a criminalist - ballistics expert
	a criminalist - trace evidence specialist
	a sketch artist
	a photographer
	a victim (the death cause?)

Fig.93. Forensic team at the crime scene

Some time later Warrick checks and combs the outer area and finds a crime weapon…

b) Are the field analysts wearing a full crime scene suit?

c) What stages of a crime scene investigation are shown in the comics story?

d) Study the comics, find and write down the synonyms for the following words and word combinations:

1. Crime scene analysts, criminalists - _____ .
2. Crime scene - _____ .
3. To search a crime scene - _____ .
4. A sketch of a crime scene - _____ .

Did you know?

It is relatively easy to recover ***DNA*** from cigarette ends found at the crime scene.

e) Give some details of the crime scene investigation. Choose the relevant variant:

1. The crime was committed *at the concert / on the car parking / in Tim Roller's house*.
2. The victim is a very popular *politician / actor / singer*.
3. A forensic team *processed a crime scene / interviewed witnesses / arrested a suspect*.
4. Processing the crime scene *is a very easy job / doesn't require a lot of time / requires time and patience*.
5. The crime scene covers *only the car where the murder was committed / the car, the close territory and the outer area / the car and the closest parking area*.
6. *There was only one shot at the victim / There were no less than 7 fired bullets / The victim was murdered with a knife*.
7. The field analysts found *only a murder weapon and casings / no evidence / physical, biological and trace evidence.*

f) Study the list of the forensic evidence and tick ✔ those clues which were found at the crime scene. Say where they were discovered:

✔	*Ash*	*DNA*
	A knife	*A car*
	Bones	*Casings*
	A pistol	*Saliva*
	Voice prints	
	A handwriting note	
	Bloodstains	
	Footprints	
	Lipstick prints	
	Fingerprints	
	A cigar roach	
	Bullets	
	Some medicaments	
	Some fibres	
	A little poison bottle	

E.g. Ash was found in the ashtray of the car.

g) What forensic tools and containers did CSIs use to collect these pieces of evidence?

h) What forensic analysts will be involved in the evidence analysis? Use the checked evidence list from ex.6(f), p.73:

E.g. Ash will be analysed by a trace evidence expert (forensic chemist).

i) Fill in a short report about the murder:

Yesterday, on the ____ of June, at about ____ o'clock, a dead body of the famous rock _____ Tim Roller was found in a _____ on the parking near the Concert Hall. Arrived at the crime scene _____ started examining and _____ the murder area. Field analysts processed all the perimeter of the crime and discovered some interesting evidence: _____, _____, _____, _____, _____, _____, etc. All the pieces of evidence were marked, photographed and measured. All the details were carefully noted by a _____ in a rough crime diagram. Then all the found clues were collected, sealed, labelled and transported to a crime lab. We all hope the suspect will be soon detected and arrested.

UNIT 4 Crime scene investigation

j) Read the interview of Catherine Rose, the sketch artist of the forensic team. Try to match the journalist's questions and Catherine's answers:

JOURNALIST	CATHERINE ROSE
1. What can you tell about Tim Roller's murder?	a. I think it's too early to say. It's time to analyse the crime clues.
2. Have you got any evidence of it?	b. Yes, you are welcome.
3. Do you have a suspect?	c. Probably… He was found alone, but we guess he had a company…
4. So, was his guest a man?	d. Oh? It's part of the work
5. Excuse-me, can I ask you some questions?	e. Yeah… Tim Roller is known as ***a health nut***. He is said to be ***a vegetarian gym rat*** who didn't smoke, drink, or do drugs… But all the car smelt of cigar smoke…
6. Was he alone in a car?	f. We can't say anymore, we had no other evidence…
7. Thank you for your time.	g. Yes, our team found it in the outer area.
8. Did you find a murder weapon?	h. So… Tim Roller was found dead in a parked limo. He was sitting when someone capped him in a drive by shooting.

Let's discuss!

Should mass-media report details of crimes to the public?

Give **your** own opinion, support it with some arguments.

Use the following link for help: →

Journalist: _____?
Catherine Rose: _____.
J.: _____?
C.R.: _____.
J.: _____?
C.R.: _____.
J.: _____?
C.R.: _____.
J.: _____?
C.R.: _____.
J.: _____?
C.R.: _____
J.: _____?
C.R.: _____.
J.: _____.
C.R.: _____.

Look it up!

Look up these word combinations in **English-English** dictionaries.

→ ***k) What do the following slang expressions in the dialogue mean?***

A health nut - _____.
A vegetarian gym rat - _____
_____.

l) Act the dialogue.

7. Review all the information on crime scene investigation. Speak in details on the rule of seven S's and the consequence of the actions of CSIs at a crime scene.

UNIT 5

AFTER DEATH analysis

Audio Glossary

Glossary

Medical examination (n) **at a crime scene** - recording the position and condition of a victim and related evidence to determine **an** approximate cause and time of death, performed by ***medical examiners***, or ***MEs***

Post-mortem changes (n pl) - physiological changes that occur in bodies after death

Decomposition (n) - process of decaying of a corpse into simpler forms of matter, accompanied by a strong, unpleasant odour

Fresh dead body changes are:

- ***Pallor mortis (n)*** - paleness which happens in the first 15 - 120 minutes after death;
- ***Algor mortis (n)*** - the reduction in body temperature following death. This is generally a steady decline until matching ambient temperature;
- ***Rigor mortis (n)*** - stiffness or rigidity of a body, when the limbs of the corpse become stiff and difficult to move or manipulate;
- ***Livor mortis (n)*** - lividity, a settling of the blood in the lower portion of the body

Putrefaction (n) - the beginning and presence of signs of decomposition of organic matter

Skeletonisation (n) - the end of decomposition, where all soft tissues have decomposed, leaving only the skeleton

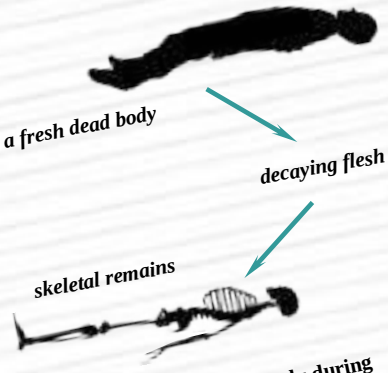


Fig.94-95. A dead body during stages of decomposition

Forensic pathology (n) - pathology that focuses on determining the cause of death by examining a corpse

Autopsy (n), also called ***Post-mortem examination (n)*** - a close, detailed and careful medical examination of a person's body and its organs after death to help establish the cause and the time of death

In a morgue

UNIT 5 After death analysis

Word bank!

1. *Study the cartoon. Answer the questions:*

1. What process is depicted in the cartoon - a medical examination or an autopsy?
2. Is a ME determining an approximate time or cause of the death?
3. What stage of decomposition is it - a fresh dead body stage, putrefaction or skeletonisation?

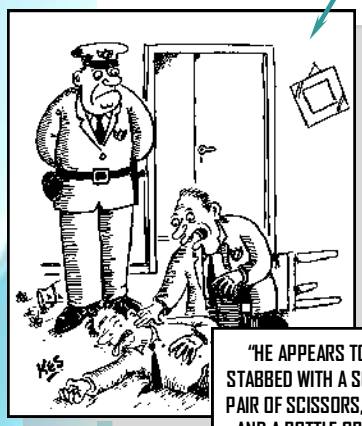


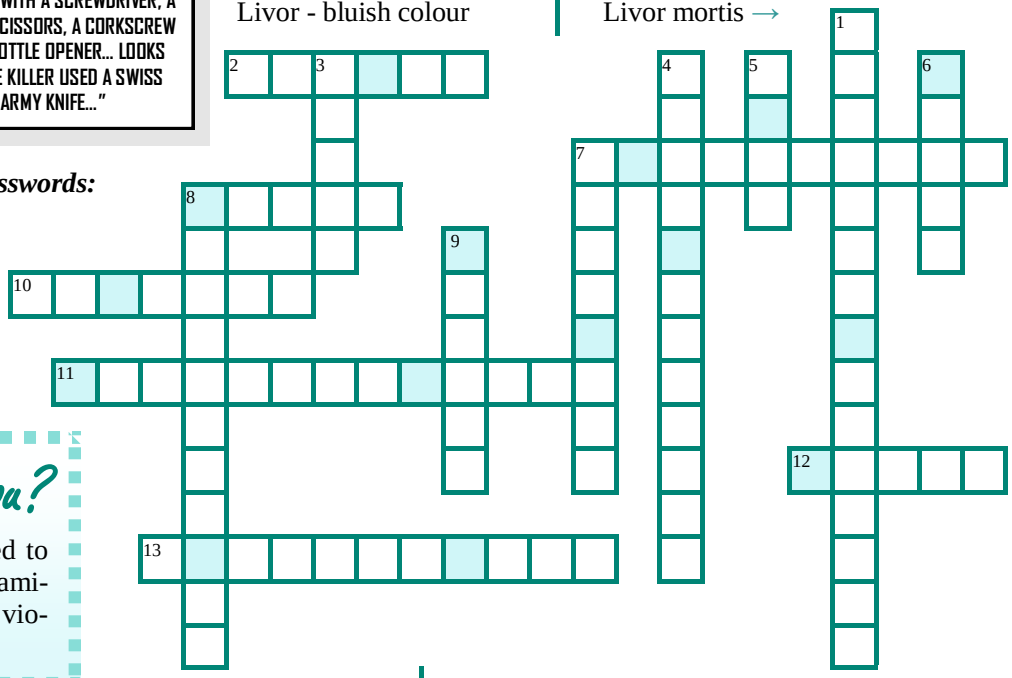
Fig.96. A crime scene cartoon

2. *Study the meaning of the Latin words and offer the simple definition for the word combinations given below:*

Post-mortem - after death
Mortis - death (of death / after death)
Pallor - paleness
Algor - coldness
Rigor- stiffness
Livor - bluish colour

Early post-mortem stages →
Post-mortem examination →
Pallor mortis →
Algor mortis →
Rigor mortis →
Livor mortis →

3. *Do the crosswords:*



What about you?

Will **you** be allowed to make an after death examination in a case of a violent crime? Why?

Across:

2. "Paleness" in Latin.
7. Science which studies insects activity.
8. Post-mortem reduction in body temperature - … mortis.
10. Post-mortem examination of a body in a morgue.
11. Process of decaying of a corpse.
12. Why did the death take place = … of death.
13. A specialist doing an autopsy of dead bodies.

Down:

1. The last stage of decomposition.
3. Post-mortem lividity = … mortis.
4. The presence of signs of decomposition of organic matter.
5. When did the death take place = … of death.
6. Stiffness after death = … mortis.
7. A full name for an ME - a medical … .
8. *(adj)* not completely accurate but close.
9. "Death" or "of death" in Latin language.

Write down the highlighted letters: _____.

Made up a key-concept:

All specialists involved must have a _____ _____.

After death analysis UNIT 5

4. Match the synonyms:

1. examination
2. dead body
3. post-mortem
4. pallor mortis
5. algor mortis
6. rigor mortis
7. livor mortis
8. decomposition
9. autopsy
10. approximate

a) lividity / bluish colour of a dead body after death
b) decaying
c) not completely accurate but close
d) post-mortem examination
e) analysis; investigation
f) coldness of a corpse after death; reduction in body temperature after death
g) corpse; cadaver; deceased
h) stiffness / rigidity of a dead body after death
i) paleness of a dead body skin after death
j) after death

1	2	3	4	5	6	7	8	9	10

Be attentive!

putrefaction [ˌpju:trɪ'fækʃn] *(n)*
skeletonisation [ˌskelɪt(ə)naɪ'zeɪʃn] *(n)*
decay [dɪ'keɪ] *(n)*
autopsy ['ɔ:təpsɪ] *(n)*
approximate [ə'prɔksɪmət] *(adj)*

5. Change the given phrases using all possible synonyms of the underlined words and word combinations:

Having arrived at a crime scene medical examiners have to make a close external examination of a dead body. They evaluate post-mortem physiological changes such as pallor mortis, algor mortis, rigor mortis and livor mortis to fix approximate time and cause of death. The real causes and time of the death are determined by a pathologist after making an autopsy. If a corpse is not in a fresh stage of decomposition, forensic entomologists or anthropologists can be involved to help in the crime investigation.

_____
_____
_____ .

6. Choose the key-terms you think the examination of a dead body deals with. Translate them:

livor mortis	ballistics	pallor mortis	fingerprints	sketch of a crime scene
broken glass	poisons	DNA analysis	rigor mortis	forensic anthropology
autopsy	corpse	death	decomposition	questioned document
search method	algor mortis	detonated bombs	impressions	forensic entomology
laser scanner	chemical liquids	putrefaction	bones	paper and ink analysis

Make up sentences with each of the underlined words and word combinations:

1. _____ .
2. _____ .
3. _____ .
4. _____ .
5. _____ .
6. _____ .
7. _____ .
8. _____ .
9. _____ .
… _____ .

Look it up!

Look up and write down other words and word combinations which can be involved in the lexical field "after death analysis".

UNIT 5 After death analysis

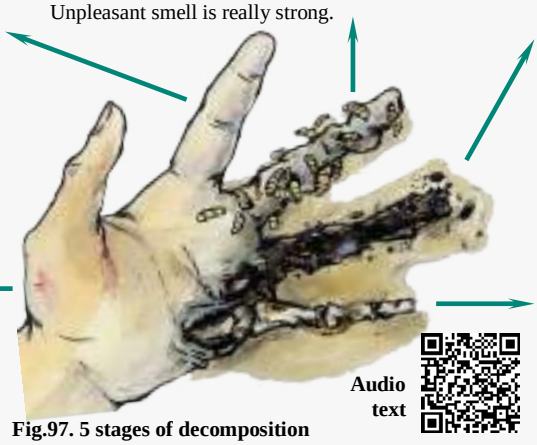
Stages of decomposition

1. Study 5 stages of a corpse decomposition:

1. Fresh stage (up to 72 hours)
With no heart beating blood stops - this creates a pale appearance in some places and a darker in others.

2. Bloating (4-10 days)
Putrefaction starts, skin begins to change colours (ranging from green to grey to brown) and something called "marbling" happens.
Accumulation of gases leads to bloated appearance. Gas pressure causes rupturing of the skin. Insects are attracted, lay eggs. Maggots hatch and start feeding on tissues.

3. Active decay (10-25 days)
The greatest mass loss is caused by feeding of maggots and purging of decomposition fluids into environment. Insects activity is huge. Unpleasant smell is really strong.



4. Advanced decay (25-50 days)
Insects activity is significantly reduced during this stage. Most of remains blacken. Putrefaction is nearly completed.

5. Dry stage/ Skeletonisation (after 50 days)
It's marked by only dry skin, cartilage, and bones remains.
If all soft tissue is removed from the cadaver, its completely skeletonised. If only portions of the bones are exposed, it is partially skeletonised.

Audio text

Fig.97. 5 stages of decomposition

2. What stage of decomposition best corresponds to the description. More than one variant is possible:

FRESH STAGE	
BLOATING	1,
ACTIVE DECAY	1,
ADVANCED DECAY	1,
DRY STAGE / SKELETONISATION	

To read more!

1. Putrefaction in action.
2. Putrefaction starts.
3. Rupturing of the skin under gases pressure.
4. Removing of all soft tissues from the dead body.
5. Purging of body fluids into environment.
6. No visible changes in the appearance.
7. Putrefaction is nearly completed.
8. Marbling colour of the skin.
9. Insects activity.
10. Reduced insects activity.
11. Very strong smells.
12. Blackening of remains.

3. Study the Glossary cartoons of a dead body (fig.94-95, p.75). Match the names of a corpse with different stages of decomposition:

1. A fresh dead body → _____ .
2. Decaying flesh → _____ .
3. Skeletal remains → _____ .

After death analysis UNIT 5

Fresh stage

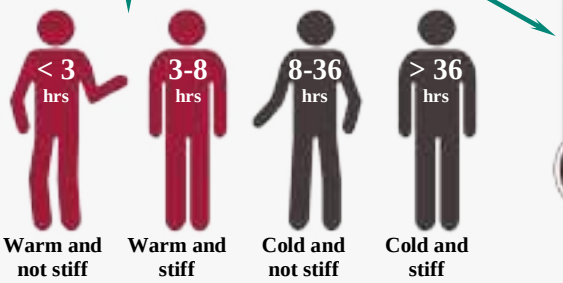
1. *Medical examiners have special duties at a crime scene. What story can a body tell?*

Arriving at a crime scene, **a medical examiner** fixes the position and condition of a victim and related evidence to determine **an approximate cause and time of the death**.

The body always tells a story, especially when the heart has stopped beating.

MEs have to evaluate:

- Pallor mortis;
- Algor mortis (body temperature);
- Rigor mortis;



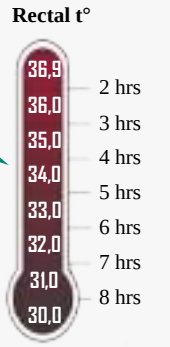


Fig.99-100. Rigor mortis, algor mortis

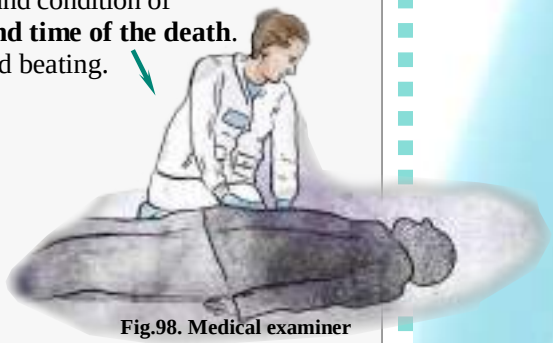


Fig.98. Medical examiner at a crime scene

- Livor mortis;
- Eye condition;
- Skin condition;
- Degree of decomposition

Audio text

To read more!

2. *What do the following notions mean? Give short and full definitions:*

Pallor mortis is _____.
Algor mortis is _____.
Rigor mortis is _____.
Livor mortis is _____.

3. *Why can forensic medical examiners determine only an approximate cause and time of the death? Use the following words and word combinations for your answer:*

Only an external examination, latent causes of the death, an autopsy should be done, the crime lab pathologist, the close examination of the corpse, internal organs, establish the real causes and time of the death.

_____
_____ .

What about you?

Think & answer.

4. *Read the situations given below and try to determine the approximate time of the death of the victims:*

1. Police discovered a body at 7 p.m. . The corpse was cold (about 28°C), but not stiff. So, the approximate death time is _____.
2. A medical examiner fixed that the body was still warm (36°C) and not stiff. So, the victim was dead _____ hour/hours ago.
3. Discovered in the forest, a corpse was cold and stiff. The body matched the outside temperature. So, the approximate death time is _____ hours ago.
4. It's hot - 33 degrees. A found cadaver matched the outside temperature. The body is not stiff. So, the victim was dead _____ hours ago.

To see more!

UNIT 5 After death analysis

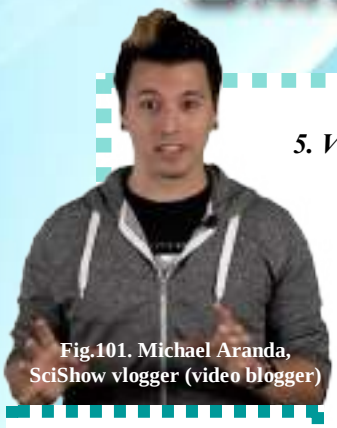


Fig.101. Michael Aranda, SciShow vlogger (video blogger)

5. Video "THE REAL SCIENCE OF FORENSICS_AFTER DEATH ANALYSIS" from SciShow, a series of science-related videos on YouTube.

a) ***Before watching the video, think about the title of the episode. Do you think the real forensic science differs from the one shown in the TV series? Why?***

_____
_____
_____
_____.

Video study!

b) ***Watch the beginning of the video (0:00-1:00) and tick ✔ the statements you've heard:***

- ☐ Hollywood seems to think that real science isn't always made for entertaining TV.
- ☐ TV series never ***sugarcoat*** forensic possibilities.
- ☐ Writers tend to take some liberties with how forensics really works.
- ☐ Most of the time writers seem ***to be*** completely ***off the mark***.
- ☐ The tests the writers use match perfectly the real expertise.
- ☐ The tests the writers use don't exist at all.
- ☐ The tests the writers use on the show might actually exist, but they wouldn't be nearly as fast or accurate in real life.
- ☐ The real forensic tests are as fast and accurate as shown in TV series.
- ☐ The technology the writers use is just… ridiculous.

Do you agree with SciShow vlogger Michael Aranda?

Look it up!

Look up these word combinations in **English-English** dictionaries.

→ ***Do you understand the expressions given in italic? Look up their meanings:***

To sugarcoat _____.
To be off the mark _____.

Fig.102. Video freeze-frame of the crime scene

c) ***Watch the video to the end, try to catch the main plot of the hypothetical crime and answer the questions:***

1. What type of crime is it? _____.
2. Where was it committed - indoors or outdoors?
3. Is the victim alive or dead? _____.
4. What is his name? _____.
5. What city was he killed in? _____.
6. What place was he killed at? _____.
7. What season is it? _____.
8. What temperature is it outdoors? _____.
9. What pieces of evidence were found at the crime scene? List them: _____
   _____
   _____.
10. Is there any suspect? _____.
11. Is there any information on the crime weapon? _____.

d) Have you caught the meaning of the Latin word "mortis"? What does it mean?

e) What kinds of after-death analyses (you know 4 of them) were mentioned in Bob's case? Give the terms according to the definitions:

1. …	a) the analysis of how the blood pools after death
2. …	b) the analysis of muscles stiffening after death
3. …	c) the analysis of the body's rectal temperature after death

What kind of test-mortis was not stated in the video? Do you have any idea why?

_____

_____ .

f) Match the analyses with the description of the body's processes given in the video:

LIVOR MORTIS RIGOR MORTIS ALGOR MORTIS

1. The body actually uses energy to make the muscles relax, not contract. So, after somebody dies, the muscles stop getting chemical energy, they can't un-contract, and after 2 hours after death the body starts stiffening. After 36 hours after death the muscles decompose enough that they can't hold their position anymore.
2. The human being's body temperature (when a person is alive) is about 37 degrees. After death, normally, a body loses heat at a rate about1-1,5 degrees Celsius per hour. The outdoors temperature must be taken into account - a body loses heat a lot faster to the colder air, but it is hard to tell exactly how fast.
3. When the heart stops beating, it doesn't distribute the blood anymore - the blood goes where gravity takes it and that makes the skin look purple from the outside. The blood is liquid until 12 hours after death, after this period it coagulates and dries.

g) What kind of after-death analysis is depicted in the picture? →

_____ .

Can you explain the purple outside stains?

_____

_____

_____

_____

_____

_____ .

Make your suggestions about the time of death and the position of the body after death?

_____

_____

_____

_____

_____ .

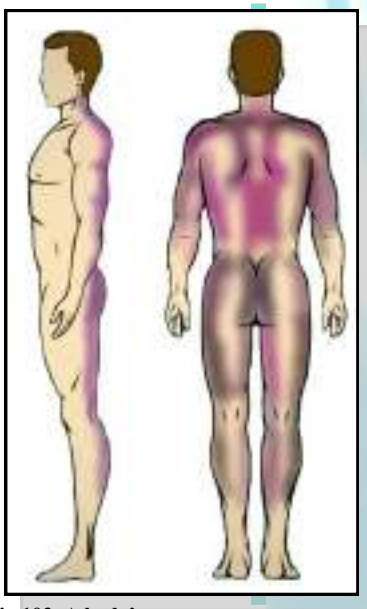


Fig.103. A body's processes

UNIT 5 After death analysis

h) Watch the video again. Then read the statements given below, fill in the gaps with the figures, work with the timeline and determine the approximate time of Bob's death:

Fig.104. Timeline, identification of the approximate time of Bob's death

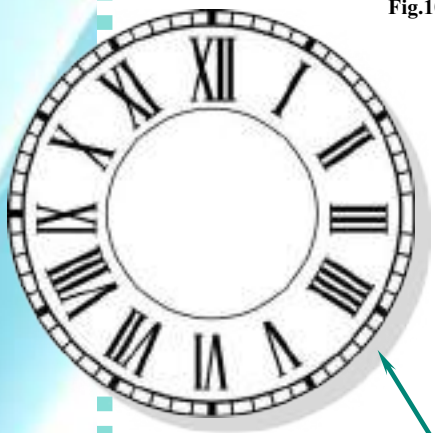


Fig.105. What is the approximate time of Bob's death?

12 ; 5-6 ; 5 ; 2 ; 29 ; 11

1. The cops secure the scene and the forensic investigators show up around _____ p.m. to gather clues.
2. Bob's blood seems to still be very liquid, so he's been dead less than _____ hours.
3. In Bob's case, rigor mortis seems to have set in, so the body is probably more than _____ hours dead.
4. Police find a receipt for a bottle of soda from a nearby store time-stamped at _____ p.m.
5. Bob's rectal temperature is _____ degrees Celsius, but this is a cold winter evening in Chicago, so Bob's been dead _____ hours.
6. So approximately Bob was killed at _____ p.m.

What about you?

What new information did **you** learn from the video?

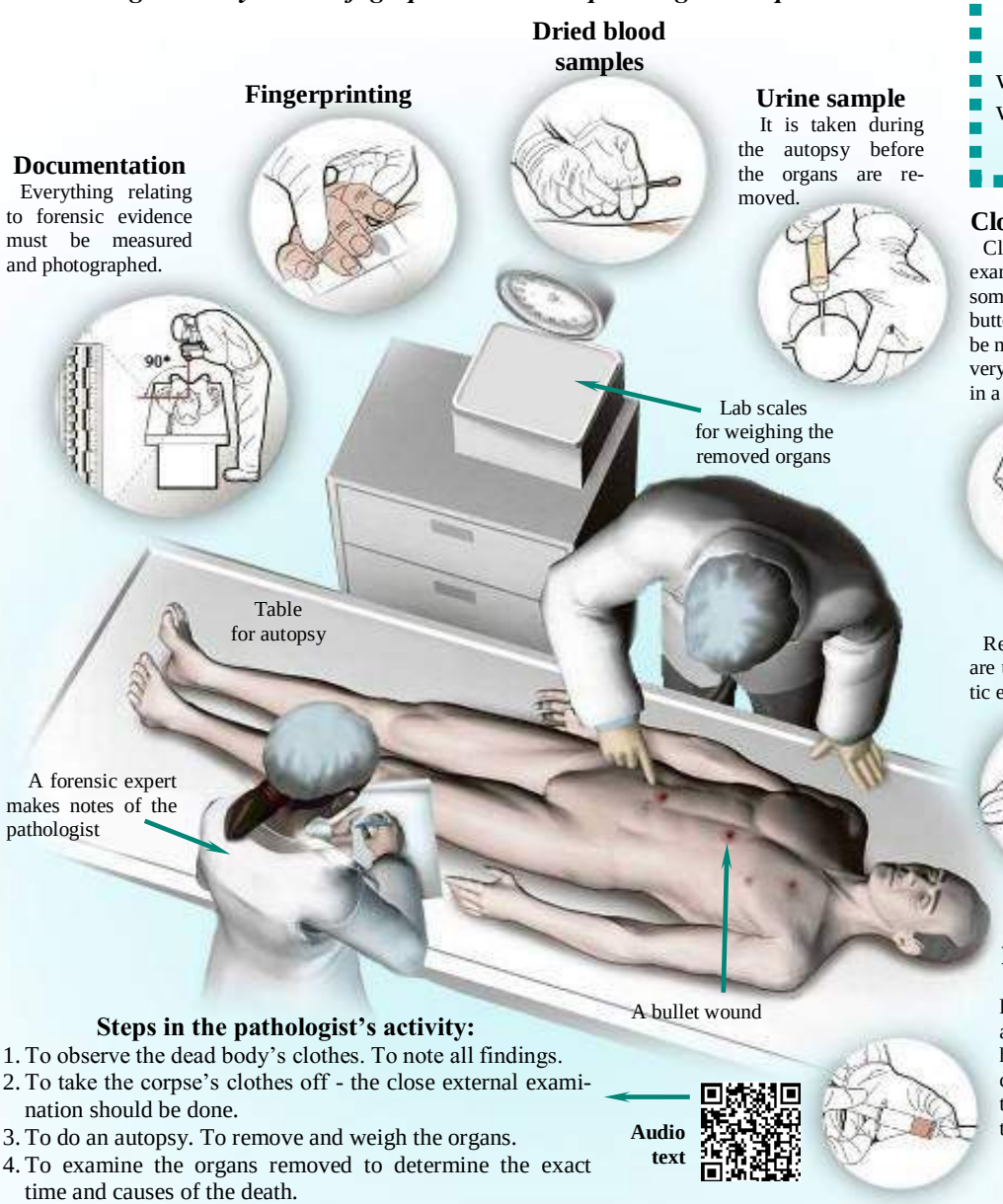
i) Think & answer:

_____
_____
_____
_____
_____
_____
_____
_____ .

6. Sum up the information about physiological changes that occur in bodies shortly after death:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____ .

7. In a morgue. Analyse the infographics about the pathologist's responsibilities:



Clothing sample
Clothing is closely examined. If there are some scrapes, ripped buttons, etc., it must be noted as it can be a very important detail in a crime solution.

Bullets
Removed bullets are used in the ballistic expertise.

Blood sample
The pathologist looks for any amount of alcohol, medicaments, drugs or other toxic substance in the body.

Steps in the pathologist's activity:

1. To observe the dead body's clothes. To note all findings.
2. To take the corpse's clothes off - the close external examination should be done.
3. To do an autopsy. To remove and weigh the organs.
4. To examine the organs removed to determine the exact time and causes of the death.

Audio text

Fig.106. Crime lab. Forensic pathologist's activities

Be attentive!

wound [wu:nd] *(n), (v)*
wounded [wu:ndid] *(p.p.)*

8. Each statement given below is wrong. Correct the sentences:

1. The pathologist's duties are only to perform the close external examination of the body and to do the autopsy.
2. It has no importance if everything relating to forensic evidence is not measured and fixed.
3. The clothing examination doesn't fall on the pathologist.
4. The autopsy and the internal organs state can't tell a story about the victim's death time and causes.
5. Removed bullets are thrown away as they can't help investigators to solve a crime.
6. The pathologist works only with the body organs, not with the body fluids.

To see more!

UNIT 5 After death analysis

Putrefaction stage

Did you know?

A dead body attracts many insects. Analysing their life cycle - **egg, larva, pupa** - entomologists can determine a fairly accurate time of death of a victim.

Mites

Mites feed on the corpse throughout its decomposition.

Some types focus on the early stage of the fresh body, while others prefer to feed on dry skin in the later stages.

Blow flies

Flies also arrive early (in 10 minutes!) as maggots prefer a fresh body to feed on and stay till the end of putrefaction.

Their system can be analysed to find any toxins that were present in the body before the death.

Beetles

Some beetles approach a dead body in the early decay to feed on the flies, not on the corpse. Others appear later to feed on other beetles, dried skin or tissues.

Beetles can also be used to find toxins and drugs, which is useful for severely decomposed bodies.

Moths

Moths are among the last type of insect that add to the process of decomposition.

Fig.109. Insects at the crime scene

1. Answer the questions:

1. What does putrefaction mean?
2. What stages of decomposition (3 of 5) does putrefaction take place in?

_____

_____.

3. How is a dead body called during the putrefaction process?
4. Whose activity is significant in this period?

Audio text

2. Study insects activity.
Try to make some conclusions. You can use the following phrases and word combinations:

Forensic entomologists, to fix a fairy accurate time of death of a victim; to analyse the type of insects; to determine the stage of the insects life (egg, larva, pupa); to find any toxins in the insects systems (drugs, medicines, poisons); to give some version of the cause of death.

_____

_____

_____

_____

_____.

3. Video "FORENSIC ENTOMOLOGY", a segment on the Forensic Entomology program at Texas A&M in College Station.

a) Before watching, analyse the video freeze-frames and the comment to the video in exercise 3 and answer the questions:

Fig.107-108. Forensic entomology training. Video freeze-frames.

1. Are the characters in the video real forensic entomologists or students?
2. Where are they trained?_____.
3. What are they doing in the pictures? _____

_____.

4. Are the fake crime scenes outdoors or indoors?_____.
5. What kind of protective clothes are the students wearing? Why?_____

_____.

6. What clues from the crime scenes could the students (future entomologists) collect? _____

_____.

After death analysis UNIT 5

b) Watch the video. Have you caught any details? Choose the relevant variant:

1. The students are trained in *Asia/ Europe/ the USA*.
2. There are *5/ 6/ 7/ 8* of them.
3. The dead body to be analysed is discovered *in the abandoned dwelling/ in the trunk of a car/ in the forest.*
4. The discovered dead body is a corpse of *a dog/ a human being/ a pig*.
5. The students use the word *"disgusting"/ "interesting"/ "cool"* to describe their first impression.

c) Study some different types of insects (critters). What kinds of insects could be found at the crime scene feeding on the decaying flesh?

butterfly	bug	mite	mosquito	potato beetle
fly	bed bug	beetle	moth	flea
blow fly	worm	coffin fly	ant	cockroach (roach)

d) Underline the insects species from exercise 3 (c) you have heard or seen in the "11 News".

e) What forensic tools and containers were used by the students to collect different insects species?

_____
_____ .

f) Watch the video again and complete the statements given below:

1. The students are uncovering clues to careers that may one day help the families of murder victims see _____.
2. The students try to read the story told by flies and maggots in a language of _____.
3. Crime scene entomologists _____ life coming after death.
4. The insects are what they _____ and they _____ all victim's substances inside them.

eat	science	carry	decipher	justice

Choose one of these statements, speak on it in details:

_____
_____
_____
_____.

g) Give your own expert opinion about the decomposition stage of the shown bodies:

1. This is the stage of a fresh body.
2. This is the stage of bloating.
3. This is the stage of active decay.
4. This is the stage of advanced decay.
5. This is the stage of skeletonisation.

You can use the following plan:

1. What kinds of insects can you see?
2. What is the period of their activities?
3. Can you make a conclusion of the decomposition stage?

Video study!

Let's discuss!

Entomologists often use the slogan: **"FLY-WITNESSES ARE MUCH BETTER THAN EYE-WITNESSES"**.

How can **you** comment it?

_____
_____
_____
_____
_____.

UNIT 5 After death analysis

Skeletonisation

1. Study the information on the stage of skeletonisation in details:

Skeletonisation is the state of a dead organism after undergoing decay.

It is **the final stage of decomposition**, by the end of which all soft tissues have been eliminated, leaving only disarticulated bones.

Once the skeletal remains are discovered or excavated, forensic anthropologists evaluate their forensic significance.

Using physical **markers on a skeleton**, a forensic anthropologist can potentially **identify a victim**, determine a victim's **age**, **sex**, **stature**, and **ancestry**.

In addition, forensic anthropologists can use skeletal **abnormalities** to potentially determine cause of death, past trauma.

If the skeletal remains are deemed as materials that have no forensic significance, they will proceed to an examination of its archaeological significance.

Audio text

Fig.110. Skeletal remains

Who is who?

This American anthropologist, popularly known as "***the bone doctor***", is considered as the pioneer of forensic anthropology.

Fig.111. Pioneer in forensic anthropology

After World War II, during the 1940-50s he actively publicised potential forensic value of ***anthropology***, ***osteology*** and ***odontology***

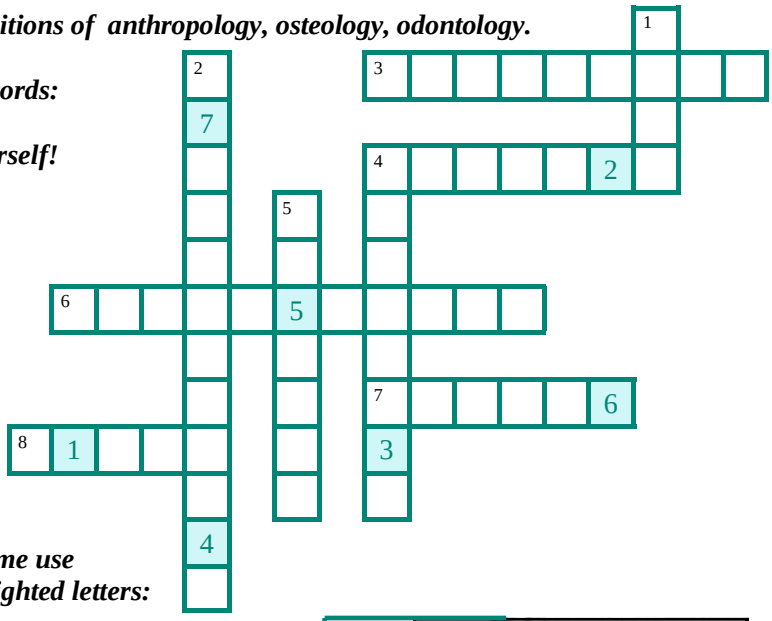
Who is he?

_____.

2. Give the definitions of anthropology, osteology, odontology.

3. Do the crosswords:

Check yourself!



To check the name use the highlighted letters:

1	2	3	4	5	6	7

Across:

3. Scientific study of bones.
4. Term to describe a physical height.
6. Something unusual in a person's body.
7. Damage to the body caused by external force.

Down:

2. The science studying skeletal remains of human beings.
5. They include skeletal material, mummies, or decomposed dead bodies.

8.

4. (down)

1.

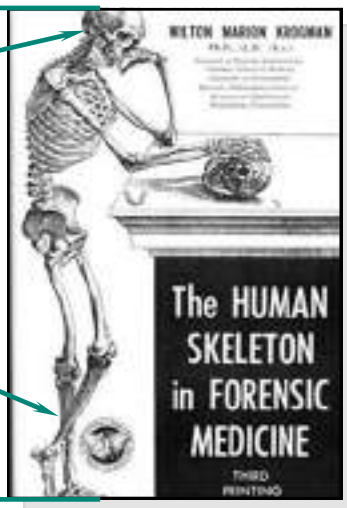


Fig.112. The book by W. Krogman

Be attentive!

skeleton ['skelɪt(ə)n] *(n)*
skeletal [ˈskelətl] *(adj)*

stature ['stætʧə] *(n)*
ancestry ['ænsestrɪ] *(n)*
abnormality [ˌæbnɔːˈmælɪtɪ] *(n)*
trauma ['trɔːmə] *(n)*

4. *Anthropologists deal with skeletons, bones, skulls. Study some differences between male and female skulls and then try to determine the sex of the offered ones:*

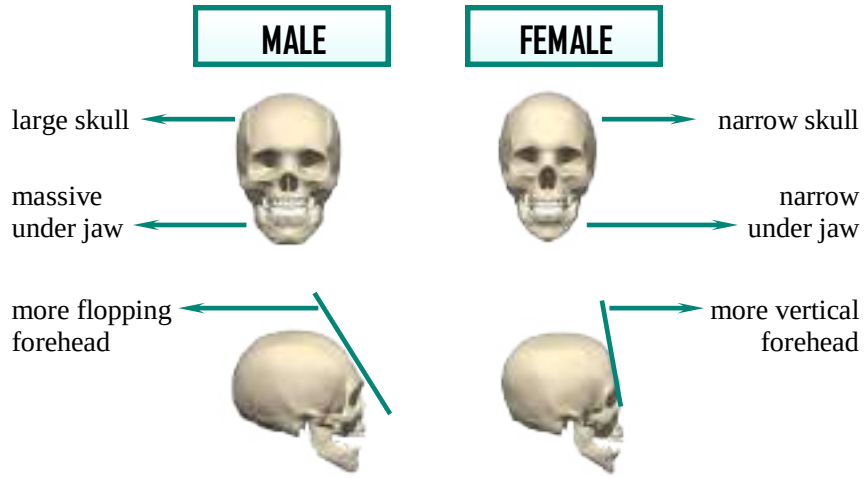
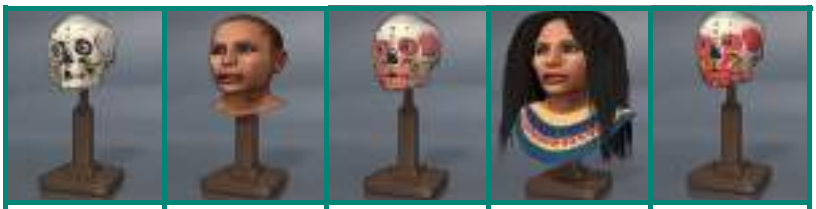


Fig.113. Male and female skulls

Male:				
Female:	1	2	3	4

5. *Sometimes criminal investigation requires victim's face reconstruction. Match the pictures with the steps in facial reconstruction, then put them into the right order:*



1	2	3	4	5

Fig.115. Stages of face reconstruction

	DETAILED STEPS in FORENSIC FACE RECONSTRUCTION
	The individual muscles are sculpted in.
	Hair and accessories are added.
	They add the skin with wrinkles and pores according to the anatomy and age.
	Forensic anthropologists examine the skull and determine the age, sex, stature, ancestry, and any bone abnormalities. They add depth markers which are placed at the osteometric (specific measurable) points on the skull.
	The specialists in facial reconstruction finish the muscles on the face.

Did you know?

Face reconstruction is a process where experts recreate an individual's face from just his skull with the help of forensic science, osteology, odontology, anatomy and of course artistry.

Fig.114. Example of face reconstruction

To see more!

UNIT 5 After death analysis

Video study!

6. Video "FBI AGENTS' TRAINING AT 'BODY FARM' ".

a) Before watching, analyse the freeze-frame (fig.116) and the words starting the video and try to give the full names of the abbreviations stated in it:

"We're here today at the Anthropology Research facility working with FBI ERTs on the Human Remains Recovery Course".

FBI stands for _____
_____.

ERT means _____
_____.

ARF abbreviates _____
_____.

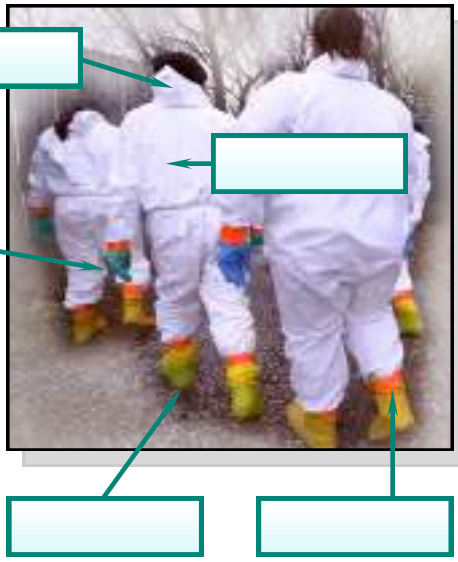
Fig.116-117. Video freeze-frames

b) Sum up the information and answer the questions:

1. What are the main characters of the video?
2. Where does the action of the video take place?
3. What do the FBI ERTs deal with?
4. What is the main aim of the FBI ERT's training?

c) Watch the video for the first time. Analyse the protective clothes of the FBI ERTs.

_____
_____
_____
_____
_____
_____
_____.



What about you?

Why do **you** think the protective measures are so strong? Give some arguments.

Let's discuss!

The FBI ERTs' faces are hardly shown in the video. Why?

How can **you** comment it?

_____
_____
_____
_____
_____.

d) Agree or disagree. If the statement is false, make it correct:

1. At the ARF the FBI ERTs deal with real crime scenes graves. ***(T/F)***
2. ERTs are trained how to recognise graves, excavate graves, surface remains, document all the evidence and make sure that they got all relevant clues. ***(T/F)***
3. It's required for ERTs to put on protective clothes to protect themselves and to keep the integrity of the scene. ***(T/F)***
4. Crime scenes with hidden human remains give no challenge for forensic experts as it's rather easy to process such areas. ***(T/F)***
5. There is no algorithm of ERTs' actions in human remains recovery. ***(T/F)***
6. Sometimes it's very difficult to recognise bones fragments as they look like rocks. ***(T/F)***
7. In graves excavating ERTs look not only for bones, but for any bits of evidence (teeth, bullets, pieces of clothing) that might be really important to the case. ***(T/F)***
8. The human remains at the ARF are ones of real victims. ***(T/F)***

e) Watch the video again and match the freeze-frames with the human remains recovery steps:

Fig.118-125. Video freeze-frames

To read more!

	DETAILED STEPS in HUMAN REMAINS RECOVERY
	While excavating the grave every piece of dirt goes through the sift not to miss bones or other evidence.
	Skeletal remains are carefully cleaned out with brushes.
	ERTs use probes to find graves. They are trained on how to feel the difference between the undisturbed and the disturbed soil - this helps locate graves.
	The remains and every piece of evidence associated with the body and the grave must be mapped, photographed and inventoried.
	Once the margins of the grave is defined, ERTs start excavating the grave, taking down the soil, layer by layer, thin layers (or levels).
	The grave must be completely exposed.
	CSIs lay out a grid in the area where they think the grave might be. Then they take photos of it.
	The remains are removed to let the agents to scrape the bottom of the grave (go down another 20 centimeters or so) to make sure the area is clear of evidence.

Put the steps in the right order: | | | | | | | | |

f) Think & answer:

_____

_____ .

What about you?

What new information did **you** learn from the video?

UNIT 5 After death analysis

Check yourself!

1. Give the English equivalents for the following Latin words and word combinations.

Post-mortem - _____.
Mortis - _____.
Pallor mortis - _____.
Algor mortis - _____.
Rigor mortis - _____.
Livor mortis - _____.

2. What are the differences between a medical examination and an autopsy? Tick ✔ the box that best corresponds to the statement. More than one variant is possible:

	MEDICAL EXAMINATION	AUTOPSY
1. It's done by a forensic pathologist.		
2. Medical training is required for performing it.	✔	✔
3. It's performed by a ME.		
4. It deals with dead bodies.		
5. It's done in a morgue.		
6. It's realised at a crime scene.		
7. It helps to determine an approximate time and cause of death.		
8. It's also called post-mortem examination.		
9. It helps to determine the exact time and causes of death.		
10. It includes external examination of a corpse.		
11. When carrying it out, a specialist analyses post-mortem changes.		
12. When carrying it out, a specialist deals with body internal organs, body fluids.		

Sum up the information and write down the description of a medical examination and an autopsy:

Medical examination _____
_____
_____
_____.

Autopsy _____
_____
_____
_____.

3. Write down the titles of the stages of decomposition:

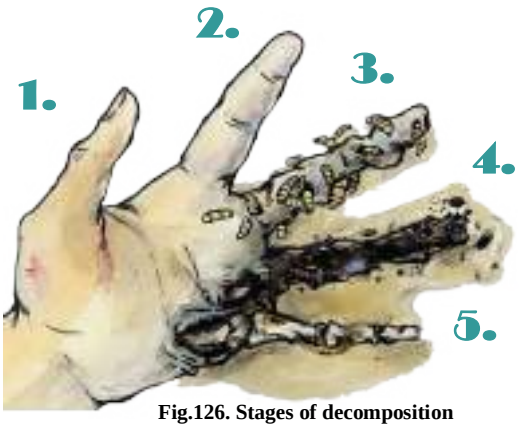


Fig.126. Stages of decomposition

1. _____.
2. _____.
3. _____.
4. _____.
5. _____.

4. Guess which of the stages is described?

1. The body bloats.
2. Insects activity is significant.
3. As a rule, it lasts up to 72 hours.
4. All soft tissues are removed from the cadaver.
5. Most of remains blacken.
6. Skin begins to change colours and something called “marbling” happens.
7. This phase is marked by strong smell and the greatest mass lost.
8. There are no significant external changes except some paler or darker places in appearance.
9. Putrefaction starts.
10. Putrefaction is nearly completed.
11. Remains are partially or completely skeletonised.
12. A dead body is called decaying flesh.

5. What do the following figures correspond with?

1. 15 min - 2 hrs after death
2. 3-8 hrs after death
3. 8-36 hrs after death
4. more than 36 hrs after death
5. up to 72 hrs after death
6. 4-10 days after death
7. 10-25 days after death
8. 25-50 days after death
9. more than 50 days after death

a) advanced decay
b) rigor mortis: warm and stiff
c) fresh stage
d) pallor mortis
e) bloating
f) rigor mortis: cold and not stiff
g) active decay
h) rigor mortis: cold and stiff
i) skeletonisation

1	2	3	4	5	6	7	8	9

Test on-line!

6. Agree or disagree. If the statement is false, make it correct:

1. Physiological changes occur in bodies just after death. ***(T/F)***
2. There are 5 post-mortem changes: pallor mortis, algor mortis, rigor mortis, livor mortis, and skeletonisation. ***(T/F)***
3. Livor mortis is evaluated according to rectal temperature. ***(T/F)***
4. Body temperature goes down until matching ambient temperature. ***(T/F)***
5. A dead body stiffs twice. ***(T/F)***
6. Rigor mortis is the first post-mortem sign. ***(T/F)***
7. Active lividity stains can indicate the position of a corpse after death. ***(T/F)***
8. Bloating is the first sign of putrefaction. ***(T/F)***
9. Insects activity is significantly reduced 50 days after death. ***(T/F)***
10. Skeletal remains examination helps determine the age, sex, stature, ancestry, past trauma and hypothetical cause of death of a victim. ***(T/F)***

UNIT 5 After death analysis

7. Study the template of an autopsy report. Try to fill it in according to the story given below.

Pathologist Name:

Case #

Autopsy Report

Who is the Deceased?

Name:

Age:

Sex:

Address:

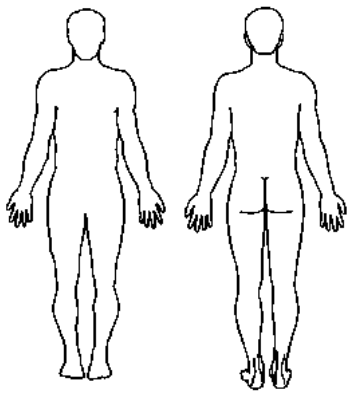
City, State, Zip

Phone #

Age	Race	Sex	Length	Weight	Eyes	Hair	Beard

Blood Type	Contents in Blood	Rigor Mortis	Liver Mortis

Marks and Wounds



Probable Cause of Death

Date of Autopsy	Location of Autopsy

Fig.127. Autopsy report template

A cold and stiff dead body of Sarah Brown, a young woman of 25, was found dead in her apartment (803 Clark Lane, 10032, NY), lying on the floor.

The external examination of Sarah's body gave the following results:

• female, white, brunette, over six feet tall, 130-140 pounds;

• some bruises around the neck and multiple stab wounds to torso (2 wounds - in the heart area, 3 wounds - in the right region of lower abdomen). Lack of blood at the crime scene suggests stab wounds made post-mortem.

Chemical body fluids analysis revealed traces of sleeping pills and alcohol in the blood.

8. Review all the information on the stages of decomposition, post-mortem changes. Speak in details on the responsibilities of MEs, forensic pathologists, forensic entomologists and forensic anthropologists:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____.

What about you?

How do **you** understand this phrase? What story can a dead body tell? Give some examples.

9. Make a conclusion.
Analyse the phrase famous in a medical community:

"A DEAD BODY CAN TELL".

_____

_____

_____

_____.

UNIT 6

TYPES of EVIDENCE

Audio Glossary

Glossary

Evidence (n) - an item (items) from a crime scene that can prove the guilt or the innocence of a suspect

1. ***Direct evidence (n) -*** evidence that, if true, establishes a fact of a crime and proves directly the guilt of an offender (e.g., confessions, audio or visual recording of the act of a crime, etc.)

Indirect evidence (n) =
Circumstantial evidence (n) - evidence that doesn't prove directly the guilt of a criminal, but can link him to a crime scene (e.g., fingerprints or hair found at a crime scene, bloodstains, etc.)

Personal testimony (n) - a witness statement about a crime or a person who committed it

2. ***Class evidence (n) -*** evidence common to a group of objects or people; it can not be linked to a single source (e.g., synthetic fibres, blood type, shoeprints without specific wear patterns, etc.)

Individual evidence (n) - evidence that can be linked with only one single source (e.g., fingerprints, handwriting, DNA samples of a person; fired bullets, tool marks, etc.)

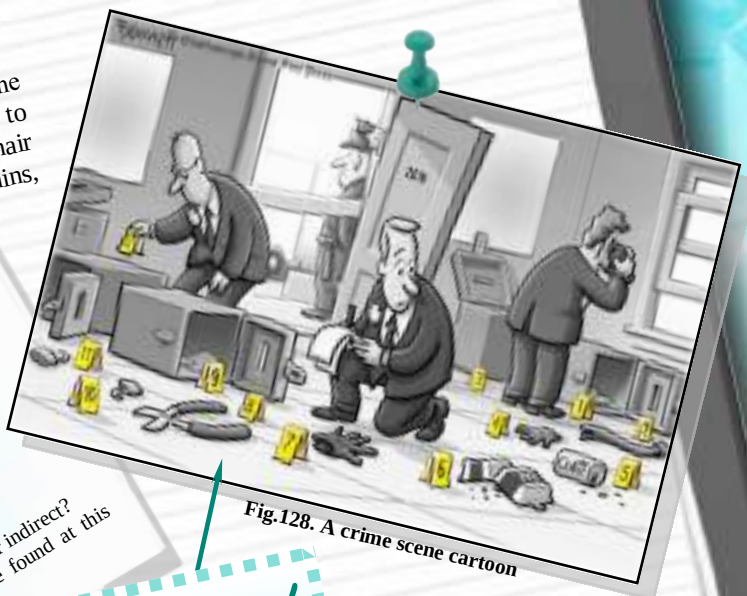


Fig.128. A crime scene cartoon

Look it up!

1. What kind of crime do you think it is?
2. Can you guess which country this crime was committed in? What details can help you make up your mind?
3. What are all of the depicted people? What are they doing?
4. How many pieces of evidence are found at a crime scene?
5. Name all the evidence discovered.
6. What is used to mark them?
7. Are these pieces of evidence direct or indirect?
8. Where can individual evidence be found at this crime scene? Explain your choice.

UNIT 6 Types of evidence

Word bank!

1. *Study the different expressions with the key-word "evidence". Divide them into evidence types, evidence nature (see p.66) and evidence examples:*

1. DNA evidence
2. liquid evidence
3. handwriting evidence
4. easily lost evidence
5. living biological evidence
6. circumstantial evidence
7. class evidence
8. footwear evidence
9. drug evidence
10. solid evidence
11. dispute document evidence
12. fingerprint evidence
13. ballistics evidence
14. fragile evidence
15. transient evidence
16. individual evidence
17. wet evidence
18. blood evidence
19. moist evidence
20. direct evidence
21. trace evidence
22. saliva evidence

Keep in mind!

The word ***evidence*** is an ***uncountable noun*** and ***is not used in the plural***. So, "evidence" is always followed by a singular verb:

*E.g. All the evidence **was** properly collected.*

When talking about one fact, sign, object, or their large number, use:

- **an item / items of evidence**;
- **a piece / pieces of evidence**;
- **a clue / clues from a crime scene**.

*E.g. Easily lost pieces of evidence **were** collected first.*

TYPES OF EVIDENCE	EVIDENCE NATURE	EVIDENCE KINDS / EXAMPLES
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
	5.	5.
	6.	6.
	7.	7.
	...	...

Be attentive!

direct [dɪ'rekt], [daɪ-] *(adj)*
indirect [ˌɪndɪ'rekt], [-daɪ-] *(adj)*

circumstance ['sɜ:kəmstæns] *(n)*
circumstantial [ˌsɜ:kəm'stænʃ(ə)l] *(adj)*

What about you?

After **your** professional training **you** will be allowed to make expertise of some kinds of evidence.

Do **you** have any idea what they are?

3. *Analyse the given information, then fill in the gaps in the following statements :*

1. A lot of _____ were left by a perpetrator at a crime scene.
2. All the _____ was marked with _____ flags.
3. Each _____ should be documented.
4. All found _____ can prove the guilt or the innocence of a suspect.
5. _____ links a criminal with a crime.
6. These _____ are considered as circumstantial _____.
7. You must use individual container for each _____.
8. _____ is a link chain between a victim, a perpetrator and a crime scene.
9. A criminal left no visible _____ at a crime scene.
10. The _____ points to her as the prime suspect.

EVIDENCE

ITEM / PIECE OF EVIDENCE

ITEMS / PIECES OF EVIDENCE

4. Skim the information about E. Locard and his developed exchange principle. Audio text

How does this principle sound like?

_____.

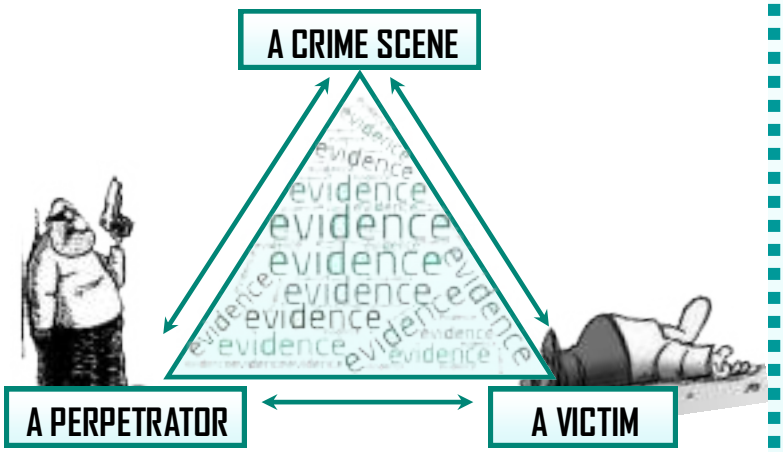
Write down the main idea of Locard's exchange principle:

_____
_____
_____
_____
_____
_____
_____.

Make a conclusion. What is the role of evidence, no matter how tiny it is?

_____
_____
_____.

5. Study the evidence linkage triangle based on the E. Locard's principle of exchange:



What and who does evidence link?

_____
_____
_____.

How does understanding this evidence linkage triangle help in proving a suspect's guilt or innocence? Complete the statements given below:

1. Establishing strong interrelationships between a crime scene, a perpetrator and a victim proves the criminal's _____.
2. Any reasonable doubt in interrelationships between a crime scene, a perpetrator and a victim can prove the criminal's _____.

Did you know?

EDMOND LOCARD (1877-1966)
Contact exchange principle


Fig.129. E. Locard

Edmond Locard is one of the most important figures in the history of forensic science.

He worked as a medical examiner during World War I and was able to identify causes and locations of death by looking at stains or dirt left on soldiers' uniforms.

Fig.130. E. Locard

In 1910 he opened the world's first police laboratory in Lyon, France.

He was compared with **Sherlock Holmes** as like Doyle's fiction character he worked with a great faith in analytical thought, objectivity, logic and scientific fact.

He developed what would become known as **Locard's exchange principle: "Every contact leaves a trace"**.

He believed that every criminal can be linked to a crime by tiny particles either carried from the scene or left there. The task of criminalists is only to detect them.

Locard's exchange principle **"Every contact leaves a trace"** marked a new era in the history of forensics.

From there on, police believed ***every criminal can be caught, the only task is to detect his traces*** left at a crime scene or carried from it.

UNIT 6 Types of evidence

Evidence definition

Did you know?

The term ***evidence*** is derived from the Latin term ***evidere*** that means ***to show clearly***, ***to discover***, ***to ascertain*** or ***to prove***.

Evidence is a means of proof.

1. Make up the fullest definition of evidence using the variants given below:

is a clue from a crime scene
can link a crime scene, a perpetrator and a victim
can prove the guilt or the innocence of a suspect
ultimately assists the police in their investigation
can considerably narrow the list of the suspects

Evidence (is) _____

_____

_____

_____.

Did you know?

PAUL L. KIRK
(1902-1970)

Fig.131. P.L.Kirk

Paul L. Kirk was an American chemist, a forensic scientist specialised in microscopy.

He published more than 250 articles in multiple forensic fields.

Being **an ardent advocate of the Locard's principle** (*do you remember it?*), he believed in the power of evidence.

2. Read the statement of P.L. Kirk about evidence:

"Wherever he steps, wherever he touches, whatever he leaves, even without consciousness, will serve as **a silent witness against him**.

Not only his fingerprints or his footprints, but his hair, the fibres from his clothes, the glass he breaks, the tool mark he leaves, the paint he scratches, the blood or semen he deposits or collects. **All of these and more, bear mute witness against him**.

This is evidence that **does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence**. Physical evidence **cannot be wrong,** it **cannot perjure itself,** it cannot be wholly absent. **Only human failure to find it, study and understand it, can diminish its value**."

P.L. Kirk

Audio text

Complete your definition of the evidence (from ex.1, p.96) with the eloquent and metaphorical ideas of P. L. Kirk:

Evidence (is) _____

_____

_____

_____

_____

_____

_____

_____

_____.

3. Learn P. L. Kirk's statement and your own evidence definition by heart.

Look it up!

4. Write down all possible synonyms for the term "EVIDENCE":

_____

_____

_____

Types of evidence

UNIT 6

Evidence classifications

1. DIRECT or INDIRECT?
Study the common global classification of the evidence:

Fig.132. Oral testimonies

Evidence is divided into 2 global groups: direct evidence and indirect (circumstantial) evidence.

Direct evidence is evidence that establishes a fact of a crime (an eyewitness's or victim's firsthand testimony; confessions, audio or visual recording of the act of a crime).

Fig.134. Video record of a crime

Indirect (circumstantial) evidence doesn't prove directly the guilt of an offender, but can link him to a crime scene (fingerprints or hair found at a crime scene, dirt on the boots sole, fired bullets, bloodstains, etc.).

Fig.133. Indirect evidence

Audio text

Be aware!

"Direct" does not mean better!

Indirect evidence is more objective, while ***direct one is subjective.***

Moreover, in general, direct evidence is not always credible:

- Eye-witnesses can be mistaken when identifying perpetrators or remembering certain events.
- Flawed questioning techniques can lead to false testimony and confessions.
- The age of the eyewitness and the passing of time since the event can also lead to faulty testimony.

2. Determine the type of the following evidence:

DIRECT EVIDENCE	
INDIRECT EVIDENCE	1,

1. Ash in the car ashtray.
2. Lipstick print on the glass of wine.
3. Audio record of a crime.
4. Explosive device fragments.
5. A pistol with a suspect's fingerprints.
6. A suspect's confession in the crime committing.
7. A victim's wound.
8. Skeletal remains found in the forest.
9. Eyewitnesses' testimonies of the crime committing.
10. John testifies that he saw Tom raise a gun and fire it at Ann and that Ann then fell to the ground.
11. John testifies that he saw Tom and Ann go into another room and that he heard Tom say to Ann that he was going to shoot her, heard a shot, and saw Tom leave the room with a smoking gun.

3. Look at the perpetrator identifying scene and read the eyewitness testimony:

I SAW A PERPETRATOR COMMITTING A CRIME... I REMEMBER ALL THE DETAILS! I'M NOT SURE ABOUT HIS HEIGHT... AND WEIGHT.. AND AGE... BUT IT WAS AN ABSOLUTELY CRIMINALLY-LOOKING MAN..

Fig.135. Perpetrator identifying

What type of evidence is it - direct or indirect?

Is the testimony credible and objective? Why? _____

_____

_____.

UNIT 6 Types of evidence

Let's discuss!

Why does ***documentary evidence*** refer to ***direct*** and ***indirect evidence*** at the same time?

Give some examples of direct documentary evidence and indirect documentary evidence.

4. Study one of numerous EVIDENCE detailed classifications. Match the different types of evidence (given in the table) with their descriptions:

DIRECT EVIDENCE	**Oral (testimonial) evidence**	
INDIRECT (CIRCUMSTANTIAL) EVIDENCE	**Documentary evidence**	
	Material (physical) evidence	
	Biological evidence	
	Chemical evidence	
	Trace evidence	

a)

Audio text

This kind of evidence is anything relating to **living beings** - it may consist of **body fluids** (blood, saliva, semen, body oil, sweat), **body parts** (fingers, nails, hair, eyelashes, teeth, etc.), **bones fragments** and **skeletal remains**, **skin**, **DNA**, **dandruff**, **ear wax**, etc.

b)

Audio text

This kind of evidence is **personal testimony**. Police interview witnesses and victims, interrogate suspects and fill in the report fixing everything they remember.

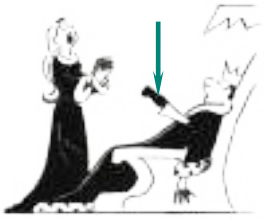
This evidence, if true and credible, can help **establish the motive** and **corroborate the alibi**.

c)

Audio text

This kind of evidence includes chemical **toxic** and **poisonous** substances (poison, gas) and **drug items** which are divided into **medicines** and **narcotics**. **Syringes**, **needles**, **pipes**, **plastic bags** are considered as this type of evidence if they contain some amount of drug.

d)



Audio text

This type of evidence can include **large items** such as damaged cars, smashed doors or even metro station, and **items minuscule in size** such as broken glass, clothing fibres. Field scientists may also collect **weapons** (knives or guns) or **fired bullets** and **spent casings**.

e)

Audio text

This evidence covers **very small** items found only by means of **a microscope** or **ultraviolet light** (some stains, trace amount of dirt, paint chips, pollen, wood splinters) and all kinds of **prints** (finger-, foot-, palm-, lipstick prints) and **impressions** (tire tracks, bite or tool marks).

f)

Audio text

This type of evidence might include a **video**, a **photo** or an **audio** of a crime scene. Also all kinds of **documents - typed** (such as e-mails, wills, messages, a printout of calls) or **handwritten** (a suicide's note, letters, a diary) can be found in this evidence list.

Fig.136. Different types of evidence

5. Determine the type of the evidence given below:

Examples	Oral (testimonial) evidence	Documentary evidence	Physical evidence	Biological evidence	Chemical evidence	Trace evidence
1. some paint chips						
2. 10 grams of white powder on the table						
3. a suicide's note						
4. some amount of skin under the victim's nails						
5. dirt on the victim's skirt						
6. the eye-witnesses' testimonies						
7. fabric samples with bloodstains						
8. tire tracks of a suspect's vehicle						
9. hair on the victim's bed						
10 a syringe with some substance						
11. a cup with fingerprints						
12. a will of the victim						
13. a printout of phone calls						
14. pills in the victim's pocket						
15. a video record of the crime						
16. saliva for DNA testing						
17. some stains on the wall						
18. an undetonated bomb						
19. broken glass next to the dead body						

Be attentive!

sweat [swet] *(n)*
wax [wæks] *(n)*
syringe [sɪ'rɪmʤ] *(n)*
ultraviolet [ˌʌltrə'vaɪələt] *(n)*
alibi ['ælɪbaɪ] *(n)*

Look it up!

Look up and add your own variants.

6. Look through the pages and write down all the mentioned pieces of evidence. Divide them into 4 types (according to the evidence classification):

PHYSICAL EVIDENCE

BIOLOGICAL EVIDENCE

CHEMICAL EVIDENCE

TRACE EVIDENCE

UNIT 6 Types of evidence

7. CLASS versus INDIVIDUAL evidence. What is the difference?

All evidence bears class characteristics. Individual characteristics may or may not be present.

Fig.137. Footprints:

Class evidence: Nike running shoes, men's, 42 size.

Individual evidence: Nike running shoes, men's, 42 size; unique wear and cuts in sole of shoes.

Audio text

The best evidence is anything that **can be linked to a unique, single specific source** (person or object). This is called **individual evidence**. Examples are fingerprints, voiceprints, handwriting, DNA patterns of a person; fired bullets, a piece of broken glass which fits exactly to another, like a jigsaw puzzle piece, etc.

Unfortunately, most evidence is **class evidence**. This means that the object has characteristics **common to a group of similar objects**, but **not to one single object**. Examples are fibres, blood type, car model, shoe size, etc. This type of evidence can not indicate a particular criminal, but it can narrow down a list of possible suspects.

Keep in mind!

In the analysis of individual evidence the verb ***to individualise*** is often used.

It means ***to match, to associate with a person / an object***.

E.g. A fired bullet can be individualised to a weapon (uniquely associated with it).

8. Agree or disagree. If the statement is false, make it correct:

1. All evidence bears individual characteristics. ***(T/F)***
2. "To individualise" means "to narrow down a list of possible suspects". ***(T/F)***
3. Individual evidence can link a crime scene and a victim with a particular criminal. ***(T/F)***
4. Evidence with characteristics common to a group of similar objects are class evidence. ***(T/F)***
5. Individual evidence helps identify a person. It can be a fingerprint, a voiceprint, a DNA pattern, a person's handwriting, and his blood type. ***(T/F)***

Let's discuss!

Analyse the got list of class evidence.

Can **you** imagine and offer the circumstances under which all of the stated pieces of evidence could be individualised?

9. Determine the type of the evidence:

INDIVIDUAL EVIDENCE	
CLASS EVIDENCE	**1,**

1. Shoeprints without specific wear patterns.
2. A synthetic fibre.
3. Hair with no root (no follicle).
4. Hair with a follicle.
5. Shoeprints with unusual cuts in soles.
6. Tracks of new tires.
7. A handwritten letter.
8. Saliva at a crime scene.
9. Fired bullets.
10. Manufactured bullets in a transportation box.
11. DNA extracted from blood samples.
12. Shoe prints without individual wear pattern.
13. Identical matches found at the scene of an arson and in the pocket of a suspect.
14. A unique key from the safe.
15. A cut piece of white paper.
16. A torn piece of a photo.
17. Blood type.

Be attentive!

individualise [ˌɪndɪ'vɪʤuəlaɪz] *(v)*
associate [ə'səuʃɪeɪt] *(v)*
unique [ju:'ni:k] *(adj)*
follicle ['fɔlɪkl] *(n)*

Types of evidence — UNIT 6

10. Analyse the situations and the pieces of evidence given below. Can the clues be individualised?

1. Some blond hairs were found on the gloves of a suspected kidnapper who has brown hair. Would they be considered class or individual evidence?

2. Some powder was found in a plastic bag in a suspect's pocket. Some similar powder was found on the victim. Can the first powder be individualised to the second powder?

3. A bloody knife has been found in the backyard of a murder suspect. Is it a class evidence? Under what circumstances could it be individualised?

4. A cigarette butt was found at the scene of a crime. Can it be uniquely associated with a cigarette package? And with the person who smoked it?

5. Pieces of a broken bottle were found at the scene of a crime. The bottom of a bottle was found in a suspect's car. Can the pieces of the bottle be individualised with what was found in the suspect's car?

6. A pair of latex gloves was found at the scene of a robbery. A box of the same brand of latex gloves was found at a suspect's home. Can the gloves be individualised to the box?

Fig.138-141. Class or individual pieces of evidence

11. Video "TYPES OF EVIDENCE".

a) Fill in the table with the information from the video:

TYPES OF EVIDENCE	DESCRIPTION	EXAMPLES
Physical		
Non-physical		
Real		
Demonstrative		
Known		
Unknown		
Class		
Individual		

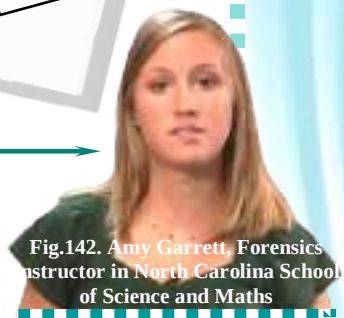


Fig.142. Amy Garrett, Forensics instructor in North Carolina School of Science and Maths

Video study!

b) Analyse the concept "physical evidence" given in the video. Have you caught the difference between its meaning from the studied classification (p.98) and this one? Try to explain it.

What about you?

UNIT 6 Types of evidence

Fig.143. Benedict Cumberbatch as Sherlock Holmes

12. *Watch a short fragment from the BBC series about Sherlock Holmes "A study in pink".*

A woman in pink lies dead in a derelict house. She is the fourth in a series of seemingly impossible suicides. Detective Inspector Lestrade knows that there's only one man who can help…

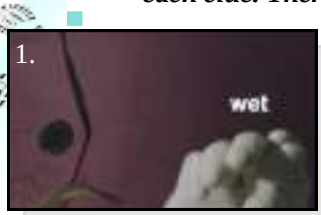
Case study!

a) Analyse the crime scene and answer the questions:

1. Where was the crime committed - indoors or outdoors?
2. Is the integrity of the scene preserved?
3. Can you imagine the area perimeter - how big the crime scene is?
4. Who is the victim? Is the victim alive or dead?
5. What about people at the crime scene - Sherlock Holmes, Dr. John Watson and Inspector Lestrade? Are they all wearing full crime scene suits?
6. What pieces of protective clothes is each of them wearing?

Fig.144. Video freeze-frame

b) Look at the video freeze-frames, name all the evidence you have caught, determine the type of each clue. There can be several pieces of evidence in one photo:



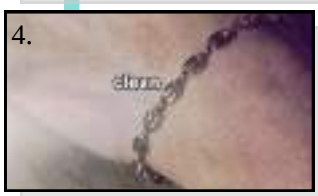


Fig.145-151. Video freeze-frames

EVIDENCE (photo #)	TYPE OF EVIDENCE (according to the known classifications)
1.	
2.	
3.	
4.	
5.	
6.	
7.	

c) What other pieces of evidence have you seen in the video? Determine their type:

_____

_____

_____.

d) Do you remember the solution of this crime puzzle? What is the cause of all the victims' death? What type of evidence is it?

_____

_____.

Case study!

13. Try to be Sherlock Holmes yourself.
Watch the short videos "DETECTIVE RIDDLES" and try to solve them.

Analyse the plot of each riddle and determine:
- ***the crime scene perimeter(s),***
- ***the cause of the victim's death,***
- ***the pieces of evidence & their type according to all the known classification.***

a) A video detective riddle "ICE TEA":

Fig.152. Video freeze-frame

Video riddle

Two young ladies were having dinner together. They both ordered ice tea. One of them was very thirsty and drank very fast. She had five glasses during the time the other drank only one.

Tragically, the girl who was nursing her drink and drinking slowly died. The other stayed alive. But it turned out that all the drinks they had been served contained poison.

How is it possible that the girl who drank more survived?

(**Answer**: In fact, the poison was contained in the ice. The ice in the tea of the girl who drank fast didn't have time to melt. But the ice cubes in the other girl's drink, melting, released the poison

Fig.153. Video freeze-frame

Video riddle

b) A video detective riddle "CRIME SCENE":

A man killed his wife in their car. He used a knife which he later threw away into an abyss where nobody was going to find it. His wife's body he took out of the car. He was very careful and left no fingerprints. After that, he headed home. In a couple of hours, he got a call from the police.

They informed him that his wife had been killed, and he had to arrive at the crime scene right away.

As soon as he got there, however, he was suspended for the murder.

How did the police realise it had been him who was guilty?

(**Answer**: The husband wasn't informed of the definite location of the crime scene. Despite that, he came to the right place).

c) A video detective riddle "SUICIDE OR MURDER":

Fig.154. Video freeze-frame

Video riddle

A detective comes to a crime scene. A man is said to jump out of a window of an abandoned building and commit suicide. The detective goes inside the building to the first floor, to the room at the front.

He lights a cigarette, goes up to the window which faces the dead man, opens it and throws the cigarette out. Then he goes to the second floor and does the same. He continues until he has visited all the floors and repeated the action again and again. Then he returns to his team and says that it was no means a suicide, but a murder.

How did he find it out?

(**Answer**: When a person commits suicide jumping from a high floor, he doesn't tend to close the window behind him. But in this case none of the windows which faced the dead man were left open. It means that there was somebody who closed them after the man had died.

UNIT 6 Types of evidence

Check yourself!

1. Give the definition of the term "evidence". Use the words and word combinations given below:

Evidence (is) _____

_____

_____

_____

_____

_____ .

- *a mute witness*
- *a silent witness*
- *never perjures itself*
- *never forgets*
- *never lies*
- *narrow the list of the suspects*
- *prove the guilt or the innocence*
- *can link the criminal with the crime scene and the victim*
- *clue from a crime scene*

What about you?

Study the poster.

How do **you** understand its message? Give some arguments to support **your** ideas.

Fig.155. Poster on evidence

2. Give all possible synonyms for the term "evidence":

_____

_____

_____

_____

_____ .

3. Locard's exchange principle. What does it sound like?

_____ .

What is its main idea?

_____

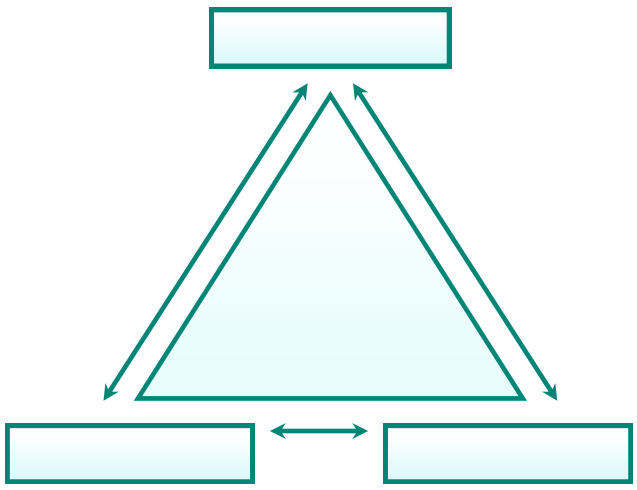
_____

_____

_____

_____ .

4. Fill in the elements of the evidence linkage triangle:



Describe the interrelationships of the elements and the role of evidence:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ .

5. Fill in the table with the missed elements of the studied evidence classifications.

DIRECT EVIDENCE	… EVIDENCE	CLASS EVIDENCE	… EVIDENCE	KNOWN EVIDENCE	… EVIDENCE	REAL EVIDENCE	… EVIDENCE
Type description							
…	evidence that doesn't prove directly the guilt of a criminal, but can link him to a crime scene	…	anything that can be linked to a unique, single specific source (person or object).	…	evidence the source of which can not be determined without performing laboratory testing	…	any kind of things created for presentation of the event of a crime in a courtroom
Examples							
• an eyewitness's or victim's first-hand testimony, • confessions, • audio recording of the act of crime, • audio recording of the act of crime	• a ransom note, • skeletal remains, • bite marks, • … , • … , • … , • …	• synthetic fibres, • blood type, • tire tracks, • shoeprint without specific wear patterns, • … , • … , • … , • …	• DNA pattern, • handwriting, • fingerprints, • fired bullets, • … , • … , • … , • …	• blood of a victim taken at a crime scene, • … , • … , • … , • …	• blood stain found at a crime scene, • … , • … , • … , • …	• a crime weapon, • casings, • footprints, • … , • … , • … , • …	• photos, • diagrams, • x-rays, • models, • … , • … , • … , • …

6. Divide the pieces of evidence into 4 types - physical, chemical, biological and trace:

Saliva of a victim (1), some bottle with a suspicious substance (2), torn pieces of currency (3), a knife (4) with blood stains (5), palm prints (6), a detonated explosive device (7), a syringe with a liquid drug (8), a dead body (9), poison (10) in a victim's cup of tea with latent fingerprints (11), skeletal remains (12), casings from fired bullets (13), broken glass (14), tire tracks (15), some keys (16), dirt under the victim's nails (17), teeth fragments (18), a pistol (19), a mobile phone (20).

Test on-line!

UNIT 6 Types of evidence

7. Study the depiction of a crime scene:

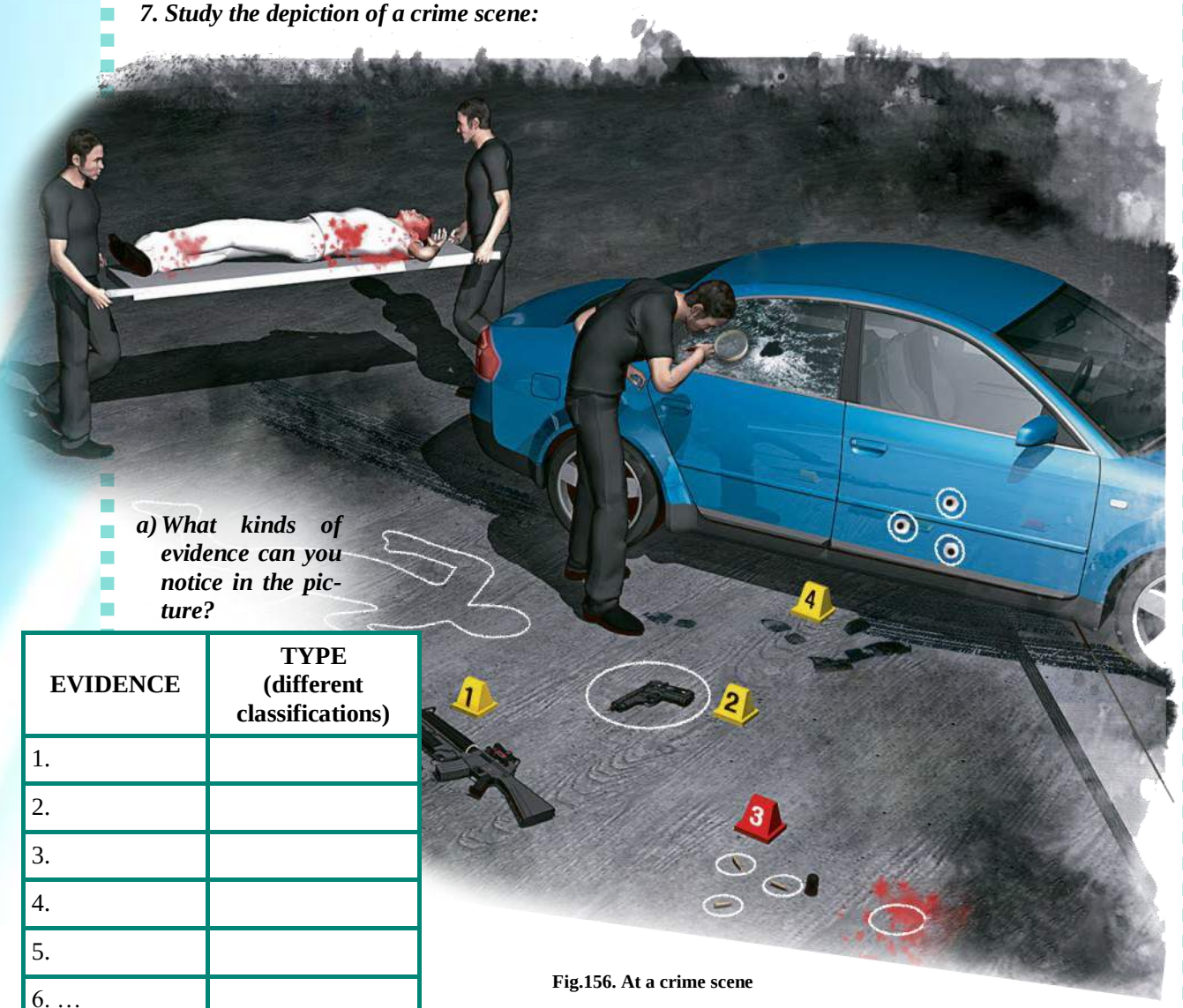


Fig.156. At a crime scene

a) What kinds of evidence can you notice in the picture?

EVIDENCE	TYPE (different classifications)
1.	
2.	
3.	
4.	
5.	
6. …	

b) Answer the questions:

1. Is the crime scene secured?
2. Are the field analysts wearing the right crime scene suit? What must they wear?
3. Is the integrity of the crime scene preserved?
4. What kind of evidence search methods could be applied? Why?
5. What is used to mark the found pieces of evidence?
6. Is the victim alive?
7. What are your ideas about what could happen according to the visible evidence?

_____
_____
_____
_____
_____.

UNIT 7

Forensic EVIDENCE EXPERTISE

Audio Glossary

Glossary

Criminal identification (n) - the cataloging of the characteristics of a person who has committed a crime for the first time or using those characteristics to ***identify*** a repeat offender

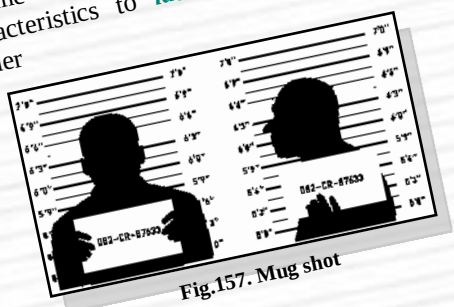


Fig.157. Mug shot

Anthropometry analysis (n) - the first forensic method of criminal ***identification*** which refers to the measurements of the human individual such as his height, head width, length of a torso, size of different parts of a body in order to reveal a recidivist

Fingerprinting (n) - the act of taking impressions of a person's fingerprints which can be used for ***identification*** purposes

Blood patterns analysis (BPA) (n) - the examination of bloodstain size, shapes, locations at a crime scene in order to recreate the actions that caused the bloodshed

Voice analysis (n) - the study of speech sounds for purposes other than linguistic content, as voice patterns are considered as proven human ***identifiers***

Forensic document examination (n) - the scientific analysis of disputed documents in legal investigations (suicide notes, ransom letters, contracts, etc)

Ballistics (n) - the examination of evidence relating to firearms at a crime scene, including the effects and behaviour of projectiles and explosive devices

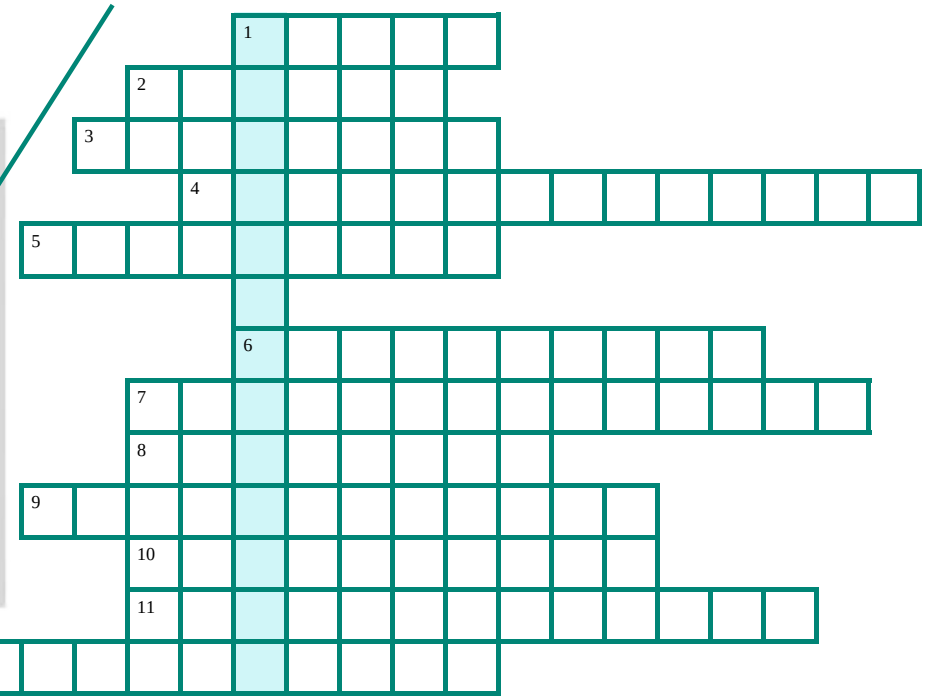
Trace evidence analysis (n) - the examination of microscopic substances from a crime scene with unique and ***identifying*** features

Fig.158-162. Different kinds of forensic expertise

UNIT 7 Forensic evidence expertise

Word bank!

1. ***Skim the glossary and do the crossword. Then complete the motto of forensic lab analysts with the key notion:***



Only our _ _ _ _ _ _ _ _ _ _ _ _ _ _ solve the case!

Fig.163. Forensic scientists' motto

1. Speech sounds of a person considered as his identifier.
2. Microscopic substances with unique and identifying features.
3. "Examination" in other words.
4. The act of taking a person's fingerprints.
5. Spilling blood in a violent crime.
6. A repeat offender.
7. Recognition of the person's identity.
8. A questioned document = a _____ document.
9. Determining physical quantitative characteristics like height, length, width, size = physical _____ .
10. A forensic examination of firearms, explosive devices and projectiles behaviour.
11. A forensic method of a criminal's identification through his physical measurements.
12. A print taken from a soft surface.

What about you?

How do **you** understand such a motto of forensic lab analysts?

Why is the **key notion** so important in crime investigation?

Let's discuss!

Come up with **your** own motto reflecting the main idea of forensic labs activities.

2. Study the glossary of typical kinds of forensic evidence expertise. Read the chains of the words and odd one out. Explain your choice:

1. Lab expertise - lab examination - lab analyst - lab test - lab investigation.
2. Fingerprints - voice prints - palmprints - handprints - impressions.
3. Height - width - age - length - size.
4. Bloodstain - blood pattern - blood sample - cold-blooded offender.
5. Bullets - projectiles - firearms - poisonous substance - explosive devices.
6. Hair - document in dispute - fibres - minute particles of broken glass - paint chips.
7. To collect - to identify - to recognise - to determine the identity.

3. *Analyse the glossary. Why are the highlighted words of the same root "identify", "identifier", "identifying", "identification" mentioned so often in the different expertise definitions?*

_____
_____
_____
_____.

What about you?

Think & answer.

4. *Study the pieces of evidence given below. What kinds of forensic expertise could be made?*

an audio message	a broken glass	a handwritten letter
a typed ransom note	blood on a knife	a fired bullet
a teeth fragment	poison in a wine glass	a paint chip of a car
some fibres	a fingerprint on a cup	a blood type
decomposing remains	a personal signature	a footprint
a cut ear	a hair with a follicle	a shoe wear pattern
semen traces	some hair	a torn piece of a bill

Be attentive!

identify [**aɪ**'dentɪf**aɪ**] *(v)*
identified [**aɪ**ˈdentɪf**aɪ**d] *(p.p.)*
identifier [**aɪ**ˈdentɪf**aɪ**ə] *(n)*
identification
[**aɪ**ˌdentɪf**ɪ**'keɪʃ(ə)n] *(n)*

What about you?

Have **you** got any idea which pieces of evidence can identify a person or an object?

Which ones can only indicate some class? (see p.102 for your help)

5. *Analyse the cartoon and the objects on the work table of the lab analyst. What kinds of forensic expertise are demonstrated in the picture? More than one variant is possible.*
Who or what is the forensic scientist trying to identify?

OBJECTS	EXPERTISE
1. a high boot	• a boot size → anthropometry analysis (identification of a criminal's height, probable age) • soil on the sole → geology expertise (…) • revealed fingerprints → fingerprinting (…) • some stain on the side → chemical examination (…) • ...
2. a blood sample	
3. some liquids	
4. ...	
…	

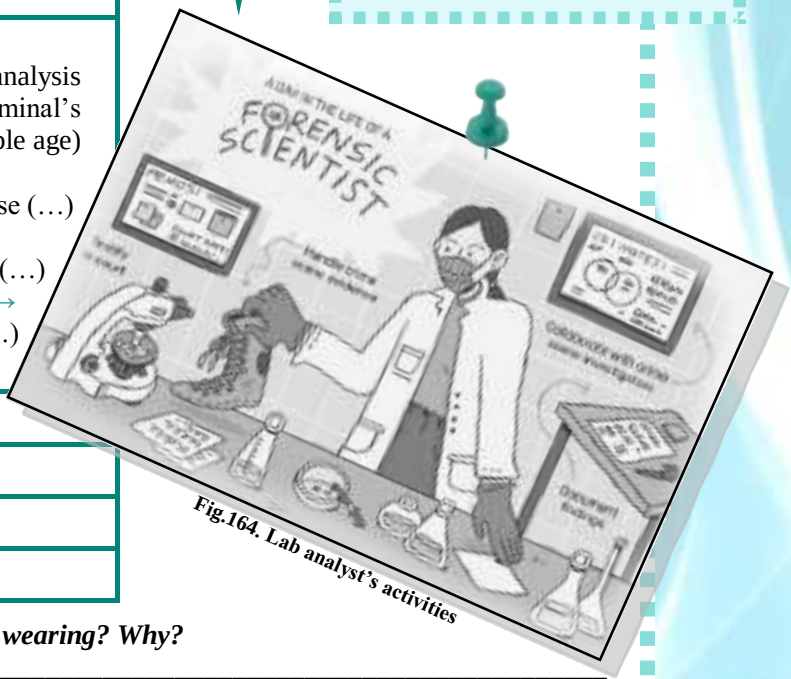


Fig.164. Lab analyst's activities

What protective clothes is the forensic scientist wearing? Why?

_____
_____.

UNIT 7 Forensic evidence expertise

Anthropometry expertise

1. Study the information on the anthropometry method of identification:

Anthropometry expertise is the first forensic method of criminal identification which refers to the measurements of a human individual such as height, head width, length of a torso, size of different parts of a body in order to reveal a recidivist.

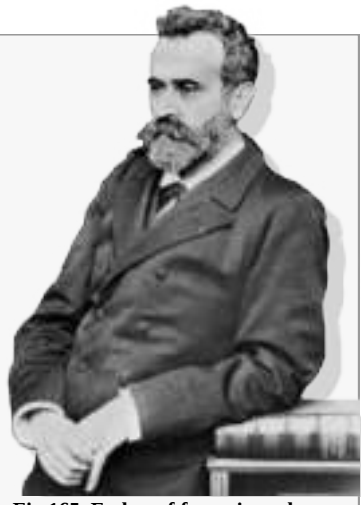


Fig.165. Father of forensic anthropometry and criminal identification

Anthropometry system was developed by _____ (?) who is considered by many to be the first forensic expert. He was a French criminologist and anthropologist who created the first system of **physical measurements**, full face and profile photography (**mug shot**), and perfectly **structured record-keeping** that police could use to identify repeat offenders.

Before _____(?), suspects could only be identified through eyewitness testimonies and unorganised files of photographs. Nowadays ***anthropometry*** ideas are realised in ***biometric*** **identification**.

Audio text

Be attentive!

height [haɪt] *(n)*
length [leŋθ] *(n)*
width [wɪtθ], [wɪdθ] *(n)*
forearm ['fɔː(r)ɑːm] *(n)*

Look it up!

Who is this forensics pioneer? _____.

What about you?

What do **you** consider as the most important Bertillon's heritage: anthropometry measurements, a mug shot method or record-keeping? Why?

2. Compare the highlighted notions "anthropometry" and "biometrics". What do they mean? Are they identical or different?

Anthropometry is _____
_____.
Biometrics is _____
_____.
So we can conclude that _____
_____
_____.

3. Look at the visual instruction for a forensic anthropometrist. Choose the body parts or characteristics to be measured to identify a recidivist:

reach	forearm	face	neck
length of a head	ear	width of a head	finger
foot	height	hand	palm
arm	nose	cheeks	waist
knee	leg	chin	toe

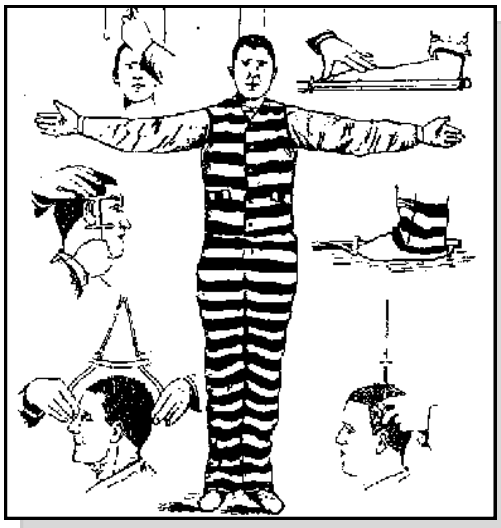
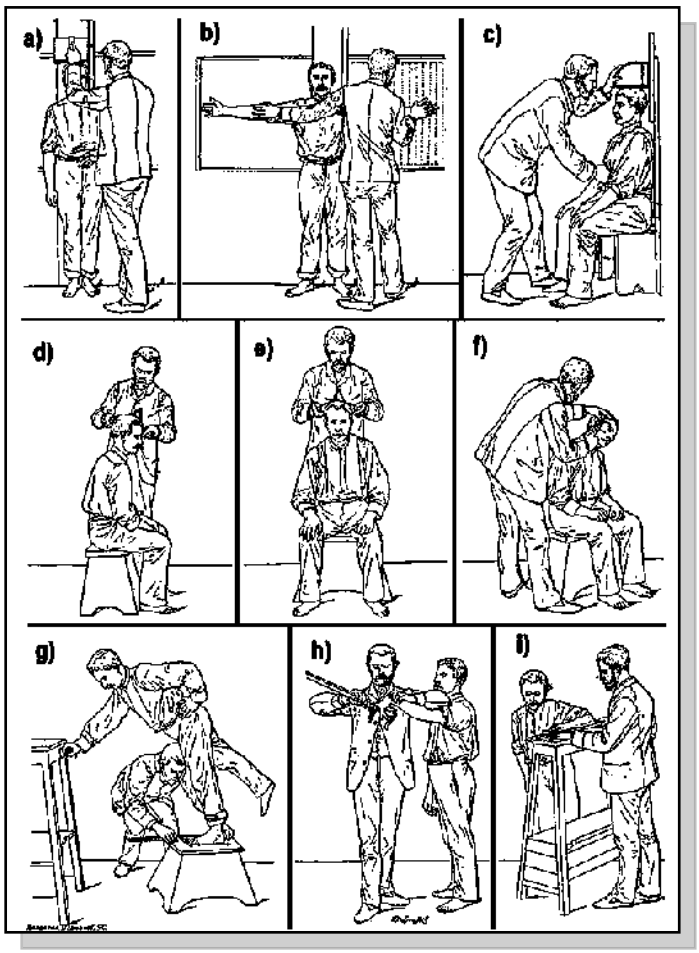


Fig.166. Human being's measuring

4. Match the anthropometry measurements with their depictions:



1. Right ear
2. Left foot
3. Height
4. Trunk
5. Width of head
6. Length of head
7. Reach
8. Left forearm
9. Left middle finger

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	

Fig.167. Human being's measurements according to A. Bertillon system

5. Make your self-portrait as a mug shot, take your own anthropometry measurements and complete your identification card:

PROFILE	FULLFACE	1. Name: _____ 2. Surname: _____ 3. Sex: _____ 4. Age: _____ 5. Apparent age: _____ 6. Nativity: _____ 7. Eyes colour: _____ 8. Hair colour: _____ 9. Weight: _____ 10. Height: _____ 11. Trunk: _____ 12. Reach: _____ 13. Width of head: _____ 14. Length of head: _____ 15. Right ear: _____ 16. Left foot: _____ 17. Left forearm: _____ 18. Left middle finger: _____

Did you know?

The history keeps the names of two criminals: ***Will West*** and ***William West***.

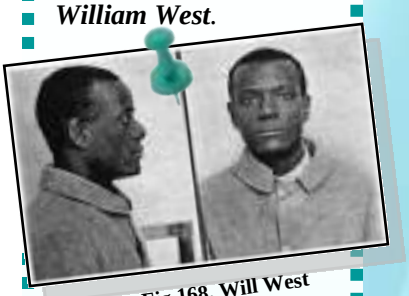


Fig.168. Will West

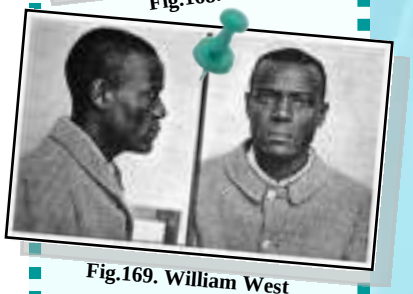


Fig.169. William West

They had almost the same names, almost the identical appearance and body measurements (according to Bertillon's system), but they were ***absolutely*** different people - ***forensic anthropometry failed*** and was replaced by ***fingerprinting***.

UNIT 7 Forensic evidence expertise

Fingerprinting

1. Study the information on fingerprinting:

Fingerprinting is the method where impressions of the minute skin ridge patterns found on the fingertips of a person are used for **identification.**

Fingerprints

A fingerprint is the impression left by the friction ridges of a human finger, mostly from the fingertips, and is often used for identification purposes.

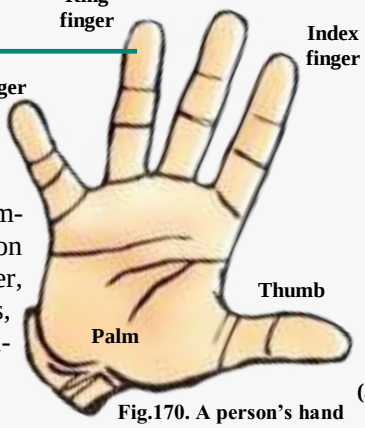


Fig.170. A person's hand

Fingerprint types

Everyone has a least one or more of the following prints patterns:

Arch (5% of people)

Loop (65%)

Whorl (30%)

Did you know?

Adermatoglyphia is a disease where people are born without fingerprints. It is exceedingly rare, affecting only five known families worldwide.

There are **two proven statements** in fingerprinting:

1. **No two people** (even identical twins) have the same fingerprints.
2. Fingerprints remain **constant**: ridges form before a baby is born and maintain their pattern throughout life.

Audio text

A person leaves fingerprints on every thing he touches with any pressure. There are two types of fingerprints - **latent** and **visible.**

Latent fingerprints are **invisible to naked eyes**. They can be left on almost any surface, including human skin. Many different methods are used to make latent prints visible. These include:

- **lasers**,
- **alternate light sources**,
- a process known as **glue fuming** (in a fuming chamber),
- **coloured powders** / **dust for fingerprinting**

Fingerprints are usually visible if the fingers are dirty or excessively oily.

Be attentive!

arch [ɑ:ʧ] *(n)*
whorl [wɜ:l] *(n)*

To see more!

"FUMING CHAMBER"

Fig.171. Fingerprinting with a special powder

Fingerprints from the victims, as well as suspects, are usually taken with **ink pad** and **paper** …

… or ideally with **fingerprint wireless scanners,** which send data to **Automated Fingerprints Identification System** (**AFIS**) - a database of fingerprints and criminal records.

Fingerprints analysis

match

don't match

An examiner compares file prints and crime scene prints **looking for matches.** Results depend on the quality of the print. Prints scanned into a computer are quickly analysed by special programs.

Fig.172. Fingerprints analysis

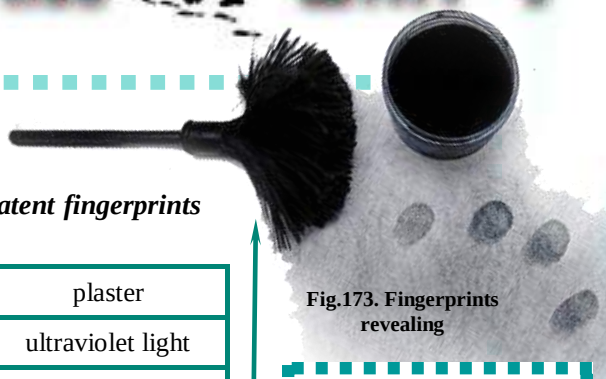


Fig.173. Fingerprints revealing

9. Video "HOW TO LIFT LATENT FINGERPRINTS".

a) Before watching choose some forensic tools you think latent fingerprints revealing and taking deal with:

flashlight	sticky tape	scissors	plaster
tweezers	mirror	chalk	ultraviolet light
laser	magnifying glass	cotton swabs	chemical reagents
brushes	dusting powder	glass slide	fuming chamber

What tools do you need to reveal and lift latent fingerprints?

Try to describe the process.

b) Watch the video.

Tick ✔ the actions which are involved in latent fingerprints lifting from a smooth, non porous surface, and from a not smooth, textured one.

SMOOTH, NON POROUS surface	NOT SMOOTH, TEXTURED surface	ACTIONS of PRINTING EXPERTS
✔	✔	1. Consider the surface itself.
		2. Prepare fingerprint powder and brushes.
		3. Coat the brush with powder.
		4. Spin off the excess powder.
		5. Colour (dust) the surface with a powder to see a fingerprint pattern.
		6. Prepare casting mass with a silicone component and apply it to the surface (spread it over).
		7. Wait for 15-20 minutes to let it dry.
		8. Use an oblique lighting to see a developed fingerprint.
		9. Use a special tape to lift a fingerprint and stick to a glass slide.
		10. Take the cast from the surface and put it into a small box not to destroy it.

c) Set the guidelines for revealing and taking latent fingerprints considering different kinds of surfaces (use ex. 9(b), p.115).

d) Think & answer:

_____

_____

_____

_____ .

Video study!

To see more!

"LATENT PRINTS UNIT"

What about you?

What new information did **you** learn from the video?

UNIT 7 Forensic evidence expertise

2. Match the terms and their definitions:

1.	
2.	
3.	
4.	
5.	
6.	
7.	

1. adermatoglyphia	a) the most common pattern of the human fingerprints
2. fingerprint	b) the forensic analysis and comparison of fingerprints as a means of identification of individuals
3. fingertip	c) one of the unique characteristics of a human body; a skin ridge pattern on a surface by a person's fingertip
4. dactyloscopy	d) one of the basic patterns of the human fingerprint, formed by several curved ridges one above the other
5. loop	e) a disease of people when they are born without fingerprints
6. whorl	f) the end of a finger
7. arch	g) one of the fingerprints that forms at least one complete circle

Who is who?

Try to guess who is described with fewer clues.

1.This is a scientist of the late XIXth century.

2. He is an anthropologist by training.

3. He studied fingerprints to seek out hereditary traits.

4. He proved that no two fingerprints are exactly alike.

5. He proved that fingerprints remain constant throughout an individual's lifetime.

6. He found out the three most common fingerprint types: loop, whorl, and arch.

7. He wrote a book very creatively named "Finger prints".

8. He is a cousin of Charles Darwin.

9. He is considered as the Father of fingerprinting.

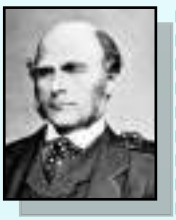


Fig.175. Father of fingerprinting

Who is he? _____.

What about you?

How many clues (hints) did **you** need to guess this scientist?

3. What are the types of the fingerprints given below:

1. Whorl
2. Simple loop
3. Double loop
4. Arch

1.	
2.	
3.	
4.	

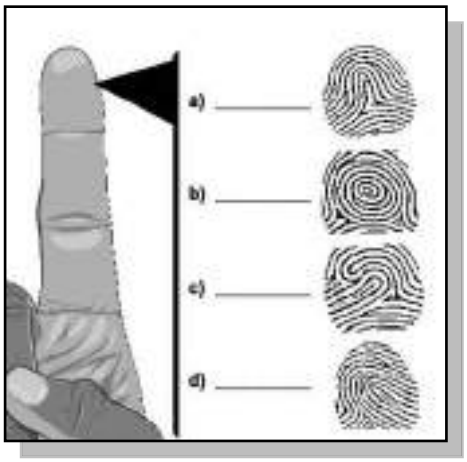


Fig.174. Different fingerprint patterns

4. Determine the types of the real fingerprints:

1. 
2. 
3. 
4. 
5. 
6. 
7. 

5. Read the information on fingerprint ridge details and determine the type of the ridges below:

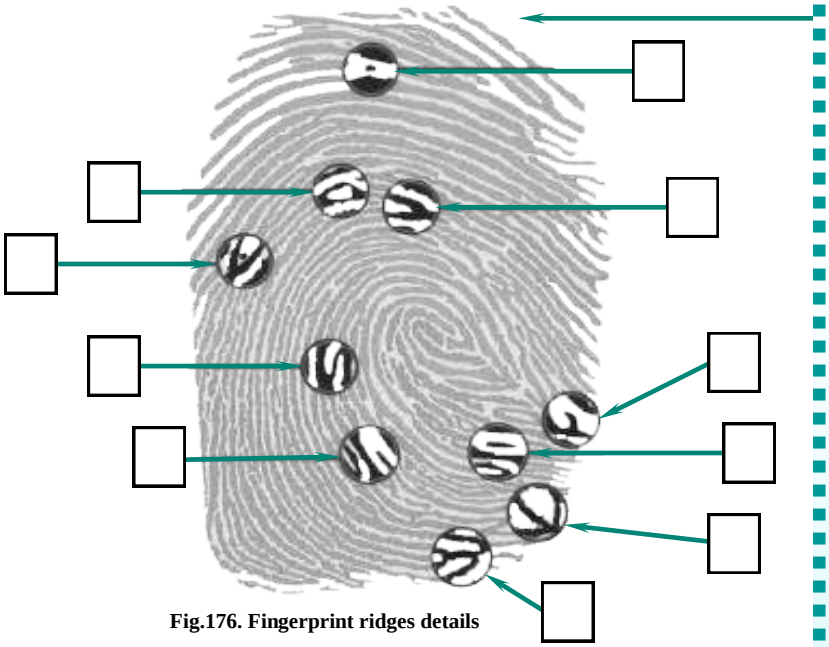


Fig.176. Fingerprint ridges details

Keep in mind!

Fingerprints differ from person to person based upon distinctive patterns of ridges. There are ten ***common fingerprint ridge details***. They are shown here in order of frequency - the ending ridge is the most frequent; the triple fork is the least frequent:

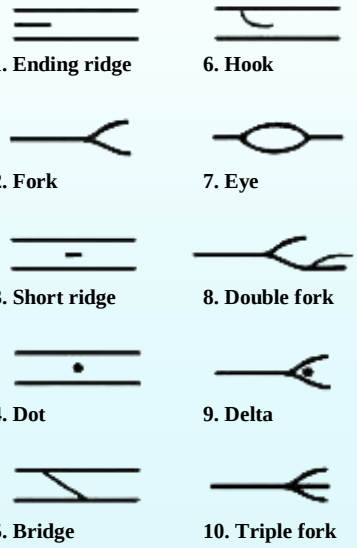


Fig.177. Common fingerprint ridge details

6. Is there a positive matching? Are these fingerprints identical?

1. 

2. 

Study the fingerprints ridge details. Use a magnifying glass if needed.

Make a conclusion. Give some arguments to prove your expert opinion.

7. ***Copy down and make your own dactylocard and examine your own fingerprints. What is (are) your fingerprint type(s)? What ridge details do your fingerprints have?***

RIGHT HAND	Thumb	Index finger	Middle finger	Ring finger	Little finger
LEFT HAND	Thumb	Index finger	Middle finger	Ring finger	Little finger

UNIT 7 Forensic evidence expertise

8. Study the information on correct fingerprints taking:

There are **two types of impressions** involved in the process of taking fingerprints.
The upper 10 prints are taken **individually** - thumb, index, middle, ring, and little fingers of each hand in the order named. These are called "**rolled**" impressions, the fingers being rolled from one side of the fingernail to the other in order to obtain all available ridge detail.

The smaller impressions at the bottom of the card are taken by **simultaneously** printing all of the fingers of each hand and then the thumb without rolling. These are called "**plain**" or "**fixed**" impressions and are used as a check upon the sequence and accuracy of the rolled impressions.

Audio text

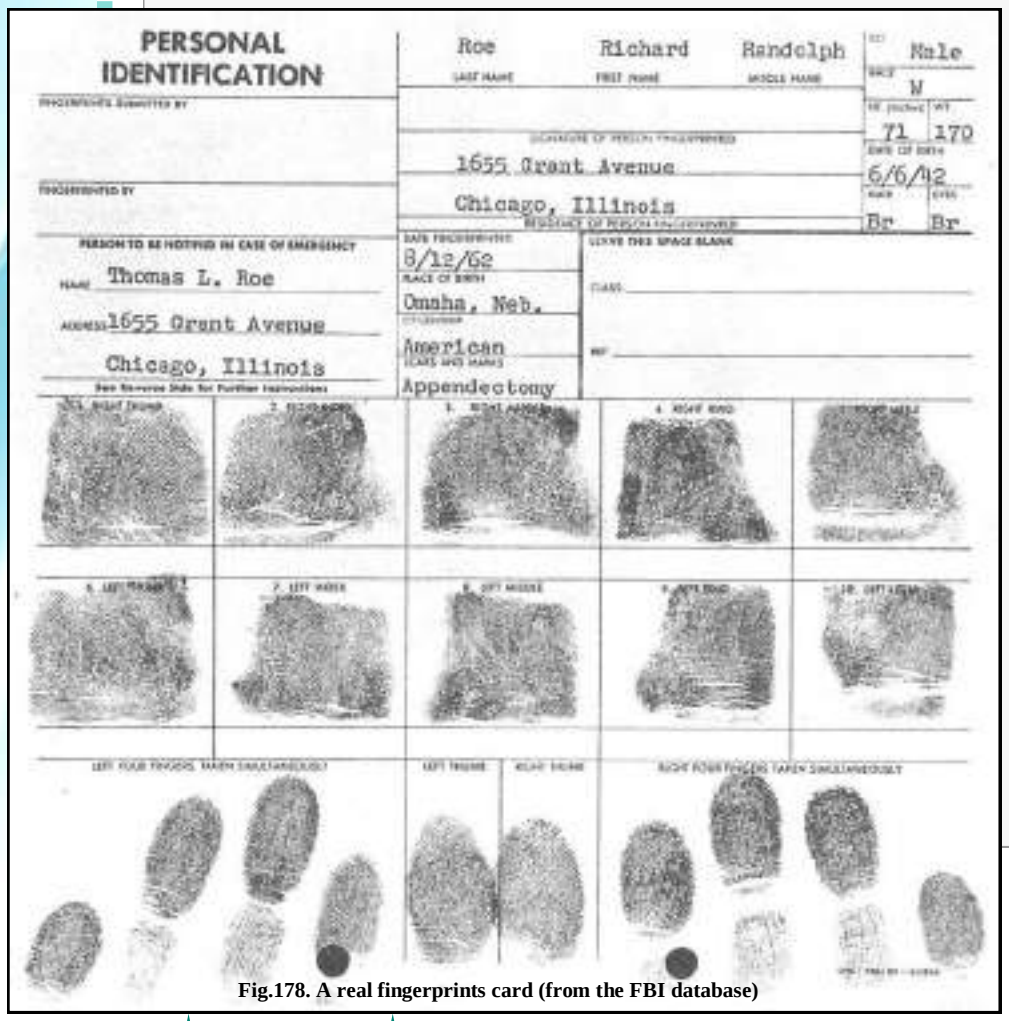


Fig.178. A real fingerprints card (from the FBI database)

Answer the questions:

1. Why do fingerprint experts need two types of impressions?
2. Why do rolled impressions look like much bigger than plain ones?

Scan the information about the fingerprinted person and check his description. Correct it if needed:

A fingerprinted person is a 30-years white woman 1942 year of birth by surnamed Richard. She was born in Omaha, Nebraska, then moved to the west of the USA, in Chicago, Illinois. She is a blue-eyed brunette, of average height, and really over weight (170 kg). She has a scar on her back after a car accident.

Study the fingerprints. What types of fingerprints can you reveal?

_____

_____

_____ .

Look it up!

Does a dactylocard in Russia look like this one?

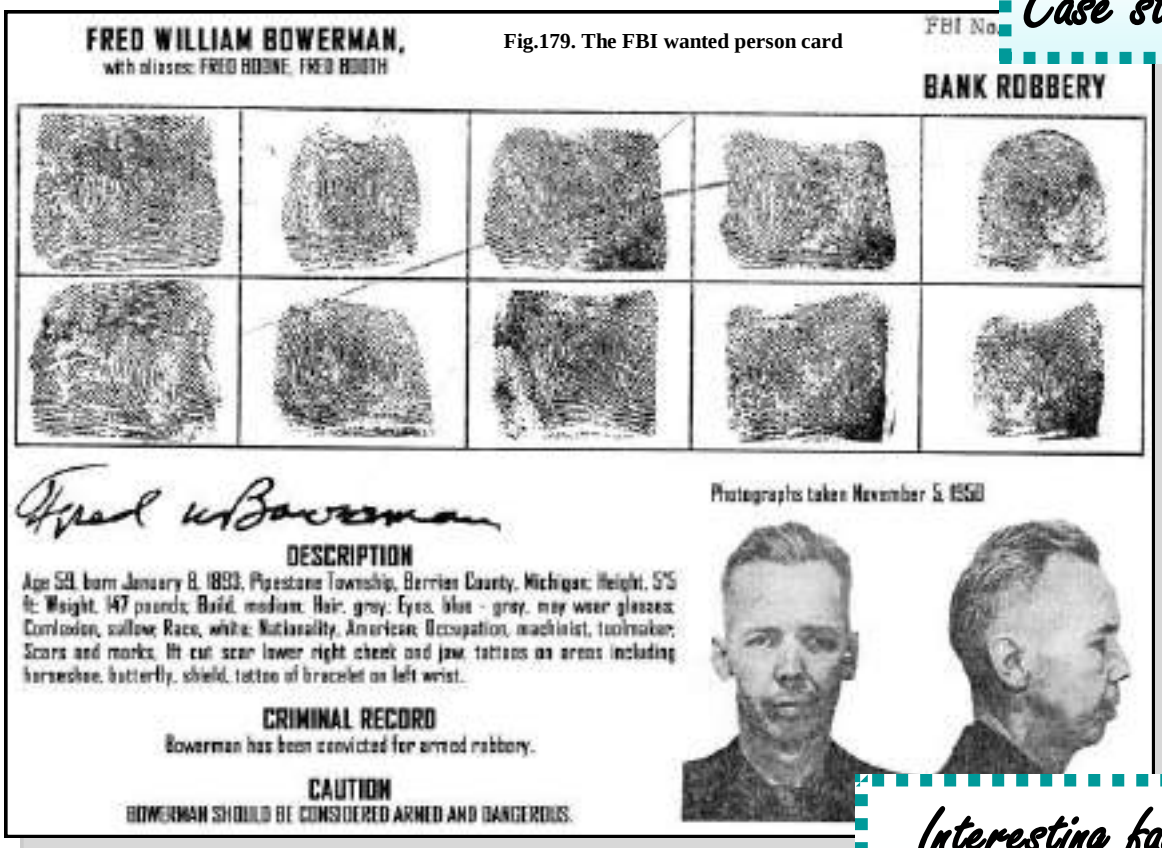
What about you?

Why do **you** think a dactylocard is named "personal identification card"?

Case study!

10. Skim the information of the FBI wanted person card:

Fig.179. The FBI wanted person card



a) All the statements are false. Correct them:

1. Fred Bowerman is an Australian dangerous offender. ***(T/F)***
2. His personal identification card was created by the FBI in 1953. ***(T/F)***
3. The card presents the rolled and plain impressions of the criminal's fingers. ***(T/F)***
4. The upper fingers impressions are of the left hand; the lower - of the right hand. ***(T/F)***
5. Bowerman robbed a bank on November 5, 1950. ***(T/F)***
6. While committing the crime, Bowerman had two accomplices - Fred Boone and Fred Booth. ***(T/F)***
7. A Bowerman's mugshot standardly gives the depiction of his full face and left profile. ***(T/F)***
8. Bowerman has a cut scar on his face and five tattoos on the left wrist. ***(T/F)***

b) What kind of fingerprints taking methods is presented here: a traditional ink method or a digital one? Prove your opinion.

c) Try to determine the types of all Bowerman's fingerprints.

d) Look up 5-7 interesting facts on this one of the FBI's most wanted people.

Interesting facts!

• A 73-year-old woman Teri Horton bought a painting from a thrift store for $5 only to later discover that ***thanks to a fingerprint*** on the canvas, it was actually an unsigned Jackson Pollock worth millions of dollars.

Fig.180. Unsigned painting of J. Pollock

• Cops "mark" a driver's side tail light or trunk ***with their fingerprints*** when they pull over the car, just in case something goes bad for them.

UNIT 7 Forensic evidence expertise

Blood patterns analysis

Keep in mind!

In the human body blood accounts for roughly **8 %** of body weight.

Male: 5-6 litres
Female: 4-5 litres

If **1,5 litres** of blood are lost, unconsciousness may occur.

Death becomes a risk at **40% blood loss**.

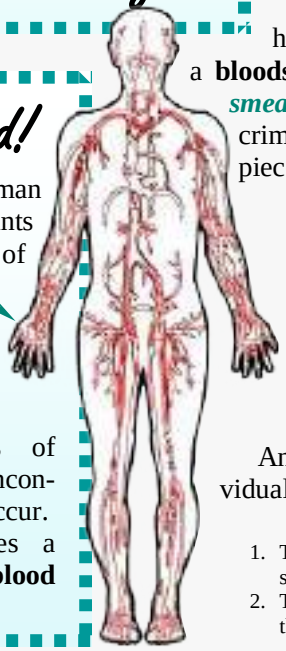


Fig.181. A blood system in the human body

1. Study the information on what bloodstains can tell about:

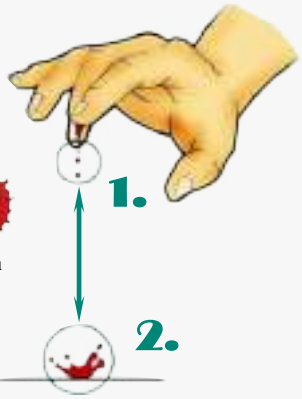
When a crime results in ***bloodshed***, the ***blood spots*** left behind functions as evidence for crime scene investigators. However, a **bloodstain patterns analyst** (**BPA**) can't simply glance at ***drips*** and ***smears of blood*** and immediately tell the who, what and when of a crime scene. ***Blood spatter*** analysis takes time and provides only a few pieces of the total crime puzzle.

BPAs can determine:

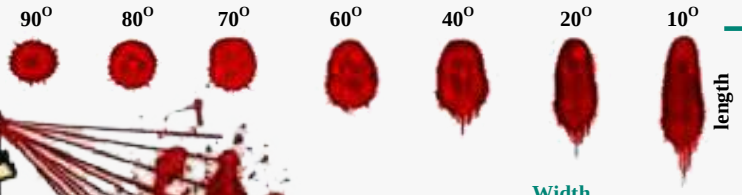
- date and time of death, and weather death was immediate, or delayed;
- type of weapon;
- if the criminal was left or right handed;
- types of injuries;
- movements / positions of those involved.

Analysing blood spatters, forensic analysts look at the shape of individual ***droplets*** to mathematically determine their point of origin:

1. Though blood droplets form at the edge of a surface as teardrops, they travel as spheres.
2. The diameter of a blood stain increases with the height from which it was dropped.



The shape of a droplet also changes with the angle at which it strikes the surface. **The sharper the angle, the longer the tail!**



Analysts can use the dimensions of the ***blood splash*** to determine the angle at which it hits the surface by **dividing** its **width** by its **length**, then taking the **arcsin** of that number.

$$\text{Angle} = \text{Arcsin}\ \frac{\text{Width}}{\text{Length}}$$

Crime scene investigators then employ "**stringing**" - using strings to chart the trajectories of all blood droplets through the air - to determine the blood point of origin (the strings point of convergence).

Look it up!

Look up what methods CSIs use to find **hidden blood spots**.

At a crime scene BPAs can deal also with ***blood pools*** which form under different kinds of wounds near immobile but still alive victims (as death stops ***bleeding***).

Audio text

Fig.182-184. Bloodstain pattern analysis

2. Translate the highlighted blood words and word expressions. Keep in mind the difference in their using. Which ones can be used as synonyms?

"Bloodstain" - _____.
"Bloodshed" - _____.
"Blood spot" - _____.
"Blood drip" - _____.
"Smear of blood" - _____.
"Blood spatter" - _____.
"Blood droplet" - _____.
"Blood splash" - _____.
"Blood pool" - _____.
"Bleeding" - _____ .

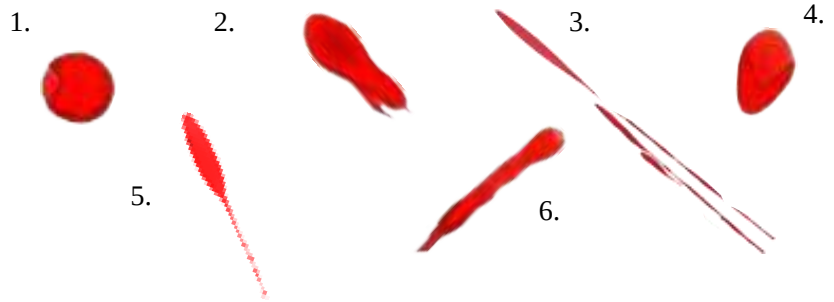
3. Tell if the statements given below are true or false. Correct the false ones:

1. A man lost 4 litres of blood, but managed to survive. ***(T/F)***
2. All BPAs are forensic analysts, but not all forensic analysts are BPAs. ***(T/F)***
3. Smears occur when a bleeding dead body is moved on a solid surface. ***(T/F)***
4. Bloodstain patterns analysis can determine the blood point of origin. ***(T/F)***
5. There is a rule for analysis of blood droplets shape on a surface at which it strikes: the sharper the angle, the shorter the tail. ***(T/F)***
6. Blood tails indicate the direction of blood droplets travelling start. ***(T/F)***
7. The diameter of a blood stain decreases with the height from which it was dropped. ***(T/F)***
8. BPAs use a mathematic method for calculating the angle of travelling of blood splash. ***(T/F)***
9. A stringing method is a method to chart the trajectories of al blood droplets to find their origin point.
10. CSIs determine the angle at which a blood drip hits a surface by dividing its length by its width, then taking the arcsin of that number. ***(T/F)***

4. Study the different formulas to determine the angle at which a blood droplet strikes the surface:

$$\text{ANGLE} = \text{ARCSIN}\ \frac{\text{WIDTH}}{\text{LENGTH}} \quad \text{or} \quad \text{SIN (ANGLE)} = \frac{\text{WIDTH}}{\text{LENGTH}}$$

Using the dimensions of the depicted blood droplets, calculate the angles at which they could strike the surface:



To read more!

Look it up!

What component in **blood** makes it **red**?

What is the meaning of **blue blood** in idioms?

Are there any living beings who really have blue blood? Who are they? Why do they have such blood?

Look it up!

Look up an **online arcsin** (or **sin**) **calculator** to deal with bloodstain patterns analysis.

Join in!

Can **you** check the validity of such calculations?

Work in groups.

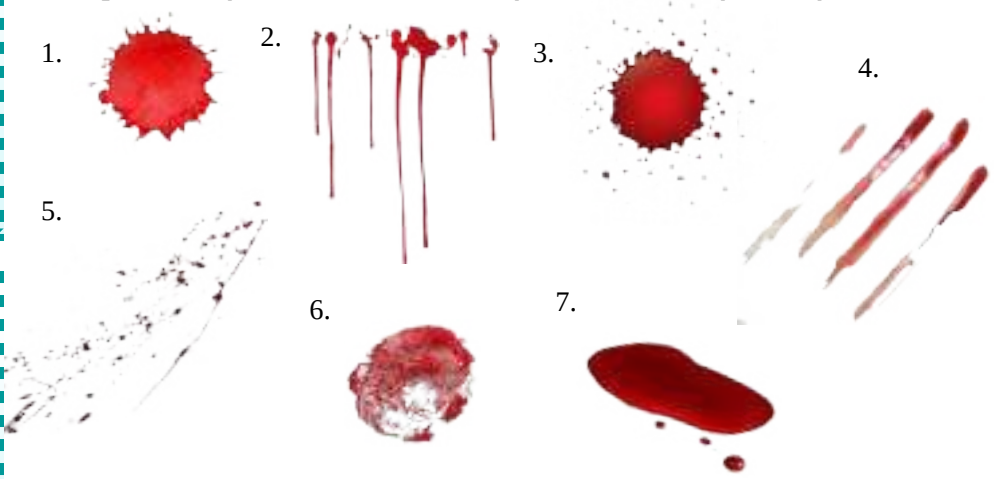
Make an experiment: splash some drops of paint on a white sheet of paper. Make all kinds of calculations. Make a conclusion if **your** mathematically obtained results are true or not.

UNIT 7 Forensic evidence expertise

Video study!

5. Video "BLOODSTAIN PATTERNS ANALYSIS_PART I".

a) Watch the video, then study the bloodstains depicted below. Analyse their shape, mode of the contact with the surface, the texture of the surface:



Keep in mind!

Various surfaces react ***differently*** to bloodstains dropped by ***similar physical mechanisms***.

Describe the bloodstains with the given characteristics (taken from the video):

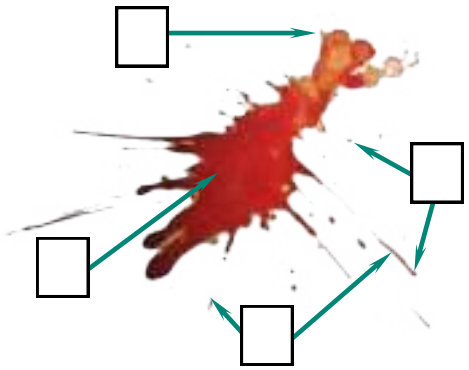
uniform shape (edge)	*drops absorbed into some porous surface*	*impact spatters with long/ short tails*	*drops not absorbed into a surface*
pooling stain	*flow stain*	*even shape (edge)*	*transfer stain*
parent stain	*spiny shape (edge)*	*satellite stain*	*scalloped shape (edge)*
passive stain	*smooth stain*	*drag effect*	*feathering effect*

E.g. A blood drop (1) is a passive stain with spiny, scalloped edges, inherent in drops absorbed into some porous surface.

Fig.185. Matthew Steiner Certified Senior CSI, Veteran Investigator

Did you know all these words and word combinations? Highlight the most difficult ones and try to remember them.

b) Study the depiction of a bloodstain. Match its elements with their names:



1.	Parent stain
2.	Satellite stain
3.	Bloodstain spine
4.	Bloodstain tail

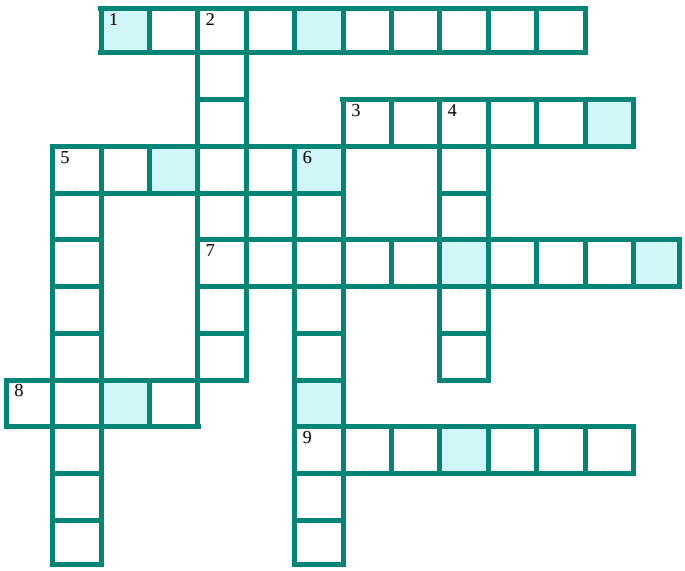
What about you?

In the full version of the video ("Forensics Expert Explains How to Analyze Bloodstain Patterns | WIRED") Matthew Steiner underlines: "At a crime scene, we wear **multiple layers** of gloves".

How can **you** explain so strict protection measures in handling blood evidence?

c) How can you explain so metaphoric names ("parent", 'satellite", "spine", "tail", "feathering") for bloodstain and its element description?

d) Do the crossword about blood patterns:



Across:

1. Accumulation of blood caused by bleeding and typically absorbed into a porous surface (like a bed, a carpet, etc).
2. This kind of pattern is caused with some sort of external force on an open source of blood.
5. Pointed edges of a stain that radiate out.
7. The effect of movement on blood which get lighter and lighter with moving along.
8. This kind of blood passes vertically being affected by gravity.
9. Accumulation of blood caused by bleeding, not absorbed into a surface.

Down:

2. This passive blood pattern occurs where bloody surface comes in contact with another surface.
4. The droplet from which a satellite spatter originates.
5. Small drops of blood that break of from the parent spatter when the blood droplet hits a surface.
6. "Spiny" in an other word.

Write down the highlighted letters: _____.
Made up a key-concept:

A BPA is a CSI handling blood patterns at a crime scene.
A scientist who works with blood evidence in a lab is

a ☐☐☐☐☐☐☐☐☐☐.

e) Try to describe what kinds of bloodstain patterns could you deal at the following crime situations:

1. On Friday, May 3, around 6 a.m., in the Central Park a man's body was found shot in the head.
2. A criminal walked around the crime scene, leaving the bloodstains all over the apartment.
3. An accidental shooting in southwest Houston left a 17-year-old dead.
4. The victim was trying to escape - everywhere there are her bloody handprints on the walls.
5. A perpetrator stabbed the woman as an unnecessary victim.
6. A bleeding victim was suspended in the garage.
7. Wounded with a knife, the victim was dragged to the pond for disposal.
8. The offender jacket was stained with the blood of the victim.

f) Do you agree that bloodstain patterns analysis can help in crime reconstruction? Give some examples to prove your point of view.

Be attentive!

surface ['sɜ:fɪs] *(n)*
texture ['tekstʃə] *(n)*
edge [edʒ] *(n)*
satellite ['sæt(ə)laɪt] *(n), (adj)*

scalloped ['skɔləpt] *(adj)*
feathering ['feð(ə)rɪŋ] *(n)*

Let's discuss!

How do **you** understand the statement in the context of blood speaking:
"**THE TAIL TELLS THE TALE**"?
Give some arguments to support **your** ideas.

6. Video "BLOODSTAIN PATTERNS ANALYSIS_PART II".

Video study!

a) Watch the video, then tick ✔ the information mentioned in it:

This video gives the information about:

- □ how to determine if death was immediate or delayed
- □ how to analyse bloodstains in two-dimensional space
- □ how to mathematically determine the area of convergence
- □ what kinds of bloodstains could be found at a crime scene
- □ where you can use in practice formulas with arcsin and tangent
- □ how to determine if the criminal was left or right handed
- □ how to find the point of bloodstains origin in three-dimensional space
- □ where a digital caliper and a regular ruler can be used as forensic tools

b) Put the steps in finding the area of origin in the logical order:

STEP number	STEP description
	Find the area of convergence of the bloodstains in the two-dimensional space.
	Draw a line through the long axis of one of stains.
	Find the angle of the impact stains by measuring the chosen bloodstains width and length. Divide them, then take the arcsin of the numbers.
	Select elliptical stains (elongated, oval-shaped).
	Find the area of the bloodstains origin in the three-dimensional space using the formula with tangent.
	Draw lines through multiple stains to get lines of convergence.

c) What kinds of processes are depicted below? Can you describe the BPAs actions in details?

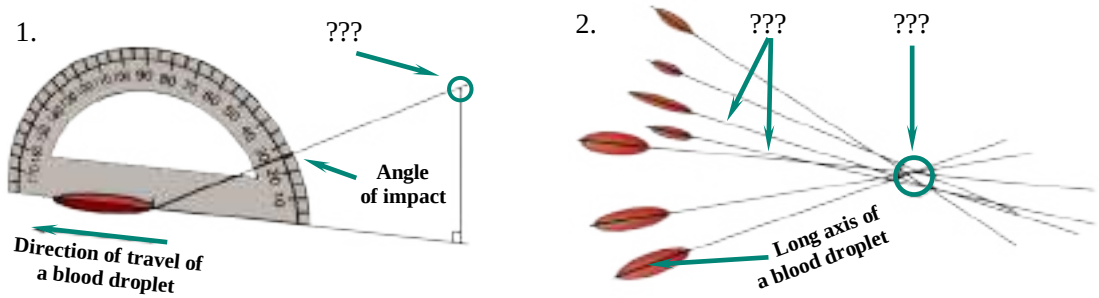


Fig.186-187. BPA's measuring & calculating at a crime scene

What elements in bloodstains analysis are marked with the question sings?

d) Check the formula. Is it correct?

TANGENT (angle of impact) * LENGTH (line of convergence) =
= HEIGHT of the point of bloodstains origin

e) Try to apply all your knowledge in practice analysing paint splashes.

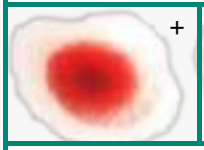
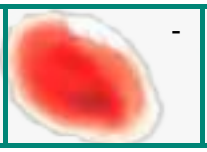
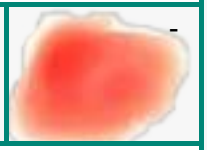
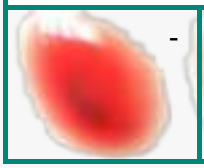
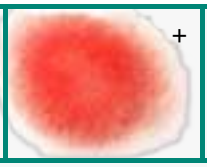
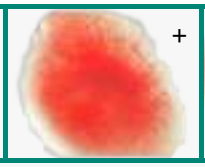
Be attentive!

convergence [kən'vɜːʤ(ə)n(t)s] *(n)*
axis ['æksɪs] *(n)*
dimension [daɪ'men(t)ʃn] *(n)*
tangent ['tænʤ(ə)nt] *(n)*

7. Study the information on AB0 blood types analysis:

The classification of **AB0 blood types** is an important tool in forensic science as it helps significantly narrow down the list of suspects.

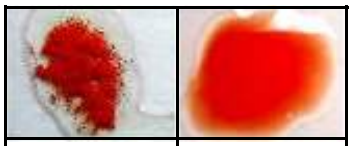
Analysing **reactions of blood agglutination (clumping)**, forensic scientists can definitively compare the blood type of a blood evidence left at a crime scene to the blood type of a suspect.

Blood type A	Blood type B	Blood type AB	Blood type 0
Reaction with anti-A antibody			
 +	 -	 +	 -
Reaction with anti-B antibody			
 -	 +	 +	 -

Blood type is that where there is **a clumping reaction** (granulars presence). **Different reactions of agglutination mean different blood types!**

Audio text

8. Test yourselves. Try to determine the blood group:

1. 

Anti-B antibody	Anti-A antibody

2. 

Anti-B antibody	Anti-A antibody

4. This blood type doesn't react with anti-A antibody.
5. The cells in this blood type don't agglutinate with anti-A or anti-B antibodies.
6. This type has antigens A and B.
7. This blood type has antigen A and doesn't react with anti-B antibody.

9. Case study. Read the crime story and work with the blood type test:

In 2019, a police man followed a man that stole a van. It resulted in a shootout and the only thing left on the scene was a policeman's dead body and some amount of blood evidence. Having tested the blood patterns forensic serologists concluded: there were 2 blood types - in the first (police officer's pattern) there was no reaction with anti-B antibody and in the second one (a suspect's pattern) there was an agglutination reaction with both anti-A antibody and anti-B antibody.

Police had 3 suspects - Roger Williams (blood type A), Chester Turner (blood type AB) and John Lewis (blood type 0).

What blood type did the policeman have? And a suspect?
Did a blood type testing narrow the suspects' list? Who can be excluded?

Blood type test

Did you know?

Blood type A has antigen A which is recognised by anti-A antibody to cause agglutination and doesn't react with anti-B antibody.

Blood type B has antigen B which is recognised by anti-B antibody to cause agglutination and doesn't react with anti-A antibody.

Blood type AB has two antigens and two reactions.

Blood type 0 has no antigens and no reactions.

Be attentive!

anti- ['æntɪ-]
antigen ['æntɪʤən] *(n)*
antibody ['æntɪˌbɔdɪ] *(n)*
agglutination [əˌglu:tɪ'neɪʃ(ə)n] *(n)*
clumping [klʌmpɪŋ] *(n)*
cell [sel] *(n)*
granular ['grænjələ], [-nju-] *(n)*

Who is who?

He is considered as the Father of serology, as he developed the classification of blood types.

Fig.188. Father of serology

Who is he?

_____.

UNIT 7 Forensic evidence expertise

DNA fingerprinting

Keep in mind!

DNA fingerprinting, also known as ***DNA profiling*** or ***DNA testing***, is a technique used to identify people based on their genetic materials.

The best sources for DNA analysis are: semen, muscle tissue, bones, blood, saliva, skin cells, hair.

Be attentive!

hereditary [hɪ'redət(ə)rɪ] *(adj)*
molecule ['mɔlɪkjuːl] *(n)*
genetic [dʒɪ'netɪk] *(adj)*
tissue ['tɪʃuː] *(n)*
technique [tek'niːk] *(n)*

1. Study all the information on DNA fingerprinting - one of the greatest discoveries of the XXth century:

Deoxyribonucleic acid or **DNA** is the hereditary material, a molecule with the **unique genetic code**, which is contained in every cell of a person's body.

Like fingerprints DNA can connect a suspect to a crime scene (it is found in all body tissues) as everyone (except identical twins) has unique DNA.

DNA testing in crime investigation looks like that:

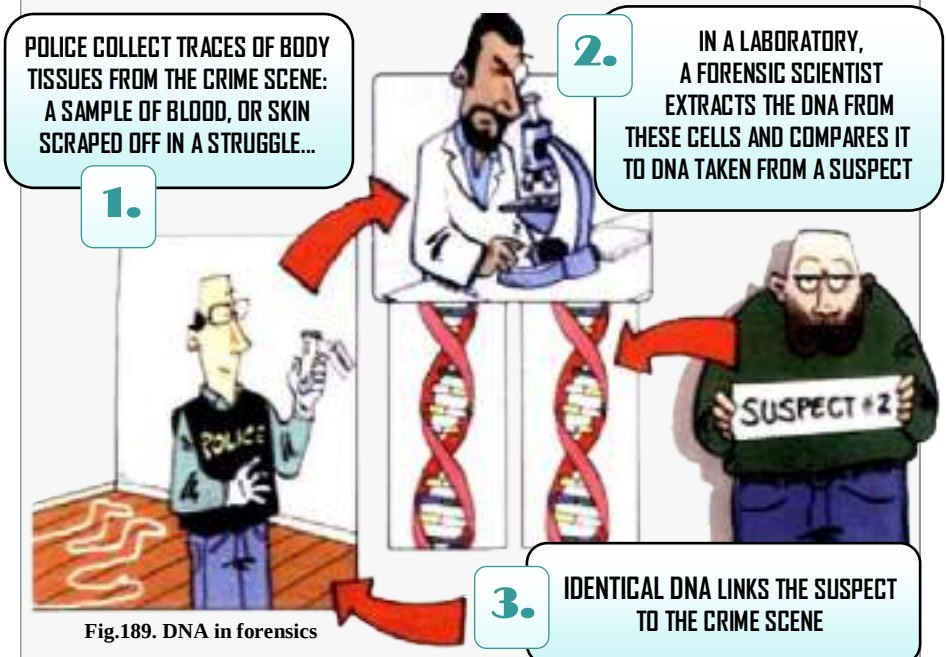
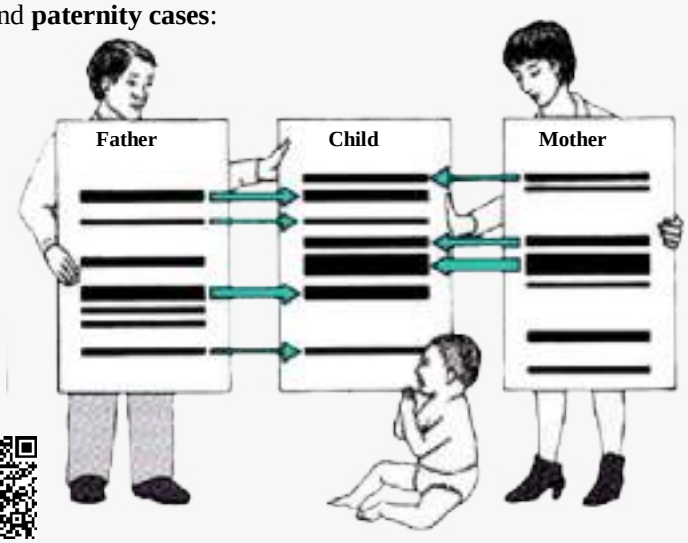


Fig.189. DNA in forensics

DNA testing has not only a crucial impact on determining the guilt or the innocence of a suspect, it also helps in solving **immigration** and **paternity cases**:



Audio text

Fig.191. A simplified DNA chart in a paternity case

Who is who?

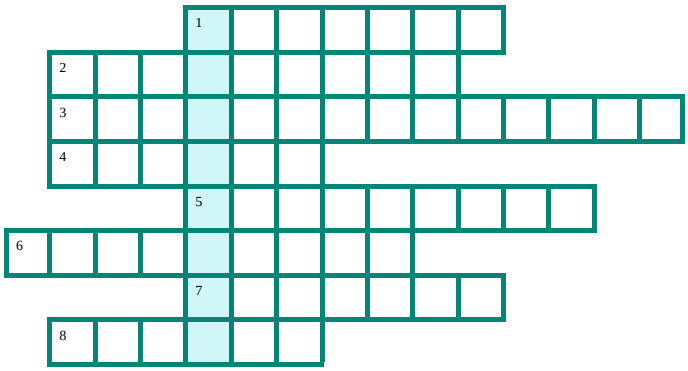
10 September 1984… He was working in his laboratory at the University of Leicester when he discovered DNA fingerprinting.

Fig.190. Father of DNA fingerprinting

"It was a real eureka moment. Thirty seconds which literally changed my life," he remembers. No doubt, that moment changed the whole world in general.

Who is he? _____.

2. Find the synonyms in the thematic material:



1. hereditary
2. family link
3. ID recognition
4. discovery
5. method
6. DNA testing = = DNA …
7. to link = to …
8. ≈ material

What is the key-word? How is it connected with DNA testing?

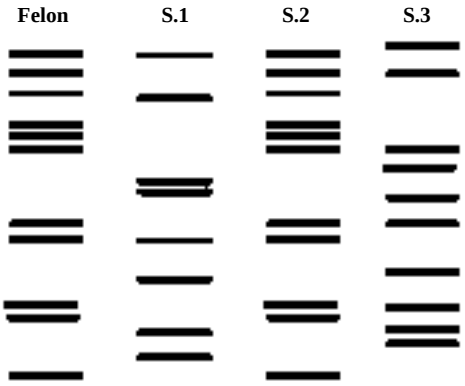
3. Agree or disagree with the statements given below:

1. DNA fingerprinting was discovered just after World War II. ***(T/F)***
2. DNA contains hereditary material that's why it is used in solving paternity cases. ***(T/F)***
3. DNA fingerprinting discovery had the most important impact on immigration cases solving. ***(T/F)***
4. DNA fingerprinting helps to establish the guilt or the innocence of a suspect. ***(T/F)***
5. DNA profiling is also known as DNA testing or DNA footprinting. ***(T/F)***
6. DNA testing can be taken from hair, skin, saliva, blood, fingernails, or any body fluid. ***(T/F)***
7. Every person has his own unique DNA. ***(T/F)***
8. DNA can be compared with a fingerprint as it can link a suspect with a crime scene. ***(T/F)***

4. Try to solve DNA cases:

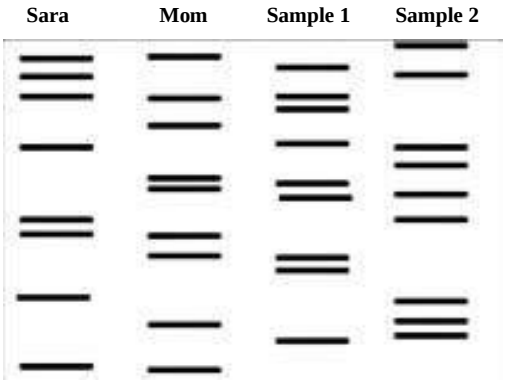
a) Criminal case

Police are investigating a murder scene. The felon was scratched by the victim and some of his skin cells were found under the victim's fingernails. A DNA test is performed. Which of the suspects is the murderer?



b) Paternity case

Sara's father died in a light aircraft crash. He was one of 2 passengers whose bodies were unrecognisable after the disaster. A paternity test is done. Which of two men is Sara's father?



Keep in mind!

DNA evidence must be stored in paper bags or envelopes. ***Plastic is never used***, as it retains moisture and can damage DNA samples.

Interesting fact!

Anna Anderson claimed to be Russia's Grand Duchess Anastasia from the 1920s until her death in 1984.

DNA fingerprinting showed that her DNA ***did not match*** the patterns of the living relatives of the Romanov royal family.

Look it up!

Look up other examples of the DNA testing role in a case solution.

UNIT 7 Forensic evidence expertise

Voice analysis

Did you know?

Voice analysis was first used in World War II for military intelligence purposes.

With the war's end the urgency for this technology diminished and showed up later, in 1960s at the request of New York City Police Department investigating numerous bomb threats by phone against major airlines.

1. Study the information on voice printing:

Voice analysis in forensic investigation relies on the fact that each person's voice is unique and can be used as a person's identifier, like a fingerprint.

Each person's voice is different because the **anatomy** of the **vocal cords**, **oral** and **nasal cavities** are specific to the individual.

Added to that, each person coordinates the muscles of the **lips**, **tongue**, **soft palate**, and **jaw** differently to produce words. The **teeth** also have an impact in the way speech is formed. The **body's voice-producing apparatus** is like an organ pipe producing notes, a tube in which sound waves vibrate, producing sounds which can be recorded.

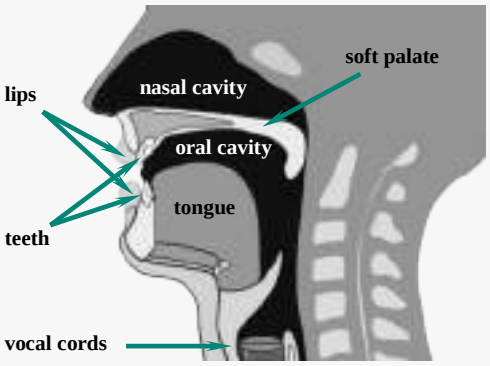


Fig.192. A body's voice-producing apparatus

In voiceprint examination analysts use a two-step process, first the aural or listening stage, then the visual stage, which involves looking over the spectrograms (visual records of voice patterns based on **frequency**, **intensity**, and **time**) produced with a **sound spectrograph**.

Spectrographic analysis makes it possible to match a suspect voiceprint to an incriminating sample - a threatening phone call, voice mail, audio message recorded in an answering machine.

Forensic voice analysis is used in a wide range of criminal cases such as murder, rape, drug dealing, bomb threats, and terrorism.

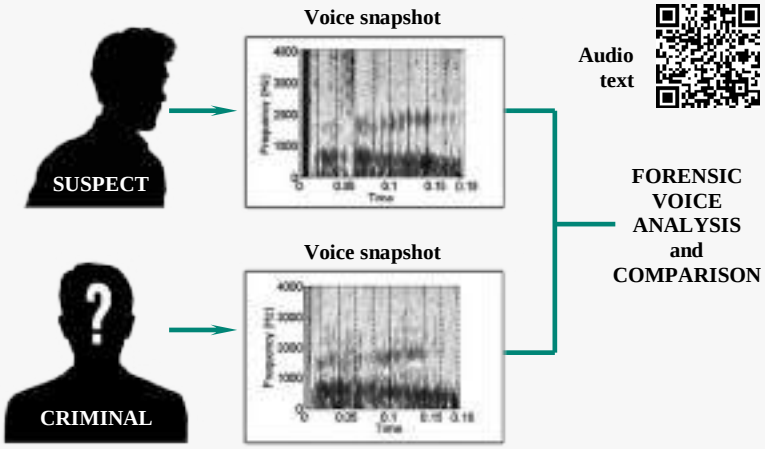


Fig.193. A comparison spectrographic analysis

Be attentive!

cavity ['kævətɪ] *(n)*
palate ['pælət] *(n)*
tongue [tʌŋ] *(n)*
frequency ['fri:kwən(t)sɪ] *(n)*
record [rɪ'kɔ:d] *(v)*
record ['rekɔ:d] *(n)*
threaten ['θret(ə)n] *(v)*
threat [θret] *(n)*

2. Skim the information. Write down the basic lexis of the theme:

Voice analysis, vocal cords, … _____

_____

_____

_____

_____

_____

_____

_____

_____ .

3. Match the terms and their definitions:

1. spectrograph	a) a crime lab employee who compares aural and visual samples of a suspect and an offender and gives his professional expert opinion about their identity
2. voiceprint	b) listening to a suspect's voice pattern and a criminal's speech comparing accent, speech habits, breath patterns, and inflection
3. aural comparison	c) analysing the spectrograph voice snapshots of a suspect and a criminal to see if they match up
4. visual comparison	d) one of biometric characteristics of a human being that can uniquely identify him
5. voice analyst	e) a laboratory machine that can map a voice into a graph

1.	
2.	
3.	
4.	
5.	

4. Choose the voice evidence. Add your own variants:

poisoned tea	a print out of telephone call	saliva
voice harassment	a telephone call record	a palmprint
an audio message	a ransom note	sweat
threats of kidnappers	a cockpit voice recorder	a blood stain
graffiti on a wall	hostage-takers' demands	a knife
a audio record of a crime	a DNA sample	a song

5. Read the statements given below. How do you understand them? Focus your answers on the highlighted key-concepts:

1. At the aural stage in forensic audio analysis an expert needs to apply ***critical listening***.

_____
_____
_____
_____
_____ .

2. Voice analysis deals with ***voice biometrics*** which is a way of translating a voice into ***a visual fingerprint***.

_____
_____
_____
_____

Fig.194. A digital depiction of voice biometrics

What about you?

Can **you** be called a voice analyst as **you** can recognise the audio patterns of **your** relatives, favourite actors, singers?

Prove **your** ideas with some arguments.

Did you know?

A person's voice changes with age, but the voiceprint ***remains distinctive***.

Keep in mind!

Spectrographic analysis remains ***controversial***. In the USA it is permissible as evidence in 35 of 50 states.

Look it up!

Look up if spectrographic analysis results are permissible as evidence in Russian courts of law.

UNIT 7 Forensic evidence expertise

Document examination

Be attentive!

authentic [ɔː'θentɪk] *(n)*
authenticity [ˌɔːθen'tɪsətɪ] *(n)*
authorship ['ɔːθəʃɪp] *(n)*
sign [saɪn] *(v)*
signature ['sɪgnəʧə] *(n)*
genuine ['ʤenjuɪn] *(adj)*

1. Study the information on forensic document examination:

Since documents are part of daily life, forensic document examiners deal with a wide variety of cases. They are called to investigate the **authenticity of documents** in situations such as:

- forgery,
- counterfeiting,
- identity theft,
- fraud,
- extortion, etc.

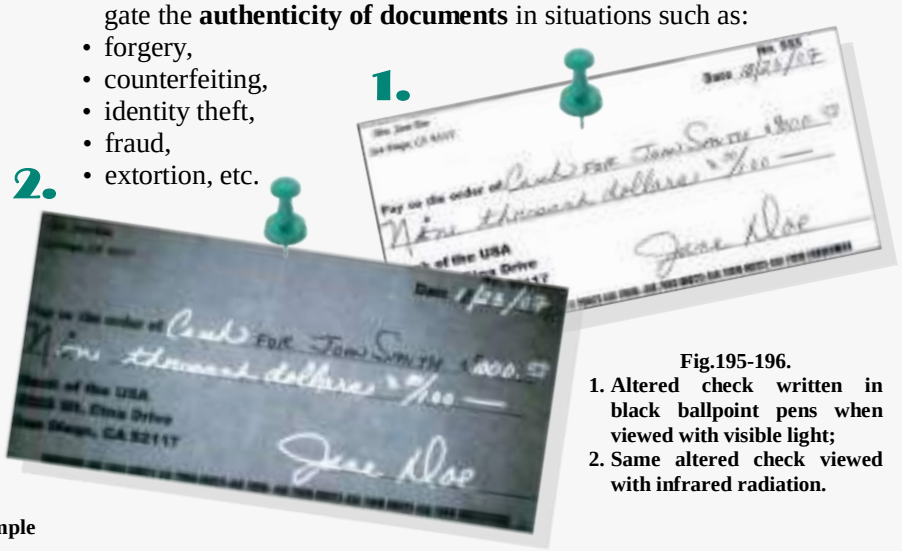
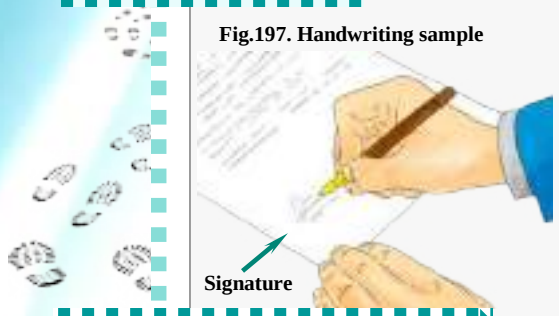


Fig.195-196.
1. Altered check written in black ballpoint pens when viewed with visible light;
2. Same altered check viewed with infrared radiation.

Handwriting

Fig.197. Handwriting sample



Forensic document examiners are frequently asked to resolve questions of **authorship**, as **individual writing features are unique**. A suicide note found next to a dead body - is it actually written by a deceased or by a killer trying to cover up his crime? Who wrote the anonymous letter? Is the signature on the mortgage loan genuine? Is the signature on the will original?..

By comparing **questioned documents** (**documents in dispute**) and **known** writing **samples**, the experts can help include or exclude suspects from the investigation:

For handwriting, the forensic document examiners observe various features: letter size, formation, relative proportions, letter slant, spacing, pressure, line quality, connecting strokes, etc.

Audio text

Known writing sample

Questioned writing sample

The experts focus also on the investigation of the so-called document history: the writing instrument (pen and ink, pencil, typewriter, etc), and the writing surface (characteristics of paper).

Keep in mind!

A situation when a person ***simulates*** someone's handwriting or ***disguises*** his own one (to evade justice) is a difficult problem in handwriting analysis.

In this case a forensic document examiner may dictate some phrases to a potential suspect slowly then faster so that he has less chance of masking his handwriting.

Look it up!

Look up other synonyms for the given key-words.

2. Translate the topic key-words and match them with their synonyms:

1. Authentic
2. Fake

altered	*original*	*false*
counterfeit	*forged*	*true*
real	*genuine*	*fraudulent*

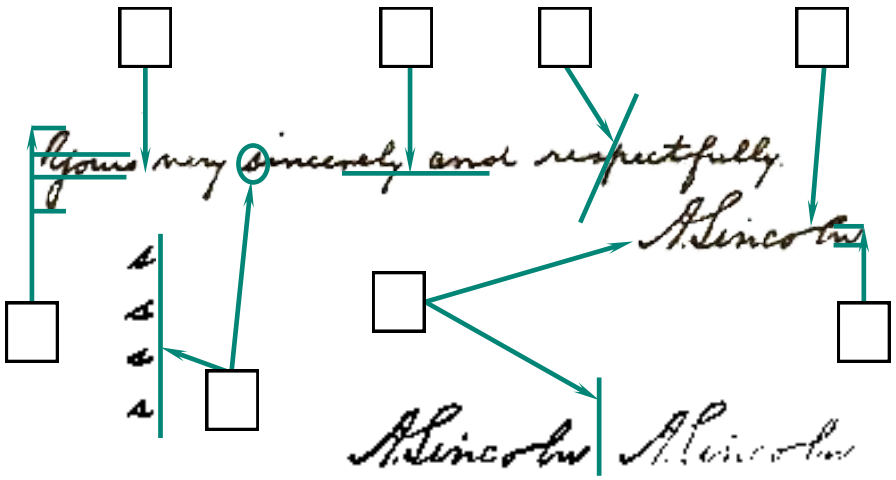
3. Study the payment check at page 130. Answer the questions:

1. What is the name of the person who wrote the authentic check? _____.
2. Who was the false check written to? _____.
3. Who was the original check written to? _____.
4. What is the genuine date of the check writing? _____.
5. What is the fake date? _____.
6. What is the real money amount in the check? _____.
7. What is the forged amount? _____.
8. How many elements were altered in the check? What are they? _____.
9. What forensic method helped discover the forgery? _____.

What about you?

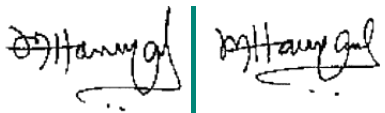
Was there any situation when **you** faced with the falsification of documents? Tell the story.

4. Find all kinds of features in A. Lincoln's handwriting:

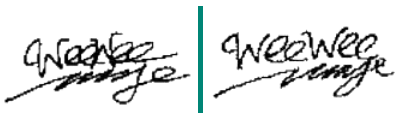


1.	Letter size
2.	Letter formation
3.	Letter slant
4.	Spacing
5.	Pressure
6.	Line quality
7.	Connecting strokes
8.	Relative proportions

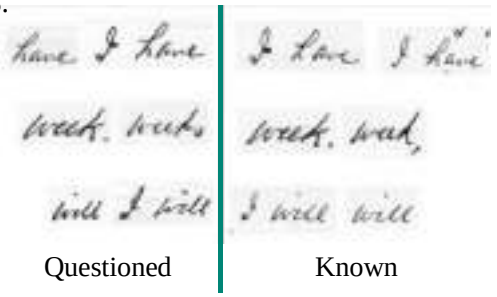
5. Compare the samples in disputes with the known standards. Are they the same or different? Prove your ideas analysing the handwriting features.

1. 

Questioned | Known

2. 

Questioned | Known

3. 

Questioned | Known

4. 

Make a conclusion. ***Which samples are authentic? Which ones are fake?***

AUTHENTIC	1(?), ...
FAKE	1(?), ...

Who is who?

He is the Founding President of the American Society of Questioned Document Examiners. He wrote a lot of books where he proved the uniqueness of an adult person's handwriting.

Fig.198. American Father of Document Examination

Who is he?

_____.

6. Forensic handwriting examination or graphology? Read the information and check it out:

Be aware!

The term "handwriting analysis" is not to be confused with "graphology".

Graphology is the process of determining ***the psychological state of a writer*** through analysis of his or her handwriting.

What about you?

Which method of handwriting examination do **you** think is more scientific and objective - graphology or forensic handwriting analysis? Why?

Let's discuss!

Do **you** believe that analysis of an individual's handwriting can really produce a personality profile of the writer? And help in some cases in crime investigation?

To read more!

Fig.199. Simplified graphology analysis

7. Study the real handwritten bank-robbery notes given below:

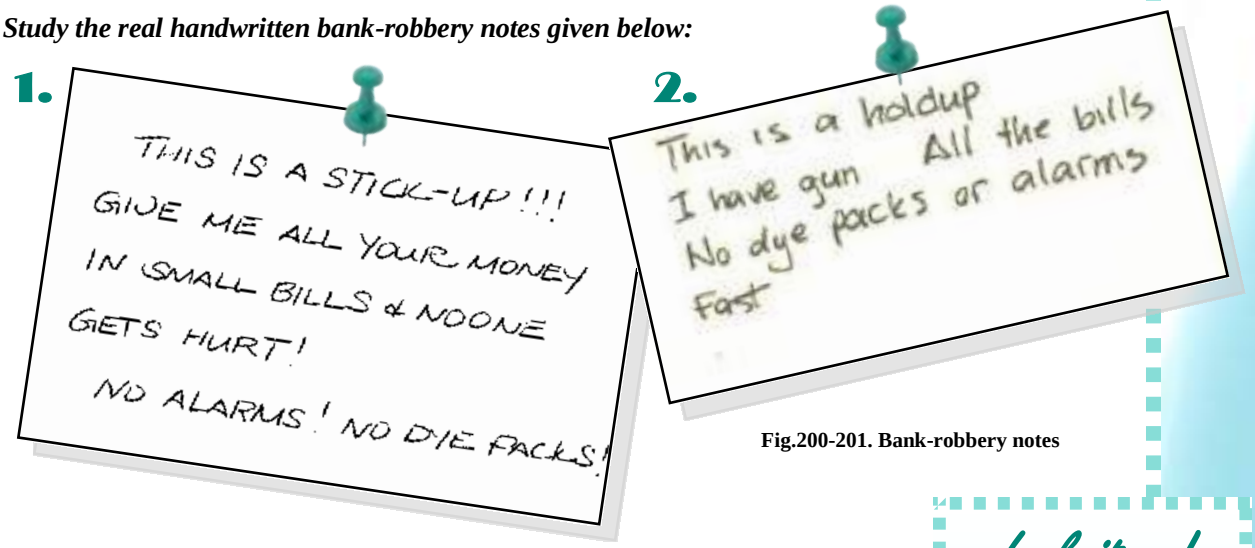


Fig.200-201. Bank-robbery notes

Do you understand the expressions from the notes:

A stick-up - _____.
A hold up - _____.
Bills -_____.
Dye packs - _____.

Look it up!

Look up these word combinations in **English-English** dictionaries.

Use the graphology analysis guidelines and try to determine some personal traits of criminals:

1. The first criminal seems to be _____
_____ .
2. The second criminal seems to be _____
_____ .

Are these personality profiles similar?

8. Copy the text given below, analyse your own handwriting and try to make your simplified personality profile.

Just for fun

"I am writing this message to have a sample for graphology analysis. I will investigate my handwriting letters size, slant, shape; spacing between words and looping to make my personality profile".

_____
_____
_____
_____.

My letters size says that I'm _____ .
My letters slant says that _____ .
My letters shape says _____ .
Spacing between the words shows _____ .
My 'l' loops demonstrate that _____.
My 'e' loops illustrate _____.

Are your findings true?

Let's discuss!

UNIT 7 Forensic evidence expertise

Biometrics in forensics

1. Skim the information about the biometrics role in forensics:

One of the main ideas in forensic examination is a _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ (?).

Fig.202. Unique facial data

Nowadays **biometrics** is a commonplace technology of identifying an individual through his own unique anatomical, chemical or behavioural characteristics. We can differ our family, relatives or friends by their face or voice. In case of biometrics, this ability is given to electronic equipment to identify us without the help of any human assistance.

Some human **physiological characteristics** like fingerprints, DNA structure, iris pattern, retina pattern, patterns of blood vessels, ear shape, face geometry, hand geometry, heartbeat, etc. are considered to be unique for an individual. So these characteristics are taken as biometric identifiers.

Audio text

Along with these physiological characteristics, there are **behavioural characteristics** like gait, keystroke, handwriting, voice, etc. that are also considered as individual characteristics and can be leveraged for biometric identification.

Be attentive!

biometrics [ˌ**baɪəu**'metrɪks] *(n)*
iris ['**aɪə**rɪs] *(n)*
retina ['**re**tɪnə] *(n)*
vessel ['ves(ə)l] *(n)*
gait [**g**eɪt] *(n)*

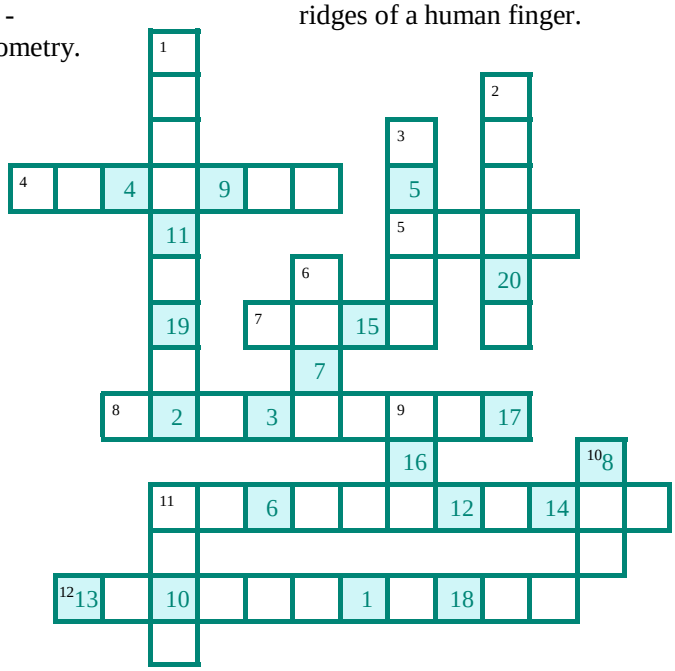
2. Do the crossword:

Across:

4. The arrangement of veins in fingers and hands - blood _____ patterns.
5. Coloured circular segment at the front of the eye.
7. Unique facial data - _____ geometry.
8. Regular movement of the heart.
11. Writing done by hand with some instrument.
12. Impression left by the friction ridges of a human finger.

Down:

1. The way of typing on a keyboard.
2. It lies at the back of the eye and detects light.
3. The way a person sounds when he speaks.
6. A specific way of walking.
9. It is a part of a body; it's unique by its shape.
10. A person's genetic code.
11. A person's palm with finger - _____ geometry.



Find out the key notion in biometrics

1	2	3	4	5	6

7	8	9	10	11	12	13	14	15	16	17	18	19	20

3. Analyse the information about human biometric measurements.
Tick ✔ the characteristics which a criminal can intentionally change, by own, either not to be recognised or to pass for another person. Are they physiological and behavioural ones?

- ☐ fingerprints
- ☐ DNA structure
- ☐ iris pattern
- ☐ retina pattern
- ☐ pattern of blood vessels
- ☐ ear shape
- ☐ face geometry
- ☐ hand geometry
- ☐ heartbeat
- ☐ gait
- ☐ keystroke
- ☐ handwriting
- ☐ voice

4. Video study.

"MISSION: IMPOSSIBLE" - a series of American action spy films starring Tom Cruise whose character with his team fights enemy forces and prevents global disasters.

Fig.203-204. "Mission: Impossible" series

Watch the episodes from "Mission: Impossible - III" & "Mission: Impossible - V" and fill in the table:

	M:I - III	M:I - V
1. What is the reason of main characters' dealing with biometrics characteristics: • passing for another person • trying not to be recognised • passing a strong security system • … (your own variant)		
2. What kinds of biometric identifiers do the series characters deal with?		
3. Are the biometric characteristics, you've revealed, behavioural or physiological ones?		
4. Which method of biometrics recognition by other people is shown in the episode: • identification with no electronic equipment • identification with some electronic equipment		

Did you know?

The ***primary body odour*** can be also considered as a biometric identifier: everybody knows that animals with a very acute sense of smell can track and trail humans.

Fig.205. Odour recognition

Nowadays, in forensics, odour biometric recognition is primarily a ***research subject*** with insufficient data on its real application.

What about you?

What are the situations (or the reasons) when **you** face with biometric measurements in **your** everyday life?

What about you?

What kinds of a person's biometric characteristics do **you** recognise in **your** daily life, by **your** own, with no additional electronic equipment?

UNIT 7 Forensic evidence expertise

Ballistic expertise

1. Read the information on forensic ballistics:

Forensic ballistics or **ballistics fingerprinting** is a science about the launching, behaviour, flight, and effect of projectiles. This is the scientific analysis of ***the path of a bullet*** **from source to target** and **its impact**.

The flight path of a bullet includes:

- Travel down the barrel (internal ballistics - 1);
- Path through the air (external ballistics - 2);
- Path through a target (terminal ballistics - 3).

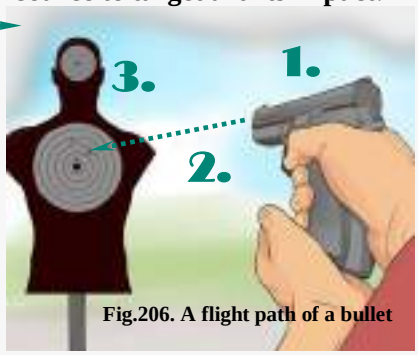


Fig.206. A flight path of a bullet

To be a ballistics specialist, a forensic examiner must have knowledge about different firearms models, their **components**...

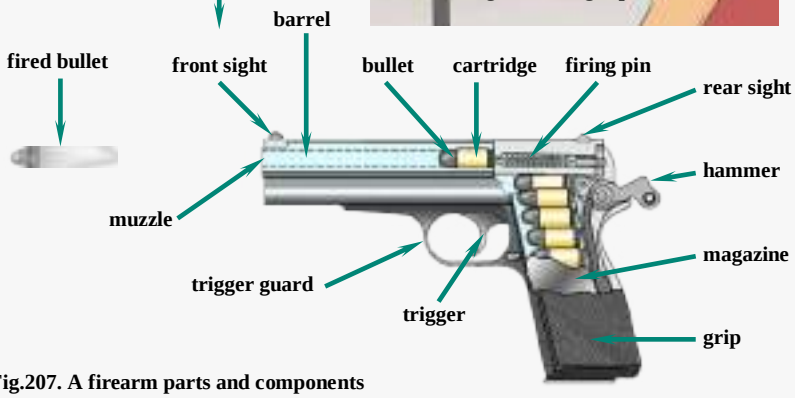


Fig.207. A firearm parts and components

… and their **ammunition** (**cartridges**).

Cartridge = Primer + Gun powder + + Projectile + Case

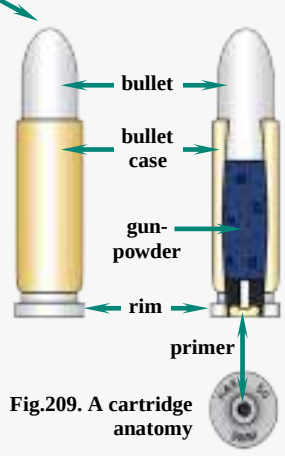


Fig.209. A cartridge anatomy

An ammunition is the assembly of:

- a primer (also known as initiator or detonator, usually high explosives),
- gun powder (also known as propellant),
- a projectile (may be in the form of shots/ pellets or single bullet),
- a case, casing or shell.

A ballistics expert **can answer** the following questions:

- type of the firearm used;
- identification of the firearm through the bullet individualisation;
- range of firing;
- direction of firing;
- identification of the shooter;
- medico-legal aspects: suicide/ homicide/ accident.

Audio text

2. Write down your findings.

Did you know?

Victor BALTHAZARD (1872-1950)


Fig.208. Victor Balthazard

The various aspects of firearms identification were not really recognised for their potential value in solving crime until the early XXth century.

In 1913 **Victor Balthazard,** a French professor, asserted that machine tools used to make gun barrels **never leave exactly the same markings**. After studying a good deal of enlarged photographs of gun barrels and bullets, he reasoned that **every gun barrel leaves "*a signature*"** - set of grooves or striations - on each fired bullet.

V. Balthazard was among the first to attempt to ***individualise a bullet to a weapon***.

Look it up!

Look up where the term "ballistics" came from? You can peep it on page 37;-)

3. Try to explain the highlighted notions:

1. The path of a bullet - _____ .
2. A gun signature - _____ .
3. To individualise a bullet to a weapon - _____ _____ .

Be attentive!

barrel ['bær(ə)l] *(n)*
bullet ['bulɪt] *(n)*
striation [straɪ'eɪʃn] *(n)*
groove [gru:v] *(n)*

4. Divide the crime weapons into firearms and cold steel weapons.

A revolver, an axe, a knife, a machine gun, a shotgun, a pistol, a sword, a gun, a rifle, a dagger, a grenade launcher, a sniper rifle, a blade.

FIREARMS	COLD STEEL WEAPONS
...	...

Can you add your own variants?

Let's discuss!

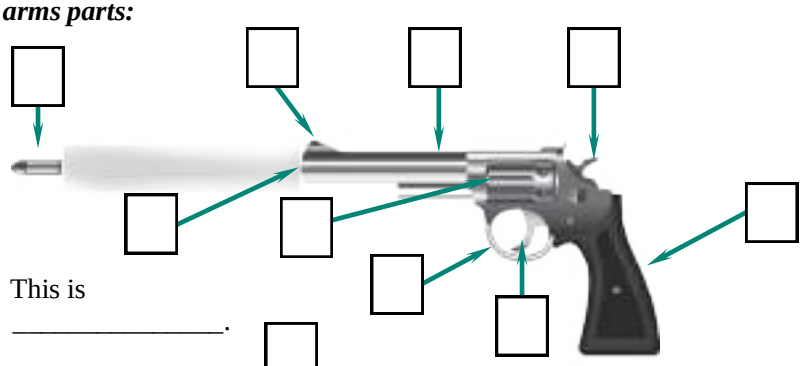
Do **you** remember Locard's exchange principle - "**Every contact leaves a trace**"(p.95)?

Can **you** apply this principle to ballistics?

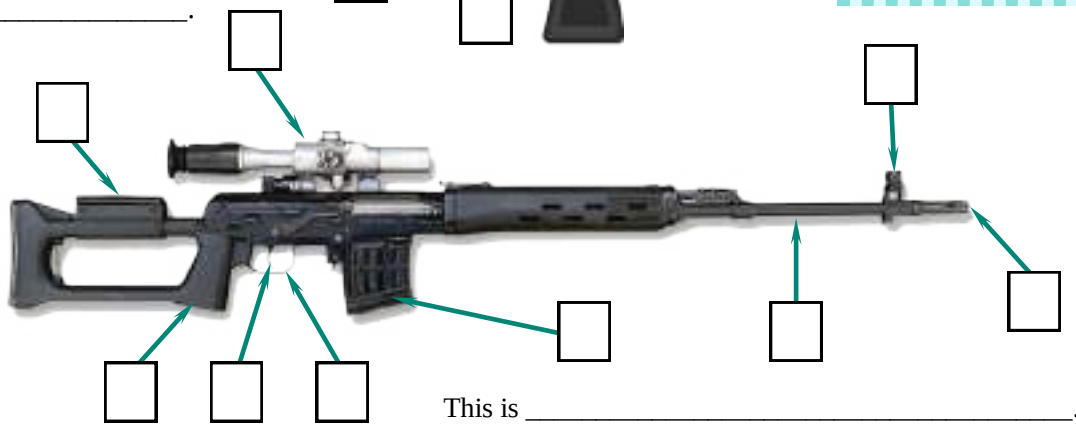
What about you?

Why do **you** think forensic ballistics is called **ballistics fingerprinting** in evidence examination ?

5. Try to define the types of the firearms depicted below. Name the firearms parts:



This is _____.



This is _____.

1.	a grip	5.	a barrel	9.	a telescope
2.	a fired bullet	6.	a trigger	10.	a trigger guard
3.	a cheek rest	7.	a muzzle	11.	a cylinder
4.	a magazine	8.	a hammer	12.	a front sight

Video study!

6. Video "BALLISTICS: THE BASICS".

a) Watch the video. Tick ✔ the information mentioned in the video:

- □ firearms components
- □ bullet paths
- □ anatomy of a cartridge
- □ types of firearms
- □ range of firing
- □ identification of the firearm
- □ ballistics definition
- □ direction of firing
- □ identification of the shooter
- □ bullet hole analysis
- □ origin of the term "ballistics"
- □ causes of fired bullets deformation

b) Agree or disagree with the statements given below:

1. Forensic ballistics focuses on firearms, related projectiles motion, character of the surface impact. ***(T/F)***
2. Internal ballistics is what happens to the bullet once it leaves the muzzle. ***(T/F)***
3. External ballistics is what happens inside the gun. ***(T/F)***
4. Terminal ballistics is what happens when a bullet strikes the target. ***(T/F)***
5. A bullet motion covers three stages: passing through a gun barrel, taking a path, going into a surface. ***(T/F)***
6. A cartridge is the same thing as a bullet. ***(T/F)***
7. Going inside of a weapon when fired, cartridges are separated into different components: shells and bullets. ***(T/F)***
8. Fired from a weapon, bullets strikes different targets and deform in different ways. ***(T/F)***

c) Study the objects from the video. What are they?

A CARTRIDGE | A BULLET | A CASING

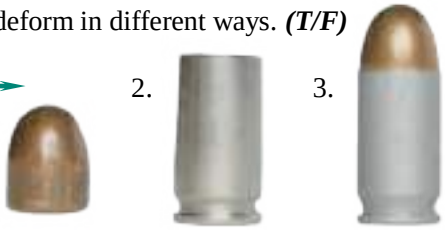


Fig.210. Video freeze-frame

d) Study the depictions given below. Answer the questions:

1. What are the depicted objects - cartridges, cases or bullets?
2. What ballistics stage do these objects demonstrate - internal, external or terminal one?
3. What object is a bullet in pretty pristine condition? Why?
4. Why are the other objects so deformed?

Fig.211-216. Video freeze-frames

Match the bullets and their description:

a) This is a fired bullet. It is dented as it hit an object at an angle.
b) This is a tested fired bullet without a lot of deformation - maybe fired into a tank of water.
c) This is a fired bullet having passed through something soft.
d) This bullet, fired into a solid surface, fragmented.
e) This bullet, fired into a solid surface, fragmented, and flattened out.

1.	2.	3.	4.	5.	6.

7. How to link a gun to a crime scene?

Guns and bullets are associated with the most serious and deadly crimes. The crucial clues important for crime scene investigators include bullet holes, shells, projectile fragments, dropped weapon(s), etc.

Here is how forensic ballistics can be used to recreate a crime scene and investigate a crime:

1. Patterns left by gunpowder residues

The bullet is not the only object that leaves a barrel when a gun is fired. In reality, firing also ejects gunpowder residues that create a **unique pattern** on an object close to the barrel: thus traces of the residue land on the hand of a shooter.

CSIs swab this area, and using an electron microscope inspect the swab samples to see if the particles are, in fact, gunshot residue.

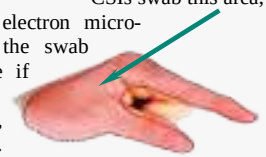


Fig.217. Residue patterns

2. Analysing trajectory, bullet holes

Tracing the flight path of a bullet significantly helps CSIs recreate the events of a crime.

Once bullet holes are located on floor, walls, ceilings or other places/objects at a crime scene, field analysts can determine the bullet trajectory and direction from which a projectile was fired.

Fig.218. Metal hole

3. Tissue damage due to the bullet

Audio text

The wound itself can reveal the bullet type, sequence of hits, distance from which the bullet was fired, its velocity and much more!

4. Striations on a fired bullet

A bullet once fired always gets markings that mirror the grooves and lands inside the firearm barrel. This is a crucial evidence to match a bullet to the weapon used for firing it as no two grooves within a firearm barrel is the same, just like fingerprints.

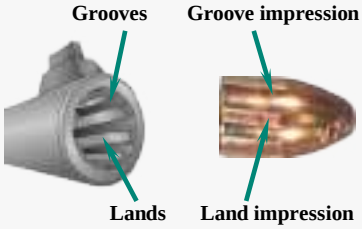


Fig.219. Striations on a bullet

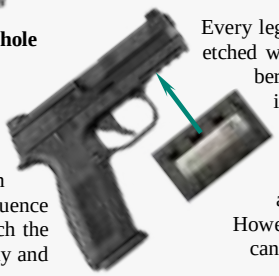
5. Firing pin, and ejector impressions

When a gun is fired, the firing pin strikes the center of the cartridge to ignite the primer and it is only then that the bullet is released.

This impression being unique to the firing pin of a particular gun can actually be used to link cartridges to specific firearms.

Fig.220. Ejector impression

6. Extraction of serial number



Every legally produced firearm is etched with a unique serial number during its manufacturing.

Often criminals try to destroy this serial number by filing/grinding to avoid tracing the weapon. However, these serial numbers can be recovered by forensic scientists.

Fig.221. A gun serial number

Write down all the clues ballistics experts deal with. Add your own variants:

_____

_____

_____

_____.

Who is who?

He is considered as the Father of ballistics and a comparison microscope. In the early XXth century with his like-minds, he collected data from all known manufactures. They compiled results and created the fullest ballistics databases of their time.

Fig.222. Father of ballistics and comparison microscope

Who is he?

_____.

Look it up!

What other forensic fields (in addition to forensic ballistics) is a comparison microscope used in?

What about you?

Can **you** describe the value of a comparison microscope in forensic examinations? For the answer **you** can imagine forensic expertise making without this facility. What would it be like?

UNIT 7 Forensic evidence expertise

Video study!

8. Video "INSIDE THE CRIME LAB_FIREARMS AND TOOLMARKS UNIT".

a) Before watching the video, check if you know the basic theme vocabulary:

firearm	specific firearm	ballistics examination
firing	ballistics	microscopic comparison
cartridge case	test-fired bullet	forensic firearms range
gun powder	shooting	specialised water tank
fired bullet	serial number	bullet recovery tank

b) Watch the video. Work with some notions from it:

1. comparison microscope	a) a 75-foot long space used to safely test firearms when no bullet recovery is necessary
2. forensic firearm range	b) a device which allows for the side by side comparison of evidence at up to 60 times magnification
3. bullet recovery tank	c) information on the firearms used in previous shooting incidents
4. ballistic database	d) a specialised water tank which allows for the collection of fired bullets in their original undamaged condition

c) What is used for test-firing nowadays?

_____ .

d) Which methods of linking a gun to a crime scene (described in ex.7, p.139) are demonstrated in the video?

e) What new information did you learn from the video?

_____

_____

_____

_____

_____ .

f) Try to compare two bullets if you were a real ballistics expert. Are they fired from the same weapon? Give some arguments to prove your opinion:

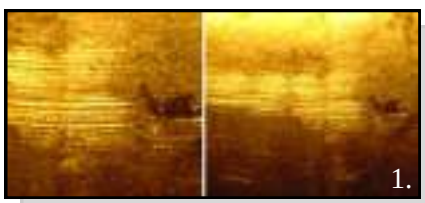


Fig.224-225. Samples for ballistic expertise

For your answer look through all the information on ballistics. What synonyms can you use for "ballistic markings":

Ballistic markings: _____ .

Did you know?

Fig.223. C. Goddard is test-firing a bullet

C. Goddard introduced **test-firing of bullets** to compare them with bullets recovered from a crime scene. At his time to prevent damage to the test bullets and to facilitate the bullet's recovery, test firings were normally made into a **recovery box** filled **with cotton** or **water**.

Let's discuss!

Why do **you** think firearms and toolmarks examinations, as a rule, are united in one crime lab unit?

Case study

9. Skim the newspapers headlines and articles materials:

Chicago Tribune

ST. VALENTINE'S DAY —MASSACRE—

7 BUGS MORAN NORTHSIDE GANGSTERS MURDERED IN LINCOLN PARK GARAGE ONGOING BATTLE FOR CONTROL OF PROHIBITION RACKETS

BUGS MORAN ALPHONSE CAPONE

"Only Capone kills like that," said Moran.

SEVEN SLAIN IN MASSACRE BY CHICAGO GANGSTERS

Victims Stood Up Against Wall and Mowed Down by Machine Guns; Killers Coolly Drive Off

CHICAGO, Feb. 14. [illegible]—Chicago gangsters, posing as police-men, invaded the North Side stronghold of the George [illegible] Moran gang, lined up seven victims with their faces to a white brick wall and mowed them down with automatic pistols and ma-chine guns.

The wholesale execution was carried out at 10:30 a.m. with all the precision of an army firing squad. It was an innovation in Chicago gang history, which brought the total gang victims to more than 135 in the past few years.

Five men drove up to Moran's headquarters in a garage at [illegible] North Clark street after putting

DAIL GIANT

TWO CENTS

7 CHICAGO GANGSTERS SLAIN BY FIRING SQUAD OF RIVALS, SOME IN POLICE UNIFORMS

VICTIMS LINED UP IN ROW

Hands Up, Faces to Wall of Garage Rendezvous, They Are Mowed Down

ALL TOOK IT FOR A RAID

Four Machine Gun Executioners, Wearing Badges, Made Swift Escape in Automobile.

MORAN'S STAFF WIPED OUT

Fig.226-228 Articles about St. Valentine's Day Massacre in Chicago

a) Collect the crime scene data and fill in the table:

1. Crime	
2. Geography of the crime	Country, City: _____ Location: _____
3. Date of the crime	
4. Victims	
5. Suspects	In appearance _____ In fact _____
6. Modus delicti	
7. Crime weapons	
8. Possible ballistics critical evidence	1. _____ 2. _____ 3. _____ 4. …

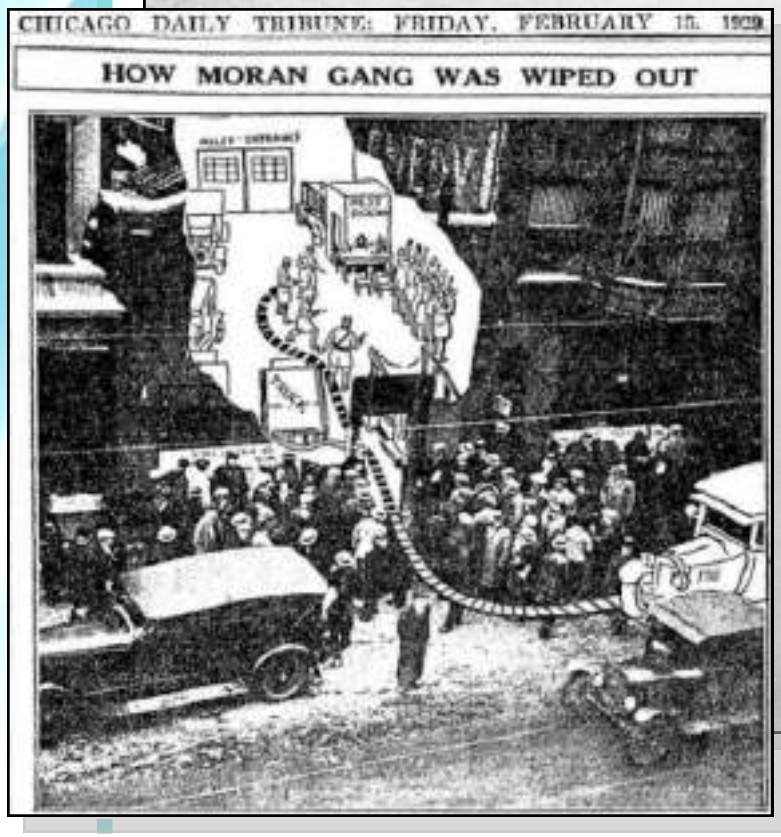
b) Compare your findings with the real story:

1929. Chicago. Gang wars took place with each gang leader seeking to be the head of the crime syndicate.

On February 14, the warehouse used by George (Bugs) Moran as a headquarters for his illegal operations, became a site of the infamous St. Valentine's Day ***Massacre***. That day men dressed like cops with their machine guns hidden inside their long raincoats walked inside the garage. Demanding that the seven ***occupants*** that were inside all line up against the wall, they proceeded to shoot them to pieces. Moran's gang was ***wiped out***. Then the killers drove off in the black Cadillac with a look of a police vehicle. It was unclear whether the killers were actually police officers or rival gang members dressed as police officers.

C. Goddard arrived in Chicago the following day. He encountered the largest collection of bullets and shells he had ever received in a single murder case - seventy 0,45-caliber cartridge shells. By examining these casings, Goddard determined that they had all been fired by automatic weapons. Working as an independent investigator, he tested the machine guns used by the Chicago police and concluded that they were not used in the murders.

Later that year, after a raid on the home of one of Al Capone's ***hit men***, two machine guns were recovered. Goddard tested these weapons and proved that they were used in the murders.


CHICAGO DAILY TRIBUNE: FRIDAY, FEBRUARY 15, 1929

HOW MORAN GANG WAS WIPED OUT

Fig.229. Newspaper crime reconstruction

Audio text

Is the initial information you've scanned previously confirmed?
What information is new for you?

_____
_____
_____
_____
_____
_____
_____
_____.

c) Try to explain the highlighted words and words combination:

Massacre - _____.
(Garage) occupants - _____.
To be wiped out - _____.
Hit man - _____.

d) Write down the vocabulary on gang activities:

_____
_____
_____
_____
_____
_____ .

Look it up!

Look up why the USA of 1920-1930s plunged into gang wars.

c) Look up the additional information on the mentioned rival gang leaders and fill in their criminal cards:

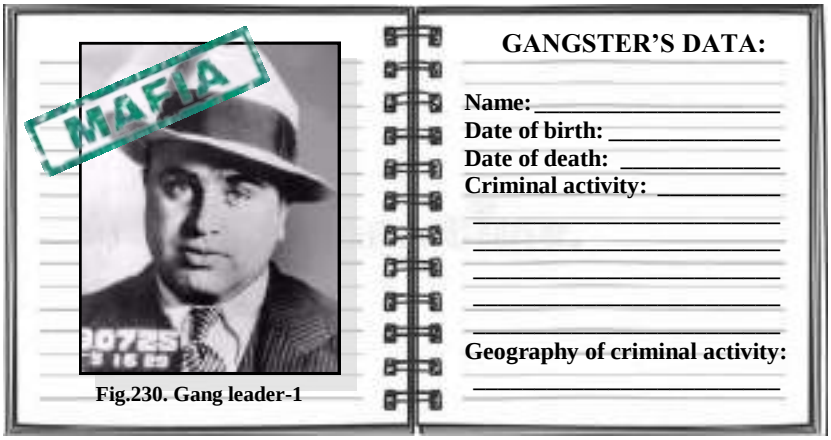


Fig.230. Gang leader-1

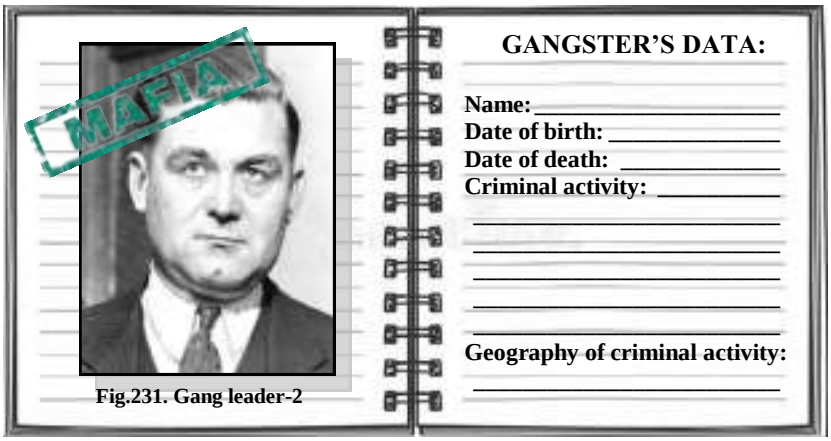


Fig.231. Gang leader-2

Interesting facts!

• Shooting was a daily routine in Chicago of 1920-1930s. It was common to see the ad for a local textile shop: "**Bullet Holes Rewoven Perfectly in Damaged Clothes - Low Price**".

• The prohibition Era saw 729 people slain in a gang-land style. The common reasons for their killings were tied to **gambling**, **business racketeering**, **taxi wars**, **vice** (**prostitution**), **bootlegging**.

Look it up!

Try to explain why smuggling used to be called "***bootlegging***".

d) Analyse the text quote:

"Working as an independent investigator, he [C. Goddard] tested the machine guns used by the Chicago police and concluded that they were not used in the murders".

What kinds of ballistic expertise could C. Goddard make? Describe them in details.

_____
_____
_____.

UNIT 7 Forensic evidence expertise

Trace evidence analysis

1. Read the information on trace evidence analysis:

Trace evidence is material found at a crime scene in **small but measurable amounts**. This is important as it can definitely **link** an individual or object to the scene.

The traces are often **microscopic in size** (some stains, trace amount of dirt or soil, paint chips, pollen, wood splinters, hairs, fibres, glass) and, therefore, are not noticed right away, particularly by the perpetrators of crime. Fortunately for the police, criminals are usually too busy to realise that their hairs or clothing fibres were left behind or they took away fragments of glass on their clothing. But **these contacts** are **silent credible witnesses** against them.

So, **every criminal can be connected to a crime** by tiny particles either carried from the scene or left there. The task of crime scene investigators is only to **detect them**.

Audio text

What about you?

Do **you** remember Edmond Locard's principle describing these transfers in the early part of the XXth century? What is it?

_____
_____ .

Be aware!

Sometimes all kinds of ***prints*** (finger-, foot-, palm-, lipstick prints) and ***impressions*** (tire tracks, bite or tool marks) are also considered as trace evidence.

2. Choose the evidence which can be considered as trace evidence. Translate these clues:

arsenic in food	saliva	victim's signature	drug bottle
skin particles	dirt	residue on a hand	graffiti on a wall
fingerprint	paint chips	ash	human skull
ransom note	knife	soil particles	palmprint
blood stain	some fibres	dirt under the nails	scratch on a neck

3. Imagine yourself a criminalist. Could you link the criminal of the story with the crime scene:

Fig.232. A criminal from the story

A man is running through a dark, cold forest in the middle of the night. His heart is pounding. He's sweating. In his mind he sees flashes of his victim… A fight, a few scratches, torn clothes… No one saw him. No one knows what he did.

He didn't leave anything for the police to find. Or did he???

What kind of trace evidence could be found at the crime scene?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____ .

4. Video "HOW MAKEUP HELPED EDMOND LOCARD CATCH A KILLER".

a) Before watching, analyse the title and the freeze-frame:

1. What is the type of the crime?
2. Who is the victim? Is she alive?
3. What pieces of evidence can be crucial clues for crime investigation?
4. What is the name of the involved forensic expert?
5. What is the approximate year of the crime committing?
6. Is the criminal caught?

Fig.233. Video freeze-frame

b) Watch the video and match the characters with their roles:

Emile Gourbin	a police investigator
Marie Latelle	a suspect
Edmond Locard	a victim

c) According to the video choose the right variant:

1. The crime was committed in *1910/ 1922/ 1912*.
2. The victim, *a young woman/ a middle-aged woman/ an old man*, was *shot/ poisoned/ strangled*.
3. The top suspect was *a victim's servant/ a victim's boyfriend/ a victim's brother*.
4. This was *E. Locard/ M. Latelle's mother/ the victim's boyfriend* who doubted the alibi of the main suspect.
5. The evidence which proved the suspect's guilt was *a drug bottle near Marie's corpse/ some fibres found on Marie's dress/ victim's skin and make-up dust under his nails*.

d) Watch the video once again and put the story parts in the right order:

1. E. Gourbin pleaded his guilt.
2. Locard examined the body of Marie Latelle. He determined the time of the death to be at midnight. Moreover he looked very closely at the corpse and could see the tiniest scrape marks on the victim's neck.
3. E. Locard examined trace evidence under Gourbin's nails. Chemical analysis proved the traces belonged to the victim.
4. Police suspected Marie's boyfriend in her death.
5. Marie Latelle was strangled in her parents' home.
6. E. Gourbin's friends confirmed his alibi. They swore he was playing poker with them at midnight.

e) How did E. Gourbin try to guarantee his alibi?

_____.

d) What kinds of trace evidence were demonstrated in the video?

_____

_____

_____ .

Let's discuss!

Can **you** predict the crime plot with the given puzzle pieces? Imagine what could happen.

Video study!

Be attentive!

alibi ['ælɪbaɪ] *(n)*

Video study!

5. Video "INSIDE THE CRIME LAB_TRACE EVIDENCE UNIT".

a) Before watching the video, analyse the comment given to it:

"The Trace Evidence Unit is responsible for collecting and analysing microscopic ***debris*** to help establish the elements of a crime. Analysis can be performed on the smallest of items: a single hair found on a weapon used in an assault; glass discovered on the clothing of a burglary suspect; and even microscopic particles of paint found on the victim of ***a hit and run***".

Explain the meaning of the highlighted notions:

"Debris" - _____.
"Hit and run" - _____.

What are the trace pieces mentioned in the initial information?
Can you give your own detailed examples? Use the key-words given on the right for your help:

EXAMPLES of TRACE EVIDENCE	KEY-WORDS
1. Microscopic particles of **gunshot residue** on a suspect's hands 2. … 3. … 4. … 5. … 6. … 7. … …	animal hair cosmetics pollen soil **gunshot residue** manmade fibres rope wood splinters

Fig.234. Video freeze-frame

b) Watch the video. What kinds of trace evidence have you caught in the video:

_____
_____
_____
_____
_____
_____.

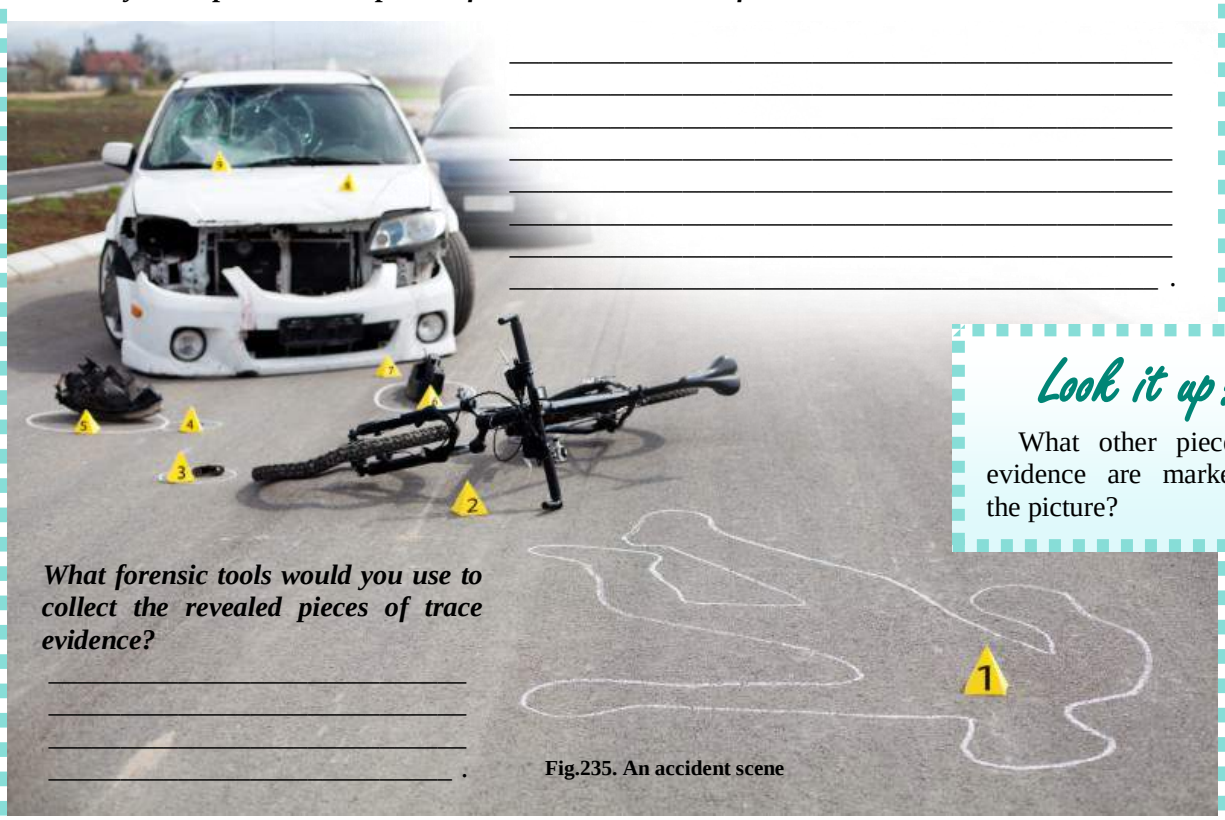
c) Tick ✔the forensic tools and containers which can be used in trace evidence collection:

- ☐ tweezers
- ☐ scissors
- ☐ brushes
- ☐ magnifying glass
- ☐ tape lift
- ☐ dust for fingerprint
- ☐ comparison microscope
- ☐ mirror
- ☐ cotton swabs
- ☐ chalk
- ☐ flashlight
- ☐ measuring tape
- ☐ test tube
- ☐ paper / paper envelope

What forensic tools are shown in the video to gather trace evidence from a piece of clothing? Describe the process.

6. Study the depiction. What pieces of trace evidence can be found at this accident scene?

_____
_____
_____
_____
_____
_____
_____
_____ .



What forensic tools would you use to collect the revealed pieces of trace evidence?

_____
_____
_____
_____ .

Fig.235. An accident scene

Look it up?

What other pieces of evidence are marked in the picture?

7. Multiple choice. More than one variant is possible:

1. What is the other word for trace evidence?
   a) latent
   b) contact
   c) biological
   d) chemical

2. The principle that explains the connection between the criminal and the crime scene is called:
   a) the principle of trace evidence
   b) Sherlock Holmes' deductive principle
   c) Locard's exchange principle

3. In terms of evidence collection what does "trace" mean?
   a) small and minute
   b) invisible
   c) fleeting

4. Which of the following is considered to be the type of trace evidence?
   a) a fired bullet
   b) minute particle of broken glass
   c) shot residue on a suspect's hands
   d) saliva

Keep in mind!

As trace evidence is small in size, they often ***remain unnoticed*** by the culprit and the other person present at the crime scene. So there is more chance that these kinds of evidence ***remain undestroyed*** and ***undisturbed*** at the crime scene.

8. Analyse the common statements about trace evidence:

1. "Trace evidence is a tiny forensic material often unnoticed by the culprit".
2. "Trace evidence keeps a contact linking an individual or object to the crime scene".
3. "Trace evidence is a silent credible witness of the crime".

Which statement gives the main idea of the trace evidence value? Support your opinion with some arguments.

Let's discuss!

UNIT 7 Forensic evidence expertise

Check yourself!

1. What are the most typical fields in the forensics evidence examination?

Fingerprinting, _____
_____
_____
_____ .

2. Look through the pages of the unit and reveal the names of all the mentioned scientists who contributed to forensics development.
Who could be the authors of the following statements? What are the fields they worked in?

1. "Every contact leaves a trace". - _____(*trace evidence examination*).
2. "My discovery was a real eureka moment - 30 seconds which literally changed my life and the whole world". - _____.
3. "No two people have the same fingerprints". - _____ (_____).
4. "My system was the first in recidivists identification". - _____ (_____).
5. "Every gun barrel leaves its own signature". - _____ (_____).
6. "Individual writing features are unique". - _____ (_____).
7. "Blood type is that where there is a reaction of agglutination". - _____ (_____).
8. "A comparison microscope can become a crucial equipment in almost every field of forensic science". - _____ (_____).

What about you?

Like any science, forensics **was not born in one day**, neither it was produced **by one man**.

Only the efforts of scientists and police investigators in the past made the advancements in scientific forensic methods possible.

What forensic discovery do **you** value the most? Why?

Find the scientists' surnames-answers in the word search puzzle:

R	B	B	A	L	A	N	D	S	T
O	E	J	L	T	H	A	E	G	E
S	R	E	F	F	I	Z	A	A	I
B	T	G	O	R	E	Y	R	L	N
O	I	E	D	D	A	S	D	T	E
R	L	L	O	N	R	D	P	O	R
N	O	L	O	C	A	R	D	N	N

Write down the unused letters: _____.
Make up a key-word from them:

Each of these scientists was a | | | | | | | | in a certain field of forensic science.

Look it up!

3. Read the hints and try to make a forensics timeline:

E. Locard formulated his exchange principle the year when he opened the first world's crime lab. The same year A. Sh. Osborn asserted that handwriting is a credible person's identifier. 3 years later V. Balthazard proved that it's possible to individualise a bullet to a weapon, and his discovery was confirmed 12 years later after creating the comparison microscope by C. Goddard. 24 years earlier in the very beginning of the XXth century K. Landsteiner's blood classification brought a new tool to forensic science. 22 years earlier A. Bertillon created the first system of identification, which was replaced 13 years later by a more reliable Sir F. Galton's fingerprinting system. The last greatest discovery for forensics was made 92 years later by Sir A. Jeffreys in 1980s.

Forensics timeline - mark the year and the forensics field in which the discovery was made:

Fig.236. Forensics timeline

4. Study the photos on the face page of Unit 7. Try to answer the questions and then fill in the table:

1. What forensic field the depicted forensic expert is dealing with?
2. What is he examining?
3. What kind of forensic tool(s) is he using (if there is/ are any)?
4. Can you suggest the forensic scientist's name?
5. When could be photo be taken? (a year/ a period after some year)?

Photo #	Forensics field	Object(s) under analysis	Forensic tool(s)	≈ Timeline year/ period	Forensic scientist's name
1.					
2.					
3.					
4.					
5.					

5. Read the statements. Could they be possible? Prove your ideas with some arguments:

1. All the found Titanic victims were identified with the help of DNA fingerprinting analysis. ***(T/F)***
2. Only having compared the bullet fired to Pushkin with a bullet sample from Georges d'Antès's weapon, ballistics experts proved that it was the French ambassador who had murdered the great Russian poet. ***(T/F)***
3. In 1888 forensic serologists could definitely determine the blood types of Jack the Ripper's victims. ***(T/F)***
4. In the late 1870s police proved that M. Cooper had forged the victim's handwriting. ***(T/F)***
5. Using a comparison microscope F. Galton could compare 2 fingerprints at the same time. ***(T/F)***
6. In 1967 M. Black was identified as a recidivist on the basis of Bertillon's anthropometry measurements. ***(T/F)***
7. In 1890s police examined gunshot residue around a bullet hole and determined the distance between the shooter and the victim. ***(T/F)***

E.g. The first situation can't be true as the Titanic went down in 1912, and DNA fingerprinting was discovered only in the end of the XXth century.

Keep in mind!

Technology has the greatest influence on practical activities of forensics nowadays.

Things like ***3D printing***, ***drones***, ***laser scanners*** have greatly improved crime scenes processing and evidence examination, pushing the limits in forensic science.

To see more!

"SIX FORENSIC TECHNOLOGIES OF THE FUTURE"

Join in!

Work in groups.

What are **your** ideas on forensic science perspectives?

UNIT 7 Forensic evidence expertise

Case study!

5. Case study. Analyse the given information, examine the evidence, solve the case:

Fig.237. Video camera freeze-frame

WHICH WAY???

Fig.238. City map. Escaping ways

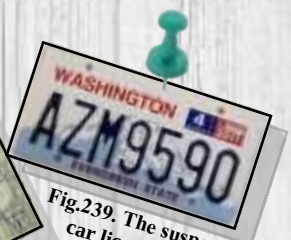


Fig.239. The suspects' car license plate

NAMES???

HOW??? What is the code???

TESTIMONIES:

Witness #1:
While stealing our money, one of the robbers saw a safe. He threatened the clerk to tell him the code for the safe. The clerk said "Sorry, I can't. The code is changing every day". But the robber found out the code.

Witness #2:
Down on my knees I saw a note fallen out of the pocket of one of the suspects. He quickly picked it up, but I remembered the writings: "**WKH ERDW ZLOO ZDLW IRU BRX LQ WKH EDB. GRQ'W EH ODWH**".

CYPHER???

Caesar's code??? Left shift of 3???

Clues:

1. Crime(s):
2. Location:
3. Date:
4. Time:
5. Number of suspects:
6. Suspects' outfit:
7. Crime weapons:
8. Witness(es):
9. Victim(s):
10. Character of the wound:
11. Robbed things:
12. Escape
    a) transport(s):
    b) direction:

Evidence:

- …
- …
- …
- …
- …
- …
- …
- …
- …
- …
- …
- …

Fig.240. Potential suspects

WHO???

M. COOPER (1)
fingerprint types: whorl
blood type: A

J. BLACK (2)
fingerprint types: loop
blood type: AB

L. SMITH (3)
fingerprint types: arch
blood type: A

H. JACKSON (4)
fingerprint types: loop & whorl
blood type: B

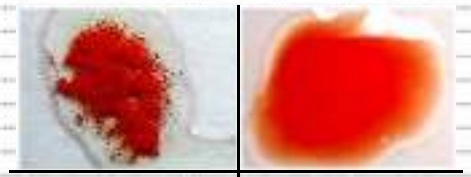
T. BUTLER (5)
fingerprint types: loop
blood type: 0

WHO can be excluded???

Forensic expertise findings:

1. CSIs found NO fingerprint of the least spread type.
2. This fingerprint was found on the inside of the safe. What type is it? _____.

1. Who are the potential suspects? _____.
2. Who cracked the safe? _____.
3. One of the suspects scratched while escaping. Serologists made a blood type test and got the following results:



Anti-A antibody | Anti-B antibody

Who can be this potential suspect? _____. Why?

6. Two pistols were found not far from the bank only with a loop type fingerprints on their grip. Whose pistols could they be? _____.
7. Analyse the ballistics expertise results. Whose crime weapon is it? _____. Why?

Match!!!

(1)

(4)

Mark and determine the types of the fingerprints ridge details (use a magnifying glass if needed).

Sample from the crime scene | **Test-sample (2)** | **Test-sample (5)**

WHO are the criminals ???

UNIT 7 Forensic evidence expertise

6. Video study. Watch a crime episode from the Russian film "Billionaire".

Video study!

Answer the questions:

1. What crime(s) is (are) shown in the episode?

_____
_____ .

2. What biometric characteristic(s) did the criminal try to change not to be identified?

_____ .

What did he use for this purpose? _____ .

3. What was the criminal armed with? _____ .

4. What kinds of evidence could be found at the crime scene? _____
_____
_____ .

5. What kinds of forensic expertise could be involved in the crime investigation?

_____
_____
_____
_____
_____
_____
_____ .

7. This is the last task in your course in FORENSIC SCIENCE in English. Was it useful for you?

What about you? →

Your feedback would be greatly appreciated.
Share, please, what you liked and what you would change.
All your ideas are welcome!

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____ .

Test on-line!

- A a -

abandon [ə'bændən] *(v)* - покидать, бросать
abandoned [ə'bændənd] *(adj)* - заброшенный, покинутый
abdomen ['æbdəmen] *(n)* - брюшная полость, живот
abnormal [æb'nɔ:m(ə)l] *(adj)* - аномальный, отклоняющийся от нормы
abnormality [ˌæbnɔ:'mælıtı] *(n)* - отклонение от нормы
abyss [ə'bıs] *(n)* - бездна, пропасть
accent ['æks(ə)nt] *(n)* - акцент, произношение
access ['ækses] *(n)* - доступ
accident ['æksıd(ə)nt] *(n)* - несчастный случай, авария, катастрофа
accommodate [ə'kɔmədeı] *(v)* - подгонять; приспосабливать; обеспечивать; вмещать
accomplice [ə'kɔmplıs] *(n)* - сообщник, соучастник
accomplish [ə'kɔmplıʃ] *(v)* - совершать, выполнять, достигать
accumulation [əˌkju:mjə'leıʃn] *(n)* - скопление; сбор
accountant [ə'kauntənt] *(n)* - бухгалтер, счетовод
accuracy ['ækjərəsı] *(n)* - точность; тщательность
accurate ['ækjərət] *(adj)* - точный; тщательный
accurately ['ækjərətlı] *(adv)* - точно; безошибочно; аккуратно
accuse [ə'kju:z] *(v)* - винить, обвинять
accuser [ə'kju:zə] *(n)* - обвинитель (частное лицо); свидетель обвинения
accused [ə'kju:zd] *(adj)* - обвиняемый; подсудимый
acute [ə'kju:t] *(adj)* - острый; сильный; проницательный
acoustic [ə'ku:stık] *(adj)* - акустический, звуковой
act [ækt] *(n)* - дело, поступок, деяние
activity [æk'tıvətı] *(n)* - деятельность
ad [æd] *(n)* - объявление, реклама
additionally [ə'dıʃn(ə)lı] *(adv)* - дополнительно; сверх того, кроме того
adermatoglyphia *(n)* - адерматоглифия (болезнь, при которой отсутствуют линии на подушечках пальцев)
adhere [əd'hıə] *(v)* - прилипать, приклеиваться
administer [əd'mınıstə] *(v)* - управлять, руководить
admit [əd'mıt] *(v)* - допускать, признавать
admission [əd'mıʃn] *(n)* - доступ, признание (вины)
adult ['ædʌlt], [ə'dʌlt] *(n), (adj)* - взрослый, зрелый; совершеннолетний (человек)
advance [əd'vɑ:ns] *(n)* - движение вперёд, рост
(v) - продвигаться вперёд
advancements [əd'vɑ:nsmənt] *(n)* - улучшение, прогресс
advertisement [əd'vɜ:tısmənt] *(n)* - объявление, реклама
advocate ['ædvəkət] *(n)* - защитник; сторонник
(v) - пропагандировать, отстаивать
affect ['æfekt] *(n)* - аффект
[ə'fekt] *(v)* - оказывать воздействие, влияние
agent ['eıdʒ(ə)nt] *(n)* - агент; вещество, реагент
agglutination [əˌglu:tı'neıʃn] *(n)* - агглютинация, свертывание
aim [eım] *(n)* - намерение, цель; прицел, мишень
air [eə] *(v)* - *зд.* передавать по телевидению
aircraft ['eəkrɑ:ft] *(n)* - самолёт, воздушное судно
airline ['eəlaın] *(n)* - авиалиния, авиакомпания
airtight ['eətaıt] *(adj)* - воздухонепроницаемый, герметический
alcohol ['ælkəhɔl] *(n)* - алкоголь, спирт
algor mortis - *лат.* посмертное охлаждение
alibi ['ælıbaı] *(n)* - алиби
alive [ə'laıv] *(adj)* - живой, в живых
alpine ['ælpaın] *(adj)* - альпийский, высокогорный
alter ['ɔ:ltə] *(v)* - менять; видоизменять; искажать
altitude ['æltıt(j)u:d] *(n)* - высота
ambassador [æm'bæsədə] *(n)* - посол
ambient ['æmbıənt] *(adj)* - внешний; соответствующий окружающей среде
amount [ə'maunt] *(n)* - количество
analyse ['æn(ə)laız] *(v)* - анализировать
analyser ['æn(ə)laızə] *(n)* - анализатор (электронный прибор)
analysis [ə'næləsıs] *(n)* - анализ, исследование
analyst ['æn(ə)lıst] *(n)* - аналитик
analytical [ˌæn(ə)'lıtıkl)] *(adj)* - аналитический
ancestry ['ænsestrı] *(n)* - предки, происхождение
angle ['æŋgl] *(n)* - угол
ant [ænt] *(n)* - муравей
anthropologist [ˌænθrə'pɔlədʒıst] *(n)* - антрополог
anthropology [ˌænθrə'pɔlədʒı] *(n)* - антропология
anthropometry [ˌænθrə'pɔmıtrı] *(n)* - антропометрия
apartment [ə'pɑ:tmənt] *(n)* - *амер.* квартира
apparently [ə'pær(ə)ntlı] *(adv)* - вероятно, видимо, по всей видимости
appearance [ə'pıər(ə)ns] *(n)* - появление; внешний вид
application [ˌæplı'keıʃn] *(n)* - применение
apply [ə'plaı] *(v)* - применять
appreciate [ə'pri:ʃıeıt] *(n)* - ценить; быть признательным
approach [ə'prəuʧ] *(n)* - подступ, подход
approximate [ə'prɔksımət] *(adj)* - приблизительный
approximately [ə'prɔksımətlı] *(adv)* - приблизительно, близко
arch [ɑ:ʧ] *(n)* - дуга
archaeologist [ˌɑ:kı'ɔlədʒıst] *(n)* - археолог
archaeology [ˌɑ:kı'ɔlədʒı] *(n)* - археология
arcsin *(n)* - арксинус
ardent ['ɑ:d(ə)nt] *(adj)* - горячий, страстный
area ['eərıə] *(n)* - территория, участок
arrangement [ə'reınʤmənt] *(n)* - расположение; приведение в порядок; классификация; систематизация
arrest [ə'rest] *(v)* - арестовывать
arsenic ['ɑ:s(ə)nık] *(n)* - мышьяк
arson ['ɑ:s(ə)n] *(n)* - поджог
arsonist ['ɑ:s(ə)nıst] *(n)* - поджигатель
artist ['ɑ:tıst] *(n)* - художник
ascertain [ˌæsə'teın] *(v)* - выяснять, устанавливать
ash [æʃ] *(n)* - зола, пепел
ashtray ['æʃtreı] *(n)* - пепельница
assassination [əˌsæsı'neıʃn] *(n)* - заказное убийство
assault [ə'sɔ:lt] *(n)* - нападение
assert [ə'sɜ:t] *(v)* - утверждать; заявлять
assessment [ə'sesmənt] *(n)* - оценка, мнение
assign [ə'saın] *(v)* - назначать, поручать
assistance [ə'sıst(ə)n(t)s] *(n)* - помощь, поддержка
associate [ə'səusıeıt], [-ʃıeıt] *(v)* - соединять, связывать

attack [ə'tæk] *(v)* - атаковать, нападать
attacker [ə'tækə] *(n)* - атакующий, нападающий
attempt [ə'tempt] *(v)* - пытаться, стараться
attitude ['ætɪt(j)u:d] *(n)* - позиция; отношение
attract [ə'trækt] *(v)* - привлекать
attraction [ə'trækʃn]) *(n)* - привлекательность, притягательность
aural ['ɔ:r(ə)l] *(adj)* - слуховой, акустический
authentic [ɔ:'θentɪk] *(adj)* - аутентичный, истинный, настоящий, подлинный, неподдельный
authenticity [ˌɔ:θen'tɪsətɪ] *(n)* - аутентичность, достоверность, подлинность
authorship ['ɔ:θəʃɪp] *(n)* - авторство
automated fingerprint identification system (AFIS) - автоматизированная система идентификации по отпечаткам пальцев
autopsy ['ɔ:tɔpsɪ] *(n)* - аутопсия, вскрытие трупа
average ['æv(ə)rɪdʒ] *(adj)* - нормальный, обыкновенный, обычный, средний
avoid [ə'vɔɪd] *(v)* - избегать
axe [æks] *(n)* - топор
axis ['æksɪs] *(n)*, **axes** *(n pl)* - ось, осевая линия

- Bb -

backup ['bækʌp] *(adj)* - запасной, резервный
backyard [ˌbæk'jɑ:d] *(n)* - задний двор
bag [bæg] *(n)* - пакет
ballistics [bə'lɪstɪks] *(n)* - баллистика
ballpoint pen ['bɔ:lpɔɪnt pen] - шариковая ручка
barrel ['bær(ə)l] *(n)* - ствол, дуло (оружия)
barrier tape ['bærɪə teɪp] *(n)* - оградительная лента
be aware! [ə'wɛə] - обратите внимание!
beam [bi:m] *(n)* - луч, испускаемое излучение
bear [bɛə] *(v)* - *книжн.* нести, иметь, касаться,
beard [bɪəd] *(n)* - борода
beat [bi:t] *(v)* - биться, стучать (о сердце, дожде); обмануть (полиграф)
beating ['bi:tɪŋ] *(n)* - биение, стук
bed bug [bed bʌg] *(n)* - клоп
beetle ['bi:tl] *(n)* - жук
behaviour [bɪ'heɪvjər] *(n)* - поведение
behavioural [bɪ'heɪvjərəl], [bə-] *(adj)* - поведенческий
belong (to) [bɪ'lɔŋ] *(v)* - принадлежать
biohazard [ˌbaɪəu'hæzəd] *(adj)* - биологически опасный
biology [baɪ'ɔlədʒɪ] *(n)* - биология
biometric [ˌbaɪəu'metrɪk] *(adj)* - биометрический
biometrics [ˌbaɪəu'metrɪks] *(n)* - биометрия, идентификация человека по его пожизненным уникальным биологическим параметрам (отпечаткам пальцев, радужной оболочке глаза, голосу, овалу лица, геометрии руки и др.)
biometry [baɪ'ɔmɪtrɪ] *(n)* - биометрия
bit [bɪt] *(n)* - кусочек; частица, небольшое количество
bite-mark [baɪt mɑ:k] *(n)* - след укуса
blacken ['blæk(ə)n] *(v)* - чернеть
blade [bleɪd] *(n)* - лезвие
bleed [bli:d] *(v)* - кровоточить; истекать кровью
bleeding ['bli:dɪŋ] *(n)* - кровотечение
bloating ['bləutɪŋ] *(n)* - вздутие, разбухание
blood [blʌd] *(n)* - кровь
bloodshed ['blʌdʃed] *(n)* - кровопролитие; резня, бойня
bloodstain ['blʌdsteɪn] *(n)* - пятно крови
blow fly [bləu flaɪ] *(n)* - трупная муха
body ['bɔdɪ] *(n)* - тело, труп
body farm ['bɔdɪ fɑ:m] *(n)* - трупная ферма
bond [bɔnd] *(n)* - связь, узы; сцепка
bone [bəun] *(n)* - кость
botany ['bɔtənɪ] *(n)* - ботаника
booties ['bu:tɪz] *(n, pl)* - бахилы
bootlegging ['bu:tlegɪŋ] *(n)* - бутлегерство (незаконная торговля спиртными напитками или другими ограниченными в обращении товарами)
borrow ['bɔrəu] *(v)* - занимать, брать на время
bottle opener ['bɔtl 'əup(ə)nə] *(n)* - открывалка
bottom ['bɔtəm] *(n)* - низ, нижняя часть; днище; дно
box [bɔks] *(n)* - коробка; поле, ячейка, таблица
brainchild ['breɪntʃaɪld] *(n)* - замысел, идея; изобретение
brand [brænd] *(n)* - торговая марка, бренд
break [breɪk] *(v)* - ломать, разбивать
breast milk [brest mɪlk] *(n)* - грудное молоко
breathe [bri:ð] *(v)* - дышать; вдыхать, выдыхать
breathing ['bri:ðɪŋ] *(n)* - дыхание
brush [brʌʃ] *(n)* - кисть, кисточка
bug [bʌg] *(n)* - букашка, мелкое насекомое; жук
bullet ['bulɪt] *(n)* - пуля
bunny suit ['bʌnɪ s(j)u:t] *(n)* - костюм кролика
buried ['berɪd] *(p.p.)* - захороненный, закопанный
bury ['berɪ] *(v)* - хоронить, закапывать
butcher ['buʧə] *(n)* - мясник
butterfly ['bʌtəflaɪ] *(n)* - бабочка
button ['bʌtn] *(n)* - пуговица
bystander ['baɪˌstændə] *(n)* - свидетель, очевидец

- Cc -

cadaver [kə'dævə] *(n)* - труп
caliper ['kælɪpə] *(n)* - штангенциркуль
camera ['kæm(ə)rə] *(n)* - фотоаппарат, видеокамера
can [kæn] *(n)* - жестяная банка; урна, бидон
canister ['kænɪstə] *(n)* - жестяная банка; герметичный контейнер (для токсичных веществ)
canvas ['kænvəs] *(n)* - полотно, холст; картина
cap ['kæp] *(n)* - шапка, шапочка
(v) - снимать головной убор
capability [ˌkeɪpə'bɪlətɪ] *(n)* - способность, возможность
capture ['kæpʧə] *(n)* - захват, задержание; поимка
(v) захватить, брать в плен; фиксировать, записывать (на фото-, кино-, видеоплёнку)
carpet ['kɑ:pɪt] *(n)* - ковёр, ковровое покрытие
carry ['kærɪ] *(v)* - носить, иметь при себе
cartilage ['kɑ:tɪlɪdʒ] *(n)* - хрящ
cartoon [kɑ:'tu:n] *(n)* - карикатура, комикс
cartridge ['kɑ:trɪdʒ] *(n)* - патрон
case [keɪs] *(n)* - случай; дело; чемодан; гильза
casing ['keɪsɪŋ] *(n)* - гильза
casual ['kæʒwəl] *(adj)* - случайный, повседневный

cast [kɑ:st] *(n)* - *зд.* (гипсовый) слепок
cataloging ['kæt(ə)lɔgɪŋ] *(n)* - каталогизация
catastrophe [kə'tæstrəfɪ] *(n)* - катастрофа, трагедия
cause [kɔ:z] *(n)* - причина
cavity (oral and nasal) ['kævətɪ] *(n)* - полость (ротовая, носовая)
ceiling ['si:lɪŋ] *(n)* - потолок; полог, навес
cell [sel] *(n)* - клетка
century ['sentʃ(ə)rɪ] *(n)* - столетие; век
chain [ʧeɪn] *(n)* - цепь, цепочка
chain of custody ['kʌstədɪ] *(n)* - система непрерывного документированного хранения
chalk [ʧɔ:k] *(n)* - мел
challenge ['ʧælɪnʤ] *(n)* - вызов
character ['kærəktə] *(n)* - характер, герой, образ
charge [ʧɑ:ʤ] *(n)* - *зд.* обвинение
chart [ʧɑ:t] *(n)* - график, диаграмма, схема, таблица
check out [] *(v)* - проверить; заценить *(сленг.)*
chemical ['kemɪk(ə)l] *(n)* - химикат; химреагент
(adj) - химический
chemist ['kemɪst] *(n)* - химик
chemistry ['kemɪstrɪ] *(n)* - химия
chest [ʧest] *(n)* - грудная клетка
chip [ʧɪp] *(n)* - тонкая пластинка (отколотая, отсечённая от чего-л.)
christen ['krɪs(ə)n] *(v)* - окрестить
cigar roach [sɪ'gɑ: rəuʧ] *(n)* - окурок
cipher ['saɪfə] *(n)* - код, шифр
circle ['sɜ:kl] *(n)* - круг
circular ['sɜ:kjələ] *(adj)* - круглый, округлый
circumstance ['sɜ:kəmstæn(t)s] *(n)* - обстоятельство
circumstantial [ˌsɜ:kəm'stænʃ(ə)l] *(adj)* - косвенный
civil ['sɪv(ə)l] *(adj)* - гражданский, штатский
civilian [sɪ'vɪlɪən] *(n), (adj)* - гражданский
claim [kleɪm] *(v)* - заявлять, утверждать
classification [ˌklæsɪfɪ'keɪʃ(ə)n] *(n)* - классификация
classify ['klæsɪfaɪ] *(v)* - классифицировать, систематизировать
clay pot [kleɪ pɔt] *(n)* - глиняный горшок
cleaner ['kli:nə] *(n)* - уборщик, уборщица
clearly ['klɪəlɪ] *(adv)* - ясно; очевидно; несомненно
clinical ['klɪnɪk(ə)l] *(adj)* - клинический
cloak [kləuk] *(n)* - плащ; мантия
close [kləuz] *(v)* - закрывать
(adj) - близко расположенный
closely ['kləuslɪ] *(adv)* - пристально, близко
close-up photos - фото с близкого расстояния
clue [klu:] *(n)* - улика
clumping [klʌmpɪŋ] *(n)* - свертывание (крови),
coagulate [kəu'ægjəleɪt] *(v)* - свёртываться
cockpit [] *(n)* **voice recorder** - черный ящик (самолёта)
cockroach ['kɔkrəuʧ] *(n)* - свёртываться
coffin fly ['kɔfɪn flaɪ] *(n)* - горбатка, форид (насекомое-падальщик)
coin [kɔɪn] *(n)* - монета
cold-blooded [ˌkəuld'blʌdɪd] *(adj)* - хладнокровный
coldness ['kəuldnəs] *(n)* - холод, холодность, окоченение
cold steel weapon - холодное оружие
collect [kə'lekt] *(v)* - собирать
collection [kə'lekʃ(ə)n] *(n)* - сбор, собирание
comb (a crime scene) [kəum] *(v)* - прочесывать (место преступления)
combine [kəm'baɪn] *(v)* - объединять, сочетать
come up with *(v)* - придумать
commit [kə'mɪt] *(v)* - совершать
common ['kɔmən] *(adj)* - общий
commonly ['kɔmənlɪ] *(adv)* - обычно, обыкновенно, как правило, в большинстве случаев
comparison [kəm'pærɪs(ə)n] *(n)* - сопоставление, сравнение
compartment [kəm'pɑ:tmənt] *(n)* - отсек, отделение
compile [kəm'paɪl] *(v)* - выбирать информацию, собирать материал (из разных источников)
compound ['kɔmpaund] *(n)* - смесь
comprehensive [ˌkɔmprɪ'hen(t)sɪv] *(adj)* - всесторонний, полный, всеобъемлющий
compromise ['kɔmprəmaɪz] *(v)* - *зд.* подвергать риску
concentrate ['kɔn(t)s(ə)ntreɪt] *(v)* - концентрировать
conceal [kən'si:l] *(v)* - скрывать; утаивать, умалчивать
concept ['kɔnsept] *(n)* - понятие, идея
conclude [kən'klu:d] *(v)* - делать вывод
conclusion [kən'klu:ʒ(ə)n] *(n)* - умозаключение
condition [kən'dɪʃ(ə)n] *(n)* - обстоятельства, условия
confess [kən'fes] *(v)* - признавать, исповедоваться
confession [kən'feʃ(ə)n] *(n)* - признание (вины), исповедь
confidence ['kɔnfɪd(ə)ns] *(n)* - доверие; уверенность
confident ['kɔnfɪd(ə)nt] *(adj)* - уверенный в себе, доверительный
confuse [kən'fju:z] *(v)* - путать
confused [kən'fju:zd] *(adj)* - озадаченный; поставленный в тупик; спутанный
connect [kə'nekt] *(v)* - соединять; связывать
connecting stroke [strəuk] - соединение букв
conscious ['kɔn(t)ʃəs] *(adj)* - сознательный, осознанный; находящийся в сознании
consciously ['kɔn(t)ʃəslɪ] *(adv)* - сознательно, осознанно
consciousness ['kɔn(t)ʃəsnəs] *(n)* - сознание
consider [kən'sɪdə] *(v)* - рассматривать
considerably [kən'sɪd(ə)rəblɪ] *(adv)* - значительно, много
consolidate [kən'sɔlɪdeɪt] *(v)* - объединять; делать твёрдым, твердеть
constant ['kɔn(t)stənt] *(adj)* - постоянный, непрерывный, неизменный
constantly ['kɔn(t)stəntlɪ] *(adv)* - непрерывно, непрестанно, постоянно
constellation [ˌkɔn(t)stə'leɪʃ(ə)n] *(n)* - созвездие
contain [kən'teɪn] *(v)* - содержать в себе, включать
container [kən'teɪnə] *(n)* - контейнер, тара (для хранения и перевозки чего-л.)
contaminate [kən'tæmɪneɪt] *(v)* - загрязнять, портить
contamination [kənˌtæmɪ'neɪʃ(ə)n] *(n)* - загрязнение
contract ['kɔntrækt] *(n)* - контракт, договор
contract [kən'trækt] *(v)* - сжимать(ся); сокращать(ся)
contribute ['kɔntrɪbju:t] *(v)* - способствовать
controversial [ˌkɔntrə'vɜ:ʃl] *(adj)* - спорный, сомнительный; дискуссионный
convergence [kən'vɜ:ʤ(ə)n(t)s] *(n)* - схождение в одной точке
conviction [kən'vɪkʃn] *(n)* - осуждение, признание виновным

coolness ['ku:lnəs] *(n)* - спокойствие, невозмутимость
cord [kɔ:d] *(n)* **(vocal cords)** - связка (вокальные связки)
cordon ['kɔ:d(ə)n] *(n)* - кордон; охрана; оцепление
cork-screw ['kɔ:kskru:] *(n)* - штопор
corpse [kɔ:ps] *(n)* - труп
corroborate (the alibi) [kə'rɔb(ə)reɪt] *(v)* - подтверждать (алиби)
cotton ['kɔt(ə)n] *(n)* - хлопок, вата
counterfeit ['kauntəfɪt] *(n)* - подделка, фальшивка
(adj) - поддельный; фальшивый
(v) - подделывать
counterfeiter ['kauntəfɪtə] *(n)* - фальшивомонетчик
counterfeiting ['kauntəfɪtɪŋ] *(n)* - подделка, незаконное изготовление
countertop ['kauntətɔp] *(n)* - рабочая поверхность; столешница
court [kɔ:t] *(n)* - суд
cover ['kəʌv] *(v)* - покрывать
cover up ['kəʌv] *(v)* - скрыть (следы преступления)
crash [kræʃ] *(n)* - авария, крушение
create [krɪ'eɪt] *(v)* - создавать, творить
creation [krɪ'eɪʃ(ə)n] *(n)* - создание, творение
credible ['kredəbl] *(adj)* - заслуживающий доверия, надёжный
crenellate ['krenəleɪt] *(v)* - сооружать
crenellated ['kren(ə)leɪtɪd] *(adj)* - зубчатый
crime [kraɪm] *(n)* - преступление
crime scene [kraɪm si:n] *(n)* - место преступления
criminal ['krɪmɪn(ə)l] *(n)* - преступник
(adj) - преступный; уголовный
criminalist ['krɪmɪn(ə)lɪst] *(n)* - криминалист
criminalistics [ˌkrimənl'istiks] *(n)* - криминалистика
criminology [ˌkrɪmɪ'nɔlədʒɪ] *(n)* - криминология
critic ['krɪtɪk] *(n)* - критик
critical ['krɪtɪk(ə)l] *(adj)* - важный, решающий
cross-contamination [krɔs-kənˌtæmɪ'neɪʃ(ə)n] *(n)* - перекрёстное загрязнение
crowd [kraud] *(n)* - толпа,
(v) - переполнять
crowded ['kraudɪd] *(adj)* - переполненный
crucial ['kru:ʃ(ə)l] *(adj)* - ключевой; решающий
cry [kraɪ] *(n)* - крик, вопль
cryptanalysis [ˌkriptə'naləsəs] *(n)* - криптоанализ
culprit ['kʌlprɪt] *(n)* - преступник; правонарушитель
cursory ['kɜ:s(ə)rɪ] *(adj)* - беглый, поверхностный
curtain ['kɜ:t(ə)n] *(n)* - занавеска, штора
curved ridge ['kɜ:vd rɪdʒ] - изогнутая бороздка, линия
custom ['kʌstəm] *(n)* - обычай, традиция
cut [kʌt] *(n)* - порез, глубокая рана
(v) - резать; стричь; укорачивать
cypher ['saɪfə] *(n)* - код, шифр, ключ

- D d -

dactyloscopy [ˌdæktɪ'lɔskəpɪ] *(n)* - дактилоскопия
dagger ['dægə] *(n)* - кинжал
damage ['dæmɪdʒ] *(n)* - вред, повреждение
(v) - повреждать, портить
dandruff ['dændrəf] *(n)* - перхоть
data ['deɪtə] *(n pl)* - данные, сведения; информация
database ['deɪtəbeɪs] *(n)* - база данных
dead [ded] *(adj)* - мёртвый; умерший; дохлый
dead body *(n)* - труп
deal (with) [di:l] *(v)* - иметь дело (с)
death [deθ] *(n)* - смерть
decay [dɪ'keɪ] *(n)* - гниение, разложение
decease [dɪ'si:s] *(n)* - гибель, кончина, смерть
deceased [dɪ'si:st] *(n)* - покойник
decipher [dɪ'saɪfə] *(v)* - разгадывать, расшифровывать
decline [dɪ'klaɪn] *(v)* - спускаться, падать, уменьшаться
decompose [ˌdi:kəm'pəuz] *(v)* - гнить, портиться, разлагаться
decomposition [ˌdi:kɔmpə'zɪʃn] *(n)* - гниение, разложение
deep [di:p] *(adj)* - глубокий
definitely ['def(ə)nətlɪ] *(adv)* - определённо, точно
degree [dɪ'gri:] *(n)* - степень, уровень
delay [dɪ'leɪ] *(v)* - откладывать, задерживать, замедлять
delta ['deltə] *(n)* - дельта, устье реки
dental ['dent(ə)l] *(adj)* - зубной
dent [dent] *(n)* - вмятина, насечка, зарубка
(v) - нарезать, насекать, зазубривать
deoxyribonucleic acid (DNA) *(n)* - дезоксирибонуклеиновая кислота, ДНК
depict [dɪ'pɪkt] *(v)* - изображать на картине, рисовать
depiction [dɪ'pɪkʃn] *(n)* - изображение, картина
deploy [dɪ'plɔɪ] *(v)* - вводить в действие
deposit [dɪ'pɔzɪt] *(v)* - *зд.* оставлять после себя
depth [depθ] *(n)* - глубина
derelict ['derəlɪkt] *(adj)* - покинутый, брошенный
derivation [ˌderɪ'veɪʃ(ə)n] *(n)* - словообразование, однокоренное слово; происхождение слова
derived [dɪ'raɪvd] *(p.p.)* - производный
describe [dɪ'skraɪb] *(v)* - описывать
description [dɪ'skrɪpʃn] *(n)* - описание
desert ['dezət] *(n)* - пустыня; пустынный район
(adj) - заброшенный, безлюдный
design [dɪ'zaɪn] *(n)* - замысел, план, чертёж, модель
(v) - придумывать, разрабатывать
desktop (computer) ['desktɔp] - настольный компьютер
destroy [dɪ'strɔɪ] *(v)* - разрушать, ломать, портить
detail ['di:teɪl] *(n)* - подробность; деталь
detect [dɪ'tekt] *(v)* - открывать, обнаруживать
detection [dɪ'tekʃ(ə)n] *(n)* - выявление, обнаружение
detective [dɪ'tektɪv] *(n)* - детектив, оперативный работник
detector [dɪ'tektə] *(n)* - прибор для обнаружения, детектор
determine [dɪ'tɜ:mɪn] *(v)* - определять
detonate ['detəneɪt] *(v)* - взрывать; взрываться
device [dɪ'vaɪs] *(n)* - устройство
dialectology [ˌdaɪəlek'tɔlədʒɪ] *(n)* - диалектология
diamond plate flooring - рифленый (алюминиевый) настил на пол
diagnose ['daɪəgnəuz] *(v)* - ставить диагноз
diagnosis [ˌdaɪəg'nəusɪs] *(n)* - диагноз
diary ['daɪərɪ] *(n)* - дневник
die [daɪ] *(v)* - умирать
differ ['dɪfə] *(v)* - отличаться, иметь иное мнение
differentiate [ˌdɪf(ə)'ren(t)ʃɪeɪt] *(v)* - различать
digital (device) ['dɪdʒɪt(ə)l] *(adj)* - цифровое устройство

digitalise ['dɪdʒɪt(ə)ˌlaɪz] *(v)* - оцифровывать
diligence ['dɪlɪdʒ(ə)ns] *(n)* - старание, усердие
dimension [daɪ'men(t)ʃn] *(n)* - измерение, размер
diminish [dɪ'mɪnɪʃ] *(v)* - убывать, уменьшаться
direct [dɪ'rekt], [daɪ-] *(adj)* - прямой
direction [dɪ'rekʃn] *(n)* - направление
directly [dɪ'rektlɪ] *(adv)* - прямо; непосредственно
dirt [dɜ:t] *(n)* - грязь
dirty ['dɜ:tɪ] *(adj)* - грязный, запачканный
disarticulate [ˌdɪsɑ:'tɪkjuleɪt] *(v)* - разъединять, расчленять
disaster [dɪ'zɑ:stə] *(n)* - беда, бедствие
disclose [dɪs'kləuz] *(v)* - выявлять, обнаруживать
discover [dɪ'skʌvə] *(v)* - обнаруживать, находить
discovery [dɪ'skʌv(ə)rɪ] *(n)* - открытие; обнаружение
disease [dɪ'zi:z] *(n)* - болезнь
disguise [dɪs'gaɪz] *(v)* - скрывать, маскировать
disgusting [dɪs'gʌstɪŋ] *(adj)* - отвратительный, противный
distinctive [dɪ'stɪŋktɪv] *(adj)* - отличительный, характерный; особенный, особый
distribute [dɪ'strɪbju:t] *(v)* - распределять, распространять
disturb [dɪ'stɜ:b] *(v)* - беспокоить; нарушать; портить
disturbance [dɪ'stɜ:b(ə)ns] *(n)* - нарушение; беспорядок; повреждение
diverse [daɪ'vɜ:s] *(adj)* - разнообразный, разный; иной
diversity [daɪ'vɜ:sɪtɪ] *(n)* - многообразие; несхожесть
division [dɪ'vɪʒ(ə)n] *(n)* - раздел, подразделение
document ['dɔkjumənt] *(n)* - документ
(v) - документировать
documents in dispute *(n)* - спорный документ (подлежащий экспертизе)
donate [dəu'neɪt] *(v)* - дарить, жаловать, жертвовать
donation [dəu'neɪʃn] *(n)* - пожертвование, дар
dose [dəus] *(n)* - доза
dot [dɔt] *(n)* - точка; пятнышко
doubt [daut] *(n)* - сомнение, неопределённость, неясность
(v) - сомневаться, быть неуверенным
draft [drɑ:ft] *(n)* - набросок, черновик, проект
drag [dræg] *(n)* - медленное движение; волочение
draw [drɔ:] *(v)* - рисовать; изображать; чертить
drawback ['drɔ:bæk] *(n)* - недостаток, отрицательная сторона
dried [draɪd] *(adj)* - засохший; сухой
drip [drɪp] *(n)* - капающая жидкость
drone [drəun] *(n)* - беспилотный самолёт
drop [drɔp] *(n)* - *зд.* капля
droplet ['drɔplət] *(n)* - капелька
drug [drʌg] *(n)* - лекарство; наркотик
dry [draɪ] *(v)* - сушить; высушивать
(adj) - сухой
dump [dʌmp] *(v)* - бросать в спешке
dust [dʌst] *(n)* - пыль; прах
dusty ['dʌstɪ] *(adj)* - пыльный, покрытый пылью
dwelling ['dwelɪŋ] *(n)* - жилое помещение, жилой дом

- Ee -

e.g. [iːˈdʒiː] *(от лат. «exempli gratia»)* - например
ear wax [ɪə wæks] *(n)* - ушная сера
edge [edʒ] *(n)* - кромка, край; грань, граница; лезвие
effective [ɪ'fektɪv] *(adj)* - действенный, результативный, эффективный
effectiveness [ɪ'fektɪvnəs] *(n)* - эффективность, результативность
effort ['efət] *(n)* - усилие, попытка
egg [eg] *(n)* - яйцо; яйцеклетка
eject [ɪ'dʒekt] *(v)* - выбрасывать, выталкивать
ejector [ɪ'dʒektə] *(n)* - эжектор, выбрасыватель; катапульта
elevate ['elɪveɪt] *(v)* - поднимать
eliminate [ɪ'lɪmɪneɪt], [ə-] *(v)* - устранять, исключать; уничтожать, ликвидировать, аннулировать
elliptical [ɪ'lɪptɪk(ə)l] *(n)* - эллиптический
elongated ['i:lɔŋgeɪtɪd] *(adj)* - вытянутый, продолговатый
eloquent ['eləkwənt] *(adj)* - красноречивый
emergency [ɪ'mɜ:dʒ(ə)n(t)sɪ], [i:-] *(n)* - чрезвычайное положение; крайность; авария
employee [ˌɪmplɔɪ'i:] *(n)* - служащий, сотрудник
enemy ['enəmɪ] *(n)* - враг; антагонист, недруг, противник
engage [ɪn'geɪdʒ], [en-] *(v)* - привлекать, нанимать
engineer [ˌendʒɪ'nɪə] *(n)* - инженер
enlarged photo *(n)* - увеличенное фото
ensure [ɪn'ʃuə] *(v)* - гарантировать, обеспечивать
entirely [ɪn'taɪəlɪ], [en-] *(adv)* - полностью, совершенно,
entomology [ˌentə'mɔlədʒɪ] *(n)* - энтомология
entry ['entrɪ] *(n)* - вход
envelope ['envələup] *(n)* - конверт, упаковка
environment [ɪn'vaɪər(ə)nmənt] *(n)* - окружающая среда
environmental [ɪnˌvaɪər(ə)n'ment(ə)l] *(adj)* - относящийся к окружающей среде
equipment [ɪ'kwɪpmənt] *(n)* - оборудование, экипировка
erect [ɪ'rekt] *(v)* - сооружать; устанавливать; возводить
error ['erə] *(n)* - заблуждение; оплошность, ошибка
escape [ɪs'keɪp] *(n)* - бегство; побег
(v) - совершать побег
establish [ɪs'tæblɪʃ] *(v)* - учреждать, устанавливать
etch [etʃ] *(v)* - гравировать; запечатлевать
ethics ['eθɪks] *(n)* - этика
eurika [jʊəˈri:kə] (*n*) - эврика
evaluate [ɪ'væljueɪt] *(v)* - оценивать
event [ɪ'vent] *(n)* - событие, мероприятие
eventually [ɪ'ventʃuəlɪ] *(adv)* - в конце концов
evidence ['evɪd(ə)ns] *(n)* - доказательство, улика
evidence flag *(n)* - флажок для указания улик
exact [ɪg'zækt] *(adj)* - безошибочный, точный
exactly [ɪg'zæktlɪ] *(adv)* - точно
examination [ɪgˌzæmɪ'neɪʃn] *(n)* - осмотр, изучение
examine [ɪg'zæmɪn] *(v)* - осматривать, исследовать
examiner [ɪg'zæmɪnə] *(n)* - исследователь, эксперт
excavate ['ekskəveɪt] *(n)* - копать, рыть; выкапывать,
exceedingly [ɪk'si:dɪŋlɪ] *(adv)* - весьма, очень, сильно, чрезвычайно
except [ɪk'sept] *(prep)* - кроме, за исключением
exchange [ɪks'ʧeɪndʒ] *(n)* - обмен
exchange principle *(n)* - принцип обмена
excited [ɪk'saɪtɪd] *(adj)* - взволнованный, напряжённый
excitement [ɪk'saɪtmənt] *(n)* - возбуждение, волнение
exclude [ɪks'klu:d] *(v)* - исключать
exhaust fan [ɪg'zɔ:st fæn] *(n)* - вытяжной вентилятор
exhibit [ɪg'zɪbɪt] *(n)* - улика

exhume [eks'(h)ju:m] *(v)* - выкапывать из земли
exhumed remains *(n pl)* - эксгумированные останки
exist [ɪg'zɪst] *(v)* - существовать, иметься в природе
expert ['ekspɜ:t] *(n)* - знаток, эксперт
expertise [ˌekspɜ:'ti:z] *(n)* - экспертиза; экспертная оценка
explosion [ɪk'spləuʒ(ə)n] *(n)* - взрыв; взрывание
explosive [ɪk'spləusɪv] *(adj)* - взрывчатый
expose [ɪk'spəuz] *(v)* - обнажать, делать видимым, показывать, выставлять напоказ
exterior [ɪk'stɪərɪə] *(adj)* - внешний, наружный
external [ɪk'stɜ:n(ə)l] *(adj)* - внешний, наружный
extortion [ɪk'stɔ:ʃn] *(n)* - вымогательство
extract [ɪk'strækt] *(n)* - фрагмент
(v) - извлекать
extraction [ɪk'strækʃn] *(n)* - извлечение; выбор, выборка
extreme [ɪks'tri:m] *(adj)* - самый отдалённый, крайний, предельный
extremely [ɪks'tri:mlɪ] *(adv)* - чрезвычайно
eyelash ['aɪlæʃ] *(n)* - ресница
eye-witness *(n)* - свидетель-очевидец

- Ff -

facial ['feɪʃl] *(adj)* - лицевой
facilitate [fə'sɪlɪteɪt] *(v)* - облегчать; способствовать; помогать
facility [fə'sɪlətɪ] *(n)* - *зд.* оборудование, приспособления, аппаратура
factual ['fæktʃuəl] *(adj)* - фактический, действительный
fade [feɪd] *(v)* - вянуть, увядать; тускнеть; выгорать, выцветать, блёкнуть
fail [feɪl] *(v)* - потерпеть крах, провалиться
failure ['feɪljə] *(n)* - неудача, неуспех, провал
faith [feɪθ] *(n)* - вера, доверие
false [fɔ:ls] *(adj)* - неправильный, ошибочный
falsely ['fɔ:lslɪ] *(adv)* - ложно, ошибочно
faulty ['fɔ:ltɪ] *(adj)* - ложный, ошибочный
feature ['fi:ʧə] *(n)* - особенность, характерная черта
fecal matter ['fi:k(ə)l 'mætə] *(n)* - фекалии
feed (on) [fi:d] *(v)* - питаться, кормиться
feedback ['fi:dbæk] *(n)* - отклик, отзыв, обратная связь
feeling ['fi:lɪŋ] *(n)* - ощущение, чувство
fellow scientist ['feləu 'saɪəntɪst] *(n)* - последователь
felon ['felən] *(n)* - опасный уголовный преступник
felony ['felənɪ] *(n)* - тяжкое уголовное преступление
female ['fi:meɪl] *(n)* - женщина; девушка
fence [fens] *(n)* - забор, изгородь, ограждение
fiction ['fɪkʃ(ə)n] *(n)* - выдумка; литературное произведение
fictional ['fɪkʃ(ə)n(ə)l] *(adj)* - вымышленный
fibre ['fɪkʃ(ə)n] *(n)* - волокно
field [fi:ld] *(n)* - поле
field analyst [fi:ld 'æn(ə)lɪst] *(n)* - криминалист, работающий на месте преступления
figure ['fɪgə] *(n)* - личность; цифра; иллюстрация
file [faɪl] *(n)* - дело; досье; файл
filing ['faɪlɪŋ] *(n)* - опиловка, снятие металлической стружки; хранение данных
find [faɪnd] *(v)* - находить, обнаруживать
finding ['faɪnd] *(n)* - *зд.* заключение, вывод
finger ['fɪŋgə] *(n)* - палец (на руке)
fingerprint ['fɪŋgəprɪnt] *(n)* - отпечаток пальца
fingerprinting ['fɪŋgəprɪntɪŋ] *(n)* - снятие отпечатков пальцев
fingertip ['fɪŋgətɪp] *(n)* - кончик пальца
fire ['faɪə] *(n)* - огонь, пламя
firearm ['faɪə(r)ɑ:m] *(n)* - огнестрельное оружие
fired bullet *(n)* - стрелянная пуля
firing pin *(n)* - ударник; боёк ударника
fit [fɪt] *(v)* - подходить, соответствовать, умещать
fix [fɪks] *(v)* - фиксировать
flashlight ['flæʃlaɪt] *(n)* - электрический фонарик
flattened (nose) ['flæt(ə)nd] *(adj)* - приплюснутый (нос)
flaw [flɔ:] *(n)* - изъян, дефект
flatten out ['flæt(ə)n] *(v)* - становиться ровным, плоским
flawed question - некорректно заданный вопрос
flea [fli:] *(n)* - блоха
fleeting ['fli:tɪŋ] *(adj)* -быстрый, мимолётный, скоротечный
flesh [fleʃ] *(n)* - плоть
flight [flaɪt] *(n)* - полёт, рейс
flopping [flɔpɪŋ] *(adj)* - покатый (лоб)
flow stain - стекающее вниз пятно
fly [flaɪ] *(n)* - муха
focus ['fəukəs] *(n)* - фокус
(v) - концентрироваться
follicle ['fɔlɪkl] *(n)* - *анат.* мешочек, сумка, фолликул
follow ['fɔləu] *(v)* - следовать, идти за
font [fɔnt] *(n)* - шрифт
footprint ['futprɪnt] *(n)* - след, отпечаток (ноги)
footwear ['futwɛə] *(adj)* - *зд.* с определенными индивидуальными признаками ношения обуви
force [fɔ:s] *(n)* - сила
forearm ['fɔ:(r)ɑ:m] *(n)* - предплечье
forehead ['fɔrɪd] *(n)* - лоб
forensic [fə'rensɪk] *(adj)* - судебный
forensic analyst *(n)* - судебный эксперт
forensic scientist *(n)* - судебный эксперт
forensic science *(n)* - судебная наука
forensics [fə'renzɪsk] *(n)* - судебная наука
forge [fɔ:ʤ] *(v)* - обманывать, подделывать
forgery ['fɔ:ʤ(ə)rɪ] *(n)* - подделка, подлог
fork [fɔ:k] *(n)* - вилка; вилы, грабли
formula ['fɔ:mjələ] *(n)* - формула
fortunately ['fɔ:ʧ(ə)nətlɪ] *(adv)* - к счастью
fortune ['fɔ:ʧu:n] *(n)* - судьба; счастье, удача
founding father *(n)* - отец-основатель
fragile ['frædʒaɪl] *(adj)* - ломкий, хрупкий
fragment ['frægmənt] *(n)* - осколок, фрагмент
fraud [frɔ:d] *(n)* - обман; мошенничество
fraudulent ['frɔ:djələnt] *(adj)* - обманный; мошеннический, жульнический
frequency ['fri:kwənsɪ] *(n)* - частота, частотность
fresh [freʃ] *(adj)* - свежий
friction ridge - бороздки на папиллярном узоре
full-body suit - костюм, покрывающий всё тело
fume [fju:m] *(v)* - дымить, загазовывать; курить
fuming chamber - окуривающая, дымовая камера (для выявления скрытых отпечатков пальцев)

fund [fʌnd] *(v)* - финансировать
fuselage ['fju:z(ə)lɑ:ʒ] *(n)* - корпус, фюзеляж

- Gg -

gait [geɪt] *(n)* - походка
gambling ['gæmblɪŋ] *(n)* - азартная игра; игра на деньги
gang [gæŋ] *(n)* - банда, артель, группа людей
gangster ['gæŋstə] *(n)* - бандит, гангстер
gap [gæp] *(n)* - пробел, интервал, пропуск
gather ['gæðə] *(v)* - собирать
generator ['ʤen(ə)reɪtə] *(n)* - источник энергии; генератор
genetic [ʤɪ'netɪk] *(adj)* - генетический
genetics [ʤɪ'netɪks] *(n)* - генетика
genuine ['ʤenjuɪn] *(adj)* - истинный, подлинный, неподдельный; реальный
glance [glɑ:n(t)s] *(n)* - (быстрый) взгляд
glance at [glɑ:n(t)s] *(v)* - бросить взгляд
glass [glɑ:s] *(n)* - стекло, бокал, фужер
glass slide *(n)* - предметное стекло
glasses ['glɑ:sɪz] *(n pl)* - очки
glossary ['glɔs(ə)rɪ] *(n)* - глоссарий
glove [glʌv] *(n)* - перчатка
glue [glu:] *(n)* - клей
(v) - клеить, приклеивать
godfather ['gɔdfɑ:ðə] *(n)* - крёстный отец
government ['gʌv(ə)nmənt] *(n)* - правительство
graduate ['grædjuət], [-ʤu-] *(n)* - выпускник
['grædjueɪt], [-ʤu-] *(v)* - оканчивать (высшее учебное заведение)
graffiti [græ'fi:tɪ] *(n)* - граффити
graph [grɑ:f] *(n)* - граф, кривая
graphology [græ'fɔlәʤɪ] *(n)* - графология
grave [greɪv] *(n)* - могила; захоронение
gravity ['grævɪtɪ] *(n)* - сила тяжести
grid [grɪd] *(n)* - решётка, сетка
grinding ['graɪndɪŋ] *(n)* - шлифовка, полировка; огранка
grip [grɪp] *(n)* - рукоятка
grisly ['grɪzlɪ] *(adj)* - вызывающий ужас
groove [gru:v] *(n)* - борозда
ground [graund] *(n)* - грунт, земля, почва
guideline ['gaɪdlaɪn] *(n)* - инструкция, руководство (по использованию)
guilt [gɪlt] *(n)* - вина
gun [gʌn] *(n)* - огнестрельное оружие; ружьё

- Hh -

habit ['hæbɪt] *(n)* - обычай, традиция
hairspray [hɛə spreɪ] *(n)* - лак для волос
hammer ['hæmə] *(n)* - курок, ударник (в огнестрельном оружии)
handkerchief ['hæŋkəʧi:f] *(n)* - носовой платок
handle (a crime scene) ['hændl] *(v)* - осмотреть, обработать, справиться со всем (на месте преступления)
handwriting ['hænd,raɪtɪŋ] *(n)* - почерк
harassment [hə'ræsmənt] *(n)* - харассмент агрессия, оскорбление, притеснение
hatch [hæʧ] *(v)* - вылупляться из яйца, выводиться
head [hed] *(n)* - голова
health [helθ] *(n)* - здоровье
heart [hɑ:t] *(n)* - сердце
heartbeat ['hɑ:tbi:t] *(n)* - биение, пульсация сердца
heat [hi:t] *(n)* - тепло, температура
height [haɪt] *(n)* - высота, рост
hereditary [hɪ'redət(ə)rɪ] *(adj)* - наследственный
hide [haɪd] *(n)* - прятать(ся), скрывать(ся)
hidden ['hɪd(ə)n] *(p.p.)* - спрятанный; невидимый
hiding-place ['haɪdɪŋ,pleɪs] *(n)* - убежище, укрытие
high plain [haɪ pleɪn] *(n)* - высокая равнина, плато
highlight ['haɪlaɪt] *(v)* - подчёркивать, выделять
high-tech [,haɪ'tek] *(adj)* - высокотехнологичный
hill [hɪl] *(n)* - возвышение, возвышенность, холм
hilly ['hɪlɪ] *(adj)* - холмистый
hire ['haɪə] *(v)* - нанимать, приглашать на работу
hit [hɪt] *(n)* - толчок, удар
hit man *(n)* - вышибала
hitchhike ['hɪʧhaɪk] *(v)* - путешествовать бесплатно на попутных машинах, автостопом
hold [həuld] *(v)* - держать, удерживать
hole (bullet hole) [həul]) *(n)* - дыра; отверстие (пулевое отверстие)
homicide ['hɔmɪsaɪd] *(n)* - (человеко-)убийство
hood [hud] *(n)* - капюшон
hook [huk] *(v)* - прицеплять, подцепить; поймать на крючок; заполучить
hostage-taker ['hɔstɪʤ 'teɪkə] *(n)* - лицо, участвующее в захвате заложников
house [haus] *(v)* - включать в себя
human ['hju:mən] *(adj)* - людской, человеческий
human being *(n)* - человек, человеческое существо
humidity [hju:'mɪdətɪ] *(n)* - сырость, влажность
hurricane ['hʌrɪkən] *(n)* - ураган
hurl [hɜ:l] *(v)* - бросать с силой, метать
hurt [hɜ:t] *(v)* - ранить; ушибить; травмировать
hydrogen peroxide ['haɪdrəʤən pə'rɔksaɪd] *(n)* - перекись водорода
hypothesis [haɪ'pɔθəsɪs] *(n)* - гипотеза, предположение
hypothetical [,haɪpəu'θetɪkl] *(adj)* - гипотетический

- Ii -

i.e. [ʌɪˈi] *(от лат. «id est»)* - то есть, иными словами
identification [aɪ,dentɪfɪ'keɪʃn] *(n)* - опознание, идентификация; установление личности
identifier [ɪ'dentə,fɪə] *(n)* - метод опознавания; лицо, производящее идентификацию; опознание; идентификатор
identify [aɪ'dentɪfaɪ] *(v)* - опознавать, распознавать; устанавливать личность
identity [aɪ'dentətɪ] *(n)* - идентичность, подлинность
idiom ['ɪdɪəm] *(n)* - идиома, диалект, наречие; жаргон
idler ['aɪdlə] *(n)* - бездельник, прожигатель жизни
ignite [ɪg'naɪt] *(v)* - зажигать; раскалять; загораться
illegal [ɪ'li:g(ə)l] *(adj)* - незаконный, неправомерный
imagination [ɪ,mæʤɪ'neɪʃn] *(n)* - воображение; фантазия
imagine [ɪ'mæʤɪn] *(v)* - воображать, представлять себе

immediate [ɪ'mi:dɪət] *(adj)* - немедленный; неотложный
immediately [ɪ'mi:dɪətlɪ] *(adv)* - сразу, незамедлительно
immobile [ɪ'məubaɪl] *(adj)* - недвижимый; неподвижный
impact ['ɪmpækt] *(n)* - вклад; сильное воздействие
impartial [ɪm'pɑ:ʃ(ə)l] *(adj)* - беспристрастный, непредвзятый
impartiality ['ɪmˌpɑ:ʃɪ'ælətɪ] *(n)* - объективность, беспристрастность,
implement ['ɪmplɪmənt] *(v)* - осуществлять; обеспечивать выполнение
implementation [ˌɪmplɪmen'teɪʃn] *(n)* - осуществление, реализация
importance [ɪm'pɔ:t(ə)ns] *(n)* - значимость, важность
important [ɪm'pɔ:t(ə)nt] *(adj)* - значительный, важный
impression [ɪm'preʃn] *(n)* - впечатление; отпечаток, оттиск, след (на мягкой поверхности)
improve [ɪm'pru:v] *(v)* - улучшать; совершенствовать
inch [ɪntʃ] *(n)* - дюйм
incident ['ɪn(t)sɪd(ə)nt] *(n)* - случай, происшествие,
increase ['ɪnkri:s] *(n)* - возрастание, рост
[ɪn'kri:s] *(v)* - возрастать, расти
incredible [ɪn'kredɪbl] *(adj)* - невероятный, немыслимый
independent [ˌɪndɪ'pendənt] *(adj)* - независимый
independence [ˌɪndɪ'pendəns] *(n)* - независимость
indicate ['ɪndɪkeɪt] *(v)* - указывать; означать
indirect [ˌɪndɪ'rekt] *(adj)* - *зд.* косвенный
individual [ˌɪndɪ'vɪdʒuəl], [-djuəl] *(n)* - человек, лицо
individuality [ˌɪndɪˌvɪdʒu'ælətɪ], [-dju-] *(n)* - индивидуальность, личность
individualise [ˌɪndɪ'vɪdʒuəlaɪz], [-djuə-] *(v)* - характеризовать, детально определять
indoor [ˌɪn'dɔ:] *(adj)* - находящийся или происходящий в помещении
indoors [ˌɪn'dɔ:z] *(adv)* - внутри дома, в помещении
inevitably [ɪ'nevɪtəblɪ] *(adv)* - неизбежно,
influence ['ɪnfluəns] *(n)* - влияние, воздействие
influential [ˌɪnflu'enʃ(ə)l] *(adj)* - влиятельный
infrared radiation [ˌɪnfrə'red ˌreɪdɪ'eɪʃn] - инфракрасное излучение
inherit [ɪn'herɪt] *(v)* - унаследовать, перенять
injured ['ɪndʒəd] *(adj)* - повреждённый; раненый; травмированный
injury ['ɪndʒ(ə)rɪ] *(n)* - повреждение, рана, ушиб, ущерб
ink [ɪŋk] *(n)* - чернила
ink pad *(n)* - штемпельная подушка
innocence ['ɪnəs(ə)ns] *(n)* - невиновность
innocent ['ɪnəs(ə)nt] *(adj)* - невинный, невиновный
inoffensive [ˌɪnə'fensɪv] *(adj)* - безвредный, безобидный, безопасный
input ['ɪnput] *(n)* - вложение, вклад; ввод
insect ['ɪnsekt] *(n)* - насекомое
inspect [ɪn'spekt] *(v)* - внимательно осматривать, изучать
inspection [ɪn'spekʃn] *(n)* - экспертиза; официальное расследование; обследование
inspiration [ˌɪnsp(ə)'reɪʃn] *(n)* - воплощение, вдохновение
inspire [ɪn'spaɪə] *(v)* - побуждать, способствовать, наполнить (чувствами)
insufficient [ˌɪnsə'fɪʃ(ə)nt] *(adj)* - недостаточный
intact [ɪn'tækt] *(adj)* - неповреждённый, невредимый
integrity [ɪn'tegrətɪ] *(n)* - целостность; честность
intensity [ɪn'tensətɪ] *(n)* - интенсивность; мощность
interaction [ˌɪntər'ækʃn] *(n)* - взаимодействие
internal [ɪn'tɜ:n(ə)l] *(adj)* - внутренний
internship ['ɪntɜ:nʃɪp] *(n)* - стажировка, учебная практика
interrelationship [ˌɪntərɪ'leɪʃ(ə)nʃɪp] *(n pl)* - взаимоотношение, взаимосвязь
interrogate [ɪn'terəgeɪt] *(v)* - допрашивать
interrogation [ɪnˌterə'geɪʃn] *(n)* - допрос
introduce [ˌɪntrə'dju:s] *(v)* - вводить, внедрять
introduction [ˌɪntrə'dʌkʃn] *(n)* - введение, вступление
inventory ['ɪnv(ə)nt(ə)rɪ] *(n)* - опись, реестр, инвентарь
investigate [ɪn'vestɪgeɪt] *(v)* - расследовать; собирать сведения
investigation [ɪnˌvestɪ'geɪʃn] *(n)* - расследование, следствие, исследование
investigator [ɪn'vestɪgeɪtə] *(n)* - следователь, исследователь
invisible [ɪn'vɪzəbl] *(adj)* - невидимый
involved [ɪn'vəlvd] *(adj)* - вовлечённый, участвующий
iris ['aɪərɪs] *(n)* - радужная оболочка (глаза)

- Jj -

jaw [dʒɔ:] *(n)* - челюсть
jigsaw ['dʒɪgsɔ:] *(n)* - механический лобзик, ножовка
judicial (case) [dʒu:'dɪʃ(ə)l] *(adj)* - судебный
juridical [dʒuə'rɪdɪk(ə)l] *(adj)* - юридический; законный; правовой, судебный
jurisprudence ['dʒuərɪsˌpru:d(ə)ns] *(n)* - правоведение, юриспруденция
jurist ['dʒuərɪst] *(n)* - законовед, правовед, юрист
justice ['dʒʌstɪs] *(n)* - справедливость, правосудие

- Kk -

keep [ki:p] *(v)* - держать; хранить; сохранять
keep in mind - иметь ввиду, учитывать
key [ki:] *(n)* - ключ, ключевой
keystroke [ki: strəuk] *(v)* - нажатие клавиши
kill [kɪl] *(v)* - убивать, лишать жизни
killer ['kɪlə] *(n)* - киллер, убийца
kit [kɪt] *(n)* - набор, комплект
knife (*pl.* **knives**) [naɪf] *(n)* - нож

- Ll -

laboratory [lə'bɔrət(ə)rɪ] *(n)* - лаборатория
land [lænd] *(v)* - приземляться, оседать
lands [lænd] *(n)* - *зд.* фаска, нарезка (на пули)
laptop ['læptɔp] *(n)* - ноутбук
larva ['lɑ:və] *(n)* - личинка
laser ['leɪzə] *(n)* - лазер
laser scanner *(n)* - лазерный сканер
latent ['leɪt(ə)nt] *(adj)* - скрытый, латентный
latex ['leɪteks] *(n)* - латекс
launch [lɔ:ntʃ] *(v)* - бросать с силой, запускать, метать
laundry ['lɔ:ndrɪ] *(n)* - прачечная

law [lɔ:] *(n)* - закон, право
law enforcement *(n)* - правоприменение
law enforcement agencies *(n pl)* - правоохранительные органы
law enforcement officer *(n)* - сотрудник правоохранительных органов
law-breaker [lɔ:' breɪkə] *(n)* - правонарушитель
lawyer ['lɔɪə], ['lɔ:jə] *(n)* - юрист; адвокат
lay [leɪ] *(v)* - класть, положить, хоронить
lay eggs - откладывать яйца
lay out - *зд.* выставлять, ставить
layer ['leɪə] *(n)* - слой, пласт
leave [li:v] *(v)* - покидать, оставлять
legal ['li:g(ə)l] *(adj)* - легальный, законный, правовой
length [leŋθ] *(n)* - длина
letter ['letə] *(n)* - буква; письмо
leverage ['li:v(ə)rɪʤ] *(v)* - использовать (с выгодой)
liberty ['lɪbətɪ] *(n)* - свобода, бесцеремонность
lie [laɪ] *(n)* - ложь, неправда, обман
lie-detector *(n)* - детектор лжи
lifetime ['laɪftaɪm] *(n)* - продолжительность жизни
light [laɪt] *(n)* - свет; освещение
lighting rigs *(n pl)* - осветительные приборы
limit ['lɪmɪt] *(n)* - граница, предел; рубеж
linguistics [lɪŋ'gwɪstɪks] *(n)* - лингвистика, языковедение
link [lɪŋk] *(n)* - связь
(v) - соединять, связывать
linkage ['lɪŋkɪʤ] *(n)* - взаимозависимость, взаимосвязь
lipstick ['lɪpstɪk] *(n)* - губная помада
lipstick print *(n)* - отпечаток губной помады
liquid ['lɪkwɪd] *(adj)* - жидкий, текучий
lividity [lɪ'vɪdɪtɪ] *(n)* - синюшность (кожи)
livor mortis *(n)* - *лат.* посмертная синюшность кожи
loan [ləun] *(n)* - заем, ссуда
mortgage loan - ссуда под ипотеку
locate [ləu'keɪt] *(v)* - определять местонахождение
location [ləu'keɪʃn] *(n)* - помещение, местоположение
locus delicti ['ləukəs] *(n)* - место преступления
log (of visitors) [lɔg] *(n)* - лог, список (посетителей)
loop [lu:p] *(n)* - петля
looping ['lu:pɪŋ] *(n)* - петлеобразование
loss [lɔs] *(n)* - потеря, лишение; утрата
loud [laud] *(adj)* - громкий

- M m -

machine [mə'ʃi:n] *(n)* - машина, механизм; станок
machine gun *(n)* - автомат, пулемет
magazine [ˌmægə'zi:n] *(n)* - барабан *(для патронов)*
magnet ['mægnət] *(n)* - магнит, притягательная сила
magnification [ˌmægnɪfɪ'keɪʃn] *(n)* - увеличение, увеличенное изображение, крупный план
magnifying glass ['mægnɪfaɪŋ glɑ:s] *(n)* - лупа, увеличительное стекло
maintain [meɪn'teɪn] *(v)* - поддерживать, сохранять
maggot ['mægət] *(n)* - личинка (насекомого, обычно мухи)
male [meɪl] *(n)* - мужчина, мужского пол
manpower ['mænˌpauə] *(n)* - рабочая сила; личный состав
manufacture [ˌmænju'fækʧə] *(n)* - производство
manufacturing [ˌmænjə'fækʧ(ə)rɪŋ] *(n)* - изготовление
map [mæp] *(v)* - отображать
mapping ['mæpɪŋ] *(n)* - составление карты, плана
marbling ['mɑ:blɪŋ] *(n)* - окраска под мрамор
margin ['mɑ:ʤɪn] *(n)* - поле (страницы); кромка, край
marijuana [ˌmærɪ'wɑ:nə] *(n)* - марихуана
mark [mɑ:k] *(n)* - знак, метка, отпечаток, след
(v) - отмечать, оставить след
marker ['mɑ:kə] *(n)* - метка, зарубка
marking ['mɑ:kɪŋ] *(n)* - отметка
massacre ['mæsəkə] *(n)* - резня; бойня
match [mæʧ] *(n)* - спичка
(v) - соотнести
matching *(n)* - соотнесение
maths [mæθs] *(n)* - математика
meaning [mi:nɪŋ] *(n)* - значение; смысл
means [mi:nz] *(n)* - способ, средство
meanwhile [meanwhile] *(adv)* - при этом, пока, между тем
measurable ['meʒ(ə)rəbl] *(adj)* - измеримый, умеренный
measure ['meʒə] *(v)* - измерять, мерить
measurement ['meʒəmənt] *(n)* - снятие мерок, измерение
measuring tape - измерительная рулетка
measuring wheel - мерный ролик
medical ['medɪk(ə)l] *(adj)* - врачебный, медицинский
medical examiner *(n)* - судмедэксперт
medicament [mə'dɪkəmənt] *(n)* - лекарство, медикамент
medicine ['medɪsɪn] *(n)* - медицина, терапия
melt [melt] *(v)* - таять
mental ['ment(ə)l] *(adj)* - умственный, психический
mentally ['ment(ə)lɪ] *(adv)* - умственно, мысленно
mention ['menʃn] *(n)* - упоминание
(v) - упоминать
merit ['merɪt] *(n)* - заслуга
mess [mes] *(n)* - беспорядок; неразбериха; грязь
message ['mesɪʤ] *(n)* - сообщение, послание
metallurgy [me'tælәʤɪ] *(n)* - металлургия
method ['meθəd] *(n)* - метод, способ
microscope ['maɪkrəskəup] *(n)* - микроскоп
microscopy [maɪ'krɔskəpɪ] *(n)* - микроскопия
mind [maɪnd] *(n)* - ум, умственная деятельность
like minds *(n pl)* - единомышленники
minuscule ['mɪnəskju:l] *(adj)* - очень маленький
minute [maɪ'n(j)u:t] *(adj)* - маленький, мельчайший
mirror ['mɪrə] *(n)* - зеркало
miss [mɪs] *(v)* - пропустить
mixture ['mɪksʧə] *(n)* - смесь, смешивание
mite [maɪt] *(n)* - клещ
modus operandi *(n)* - способ совершения
moist [mɔɪst] *(adj)* - сырой; влажный, мокрый
moisture ['mɔɪsʧə] *(n)* - влажность, сырость; влага
mold [məuld] *(n)* - пресс-форма; матрица; отливная форма; модель; шаблон; образец
molecule ['mɔlɪkju:l] *(n)* - молекула
morgue [mɔ:g] *(n)* - морг
mortgage ['mɔ:gɪʤ] *(n)* - заклад; ипотека
mosquito [mɔs'ki:təu] *(n)* - комар, москит
moth [mɔθ] *(n)* - моль, мотылёк
motion ['məuʃn] *(n)* - движение; сдвиг; ход (механизма)
motive ['məutɪv] *(n)* - мотив, побуждение, повод

motto ['mɔtəu] *(n)* - девиз, лозунг
move [mu:v] *(v)* - двигать, передвигать
movement ['mu:vmənt] *(n)* - движение, перемещение
mud [mʌd] *(n)* - грязь
mug shot ['mʌg ˌʃɔt] *(n)* - снимок преступника или подозреваемого для полицейского досье
mummy ['mʌmɪ] *(n)* - мумия
murder ['mɜ:də] *(n)* - убийство
(v) - совершать убийство
murderer ['mɜ:d(ə)rə] *(n)* - киллер, убийца
muscle ['mʌsl] *(n)* - мускул, мышца
mute [mju:t] *(adj)* - немой
muzzle ['mʌzl] *(n)* - *зд.* дуло
mystery ['mɪst(ə)rɪ] *(n)* - тайна, загадка

- N n -

nail [neɪl] *(n)* - ноготь
naked eye ['neɪkɪd aɪ] - невооруженным глазом
narrow (down) ['nærəu] *(v)* - суживать; ограничивать
native ['neɪtɪv] *(n)* - *зд.* абориген, коренной житель
natural ['nætʃ(ə)r(ə)l] *(adj)* - естественный, природный
nature ['neɪtʃə] *(n)* - природа
neatly ['ni:tlɪ] *(adv)* - аккуратно, чётко, ясно
needle ['ni:dl] *(n)* - игла
negative ['negətɪv] *(adj)* - отрицательный
nickname ['nɪkneɪm] *(n)* - прозвище
noise [nɔɪz] *(n)* - шум
non-airtight [nɔn-'ɛətaɪt] *(adj)* - воздухопроницаемый
non-porous [nɔn-'pɔ:rəs] *(adj)* - непористый
noose [nu:s] *(n)* - петля
notable ['nəutəbl] *(adj)* - выдающийся, известный, значительный
note [nəut] *(n)* - заметка, запись
(v) - отмечать
notion ['nəuʃn] *(n)* - идея, представление, понятие
noxious ['nɔkʃəs] *(adj)* - вредный, ядовитый
nurse [nɜ:s] *(v)* - *зд.* тянуть (напиток), пить медленно, не спеша

- O o -

oblique (light) [ə'bli:k] *(adj)* - косой, рассеянный (свет)
observe [əb'zɜ:v] *(v)* - проводить научные наблюдения
obtain [əb'teɪn] *(v)* - получать; добывать
occur [ə'kɜ:] *(v)* - происходить, случаться, совершаться
odd one out - игра «Найди лишнее»
odontology [ˌɔdɔn'tɔlədʒɪ] *(n)* - одонтология
odour ['əudə] *(n)* - запах
offence [ə'fens] *(n)* - преступление, правонарушение
offender [ə'fendə] *(n)* - преступник, правонарушитель
offer ['ɔfə] *(v)* - предлагать
(adj) - официальный, служебный
official [ə'fɪʃ(ə)l] *(n)* - должностное лицо
officially [ə'fɪʃ(ə)lɪ] *(adv)* - официально
oil [ɔɪl] *(n)* - масло
body oil *(n)* - кожный жир
onlooker ['ɔnˌlukə] *(n)* - зритель, зевака
operational-investigative group *(n)* - оперативно-следственная группа
opinion [ə'pɪnjən] *(n)* - взгляд, мнение, убеждение
opportunity [ˌɔpə'tju:nətɪ] *(n)* - возможность
organ ['ɔ:gən] *(n)* - орган
organ pipe ['ɔ:gən paɪp] *(n)* - органная труба
organism ['ɔ:g(ə)nɪzm] *(n)* - организм
origin ['ɔrɪdʒɪn] *(n)* - начало, источник; происхождение
osteology [ˌɔstɪ'ɔlədʒɪ] *(n)* - остеология
otherwise ['ʌðəwaɪz] *(adv)* - иным образом; по-другому
outdoor [ˌaut'dɔ:] *(adj)* - находящийся или совершающийся вне помещения
outdoors [ˌaut'dɔ:z] *(adv)* - на улице
outfit ['autfɪt] *(n)* - снаряжение, экипировка, полный комплект одежды
outline ['autlaɪn] *(n)* - очертание, контур, абрис
outside [ˌaut'saɪd] *(adj)* - внешний, наружный; находящийся снаружи
(adv) - снаружи, вовне, на открытом воздухе; на улице
outward ['autwəd] *(adj)* - наружный, внешний
overall ['əuvərɔ:l] *(n)* - спецодежда, рабочий комбинезон
overlook [ˌəuvə'luk] *(v)* - не заметить, просмотреть, пропустить
own [əun] *(adj)* - свой, собственный

- P p -

pack [pæk] *(v)* - упаковывать, запаковывать
package ['pækɪdʒ] *(n)* - упаковка
packet ['pækɪt] *(n)* - пакет, пачка, связка
pad [pæd] *(n)* - прокладка; подушечка; тампон; подкладка
paint [peɪnt] *(n)* - краска
palate ['pælət] *(n)* - нёбо
paleness ['peɪlnəs] *(n)* - бледность
pallor mortis - *лат.* посмертная бледность
palmprint [pɑ:m prɪnt] *(n)* - отпечаток ладони
palm-reader [pɑ:m 'ri:də] *(n)* - хиромант, предсказатель по линиям ладони
paper ['peɪpə] *(n)* - бумага
particle ['pɑ:tɪkl] *(n)* - частица; крупица
pass (for) [pɑ:s] *(v)* - сойти за
passer-by [ˌpɑ:sə'baɪ] *(n)* - прохожий, проезжий
paternity [pə'tɜ:nətɪ] *(n)* - отцовство
path [pɑ:θ] *(n)* - тропинка; тропа; дорожка
pathologist [pə'θɔlədʒɪst] *(n)* - патолог; патологоанатом
pathology [pə'θɔlədʒɪ] *(n)* - патология; патологическая анатомия
patient ['peɪʃ(ə)nt] *(n)* - пациент
(adj) - терпеливый
pattern ['pæt(ə)n] *(n)* - образчик
peace [pi:s] *(n)* - мир
pellet ['pelɪt] *(n)* - *зд.* дробинка; пулька
penalty ['pen(ə)ltɪ] *(n)* - наказание; взыскание; штраф
perfect ['pɜ:fɪkt] *(adj)* - совершенный, безупречный
perfectly ['pɜ:fiktlɪ] *(adv)* - отлично совершенно, в полной мере
perform [pə'fɔ:m] *(v)* - выполнять; делать, совершать

perimeter [pə'rɪmɪtə] *(n)* - периметр
perjure ['pɜːʤə] *(v)* - лжесвидетельствовать
permissible [pə'mɪsəbl] *(adj)* - дозволенный, допустимый
perpetrator ['pɜːpɪtreɪtə] *(n)* - правонарушитель, преступник
perseverance [ˌpɜːsɪ'vɪər(ə)ns] *(n)* - упорство, настойчивость
personnel [ˌpɜːs(ə)'nel] *(n)* - личный состав, персонал
perspiration [ˌpɜːsp(ə)'reɪʃn] *(n)* - потоотделение
pharmacology [ˌfɑːmə'kɔlədʒɪ] *(n)* - фармакология
photography [fə'tɔgrəfɪ] *(n)* - фотография
phase shift [feɪz ʃɪft] - сдвиг фазы, сдвиг по фазе
photo ['fəutəu] *(n)* - фотография, снимок
high resolution photo*(n pl)* - фотографии высокого разрешения
physician [fɪ'zɪʃn] *(n)* - врач, доктор, медик
physics ['fɪzɪks] *(n)* - физика
physiognomy [ˌfɪzɪ'ɔnəmɪ] *(n)* - физиогномика
pick [pɪk] *(v)* - собирать
pick up *(v)* - поднимать, подбирать; забирать
pill [pɪl] *(n)* - пилюля, таблетка
pioneer [ˌpaɪə'nɪə] *(n)* - первооткрыватель, основоположник
pistol ['pɪst(ə)l] *(n)* - пистолет
plan [plæn] *(n)* - план; проект
plaster ['plɑːstə] *(n)* - штукатурка, гипс
plead guilty [pliːd 'gɪltɪ] *(v)* - признать вину
plot [plɔt] *(n)* - сюжет, фабула
plunge (into) [plʌnʤ] *(v)* - погружаться, вовлекаться
point [pɔɪnt] *(n)* - точка
(v) - указывать
pointed ['pɔɪntɪd] *(adj.)* - острый; подчёркнутый
poison ['pɔɪzn] *(n)* - яд, отрава
pole [pəul] *(n)* - столб, шест
pollen ['pɔlən] *(n)* - пыльца
pool [puːl] *(n)* - лужа; лужица, пятно
(v) - накапливаться, скапливаться
potato beetle [pə'teɪtəu 'biːtl] *(n)* - колорадский жук
pore [pɔː] *(n)* - пора
porous ['pɔːrəs] *(adj)* - пористый
portable ['pɔːtəbl] *(adj)* - портативный, переносной
positive ['pɔzətɪv] *(adj)* - позитивный
positive association *(n)* - совпадение при сравнении
possess [pə'zes] *(v)* - владеть, иметь, обладать
post mortem *(n)* - *лат.* вскрытие, результаты вскрытия;
(adj) - посмертный
potato beetle [pə'teɪtəu 'biːtl] *(n)* - колорадский жук
potential [pə'tenʃ(ə)l] *(n)* - возможности, потенциал
pound [paund] *(v)* - сильно биться, колотиться
pound [paund] *(n)* - фунт (стерлингов)
pour [pɔː] *(v)* - литься (о воде, свете) ; идти (о дыме)
powder ['paudə] *(n)* - порошок, порох
power ['pauə] *(n)* - сила, мощь
powerful ['pauəf(ə)l], [-ful] *(adj)* - мощный, сильный
praise [preɪz] *(n)* - хвала
(v) - превозносить, прославлять
predict [prɪ'dɪkt] *(v)* - предсказывать, пророчить; прогнозировать
prediction [prɪ'dɪkʃn] *(n)* - предсказание; прогноз; пророчество
preferably ['pref(ə)rəblɪ] *(adv)* - лучше, предпочтительно
prelab activities - *зд.* деятельность экспертов на месте преступления
premises ['premɪsɪz] *(n pl)* - дом; владение; недвижимость
presence ['prez(ə)n(t)s] *(n)* - присутствие; наличие
preservation [ˌprezə'veɪʃ(ə)n] *(n)* - сохранность, сохранение
preserve [prɪ'zɜːv] *(v)* - сохранять, сберегать
press [pres] *(v)* - нажимать, надавливать
pressing ['presɪŋ] *(n)* - *зд.* нажим
pressure ['preʃə] *(n)* - давление, воздействие, нажим
prevent (a crime) [prɪ'vent] *(v)* - предотвращать, предупреждать (преступление)
prevention [prɪ'ven(t)ʃn] *(n)* - предотвращение, предупреждение
previously ['priːvɪəslɪ] *(adv)* - предварительно
primarily [praɪ'mer(ə)lɪ] *(adv)* - первоначально
primary ['praɪm(ə)rɪ] *(adj)* - первоначальный, первичный
primer ['praɪmə] *(n)* - запал; запальный патрон
print [prɪnt] *(n)* - отпечаток; след
printout [prɪntaut] *(n)* - распечатка
priority [praɪ'ɔrətɪ] *(n)* - первенство, преимущество, приоритет
prison ['prɪz(ə)n] *(n)* - тюрьма
pristine ['prɪstiːn] *(adj)* - первоначальный, нетронутый
private ['praɪvɪt] *(adj)* - частный
probably ['prɔbəblɪ] *(adv)* - вероятно, наверное
probe [prəub] *(n)* - зонд, щуп; датчик
procedure [prə'siːʤə] *(n)* - процедура, порядок осуществления действия
process (a crime scene) ['prəuses] *(v)* - обрабатывать (место преступления)
processing ['prəusesɪŋ] *(n)* - обработка
profiling [prə'faɪlɪŋ] *(n)* - определение профиля
projectile [prə'ʤektaɪl] *(n)* - снаряд; пуля
promptly ['prɔmptlɪ] *(adv)* - быстро, сразу, прямо
proof [pruːf] *(n)* - подтверждение, доказательство
proper ['prɔpə] *(adj)* - правильный, надлежащий
properly ['prɔp(ə)lɪ] *(adv)* - должным образом; как следует; правильно
protective [prə'tektɪv] *(adj)* - защитный
protective clothes *(n pl)* - защитная одежда
prove [pruːv] *(v)* - доказывать
provide [prə'vaɪd] *(v)* - снабжать; обеспечивать
proximity [prɔk'sɪmətɪ] *(n)* - близость, соседство
psychiatric [ˌsaɪkɪ'ætrɪk)] *(adj)* - психиатрический
psychiatrist [saɪ'kaɪətrɪst] *(n)* - психиатр
psychiatry [saɪ'kaɪətrɪ] *(n)* - психиатрия
psychic ['saɪkɪk] *(adj)* - психический
psychologist [saɪ'kɔlədʒɪst] *(n)* - психолог
psychology [saɪ'kɔlədʒɪ] *(n)* - психология
psychosomatic [ˌsaɪkəsə'mætɪk] *(adj)* - психосоматический
public ['pʌblɪk] *(adj)* - общественный; государственный
publicise ['pʌblɪsaɪz] *(v)* - популяризировать
pull over (the car) ['pul 'əuvə] *(v)* - останавливать автомобиль (о полиции); съезжать на обочину и останавливаться
pulse [pʌls] *(n)* - пульс

pupa ['pju:pə] *(n)* - *зоол.* куколка
purging ['pɜ:dʒɪŋ] *(n)* - продувка; промывка; очистка
purple ['pɜ:pl] *(adj)* - пурпурный, фиолетовый цвет
purpose ['pɜ:pəs] *(n)* - цель, намерение; замысел
push [puʃ] *(v)* - толкать
putrefaction [ˌpju:trɪ'fækʃn] *(n)* - гниение; разложение
puzzle ['pʌzl] *(n)* - пазл, ребус, головоломка

- Qq -

quality ['kwɔlətɪ] *(n)* - качество
questioned document ['kwestʃənd 'dɔkjumənt] *(n)* - сомнительный документ, оспариваемый документ

- Rr -

radiate (out) ['reɪdɪeɪt] *(v)* - излучать, распространяться
rag [ræg] *(n)* - лоскут, тряпка
rags - лохмотья, тряпьё, шмотки
raid [reɪd] *(n)* - внезапное нападение; рейд; налёт
raincoat ['reɪnkəut] *(n)* - плащ, дождевик
range [reɪndʒ] *(n)* - *зд.* полигон, стрельбище, тир
ransom ['ræns(ə)m] *(n)* - выкуп
rape [reɪp] *(n)* - изнасилование
ratio ['reɪʃɪəu] *(n)* - отношение, пропорция; коэффициент; соотношение
razor wire ['reɪzə 'waɪə] *(n)* - колючая проволока
reach [ri:ʧ] *(n)* - *зд.* размах (рук)
react [rɪ'ækt] *(v)* - реагировать, отзываться
reaction [rɪ'ækʃ(ə)n] *(n)* - реакция
reagent [ˌri:'eɪdʒənt] *(n)* - реактив; реагент
rear [rɪə] *(adj)* - задний, расположенный сзади
reason ['ri:z(ə)n] *(n)* - причина, повод, мотив
reasonable ['ri:z(ə)nəbl] *(adj)* - рациональный; обоснованный; корректный
receipt [rɪ'si:t] *(n)* - товарный, кассовый чек
recidivist [rɪ'sɪdɪvɪst] *(n)* - рецидивист
recognition [ˌrekəg'nɪʃn] *(n)* - узнавание, распознавание
recognise ['rekəgnaɪz] *(v)* - узнавать, опознавать, распознавать
reconstruct [ˌri:k(ə)n'strʌkt] *(v)* - восстанавливать
reconstruction [ˌri:k(ə)n'strʌkʃn] *(n)* - восстановление
record ['rekɔ:d] *(n)* - запись
[rɪ'kɔ:d] *(v)* - записывать, регистрировать
record-keeping *(n)* - ведение записей, документооборот
recover [rɪ'kʌvə] *(v)* - *зд.* найти, обнаружить
recovery [rɪ'kʌv(ə)rɪ] *(n)* - *зд.* обнаружение
recruit [rɪ'kru:t] *(v)* - вербовать, нанимать
rectal ['rekt(ə)l] *(adj)* - прямокишечный, ректальный
reduction [rɪ'dʌkʃn] *(n)* - снижение, спад
reeve [ri:v] *(n)* - *ист.* главный судья (города или округа), управляющий феодальным поместьем
refer (to) [rɪ'fɜ:] *(v)* - относиться, приписывать (какому-л. классу, периоду, течению и т. п.)
reference ['ref(ə)r(ə)ns] *(n)* - ссылка (на к.-л. / ч.-л.); упоминание (о к.-л. / ч.-л.)
reflect [rɪ'flekt] *(v)* - отражать; размышлять над
reflection [rɪ'flekʃn] *(n)* - отражение, размышление
regular ['regjələ] *(adj)* - стандартный, обычный
reject [rɪ'dʒekt] *(v)* - отклонять; выделять, извергать
relate (to) [rɪ'leɪt] *(v)* - относиться, иметь отношение
relative ['relətɪv] *(n)* - родственник,
(adj) - относящийся к делу
relatively ['relətɪvlɪ] *(adv)* - относительно, сравнительно
release [rɪ'li:s] *(v)* - отпускать, выпускать
release agent *(n)* - химическое вещество
relevant ['reləvənt] *(adj)* - значимый; важный
rely (on) [rɪ'laɪ] *(v)* - полагаться, надеяться на
remain [rɪ'meɪn] *(v)* - оставаться
remains [rɪ'meɪnz] *(n)* - останки
remove (organs) [rɪ'mu:v] *(v)* - вынимать (органы)
repeat offender [rɪ'pi:t ə'fendə] *(n)* - рецидивист
replace [rɪ'pleɪs] *(v)* - заменять, замещать
report [rɪ'pɔ:t] *(n)* - отчёт, доклад, рапорт
(v) - докладывать, составлять отчёт
request [rɪ'kwest] *(n)* - просьба; требование, запрос; заявка
research [rɪ'sɜ:ʧ] *(n)* - (научное) исследование
researcher [rɪ'sɜ:ʧə] *(n)* - научный работник; исследователь; учёный
residue ['rezɪdju:] *(n)* - осадок, остаток, порох
respect (a rule) [rɪ'spekt] *(v)* - соблюдать (правило)
respiration [ˌresp(ə)'reɪʃn] *(n)* - дыхание
respond (to a crime scene) *(v)* - реагировать (на срочный вызов на место преступления)
responder [rɪ'spɔndə] *(n)* - сотрудник, исполнитель
first responder *(n)* - полицейский, первый прибывший на место преступления
response [rɪ'spɔn(t)s] *(n)* - ответ, отклик
responsibility [rɪˌspɔnsə'bɪlətɪ] *(n)* - ответственность
responsible [rɪ'spɔnsəbl] *(adj)* - ответственный
restore [rɪ'stɔ:] *(v)* - восстанавливать, реставрировать
restrict [rɪ'strɪkt] *(v)* - сдерживать, ограничивать
restriction [rɪ'strɪkʃn] *(n)* - ограничение
result [rɪ'zʌlt] *(n)* - результат
retina ['retɪnə] *(n)* - сетчатка, сетчатая оболочка (глаза)
return [rɪ'tɜ:n] *(v)* - возвращать(ся); платить (тем же)
reveal [rɪ'vi:l] *(v)* - обнаруживать, показывать
revenge [rɪ'vendʒ] *(n)* - месть, мщение
revengeful [rɪ'vendʒf(ə)l], [-ful] *(adj)* - мстительный, жаждущий мщения
revolutionise [ˌrev(ə)'lu:ʃ(ə)naɪz] *(v)* - совершить революцию, коренным образом изменить
revolver [rɪ'vɔlvə] *(n)* - револьвер
rewoven [rɪ'wəuv(ə)n] *(adj)* - заплатанный, зашитый
riddle ['rɪdl] *(n)* - загадка
ridge [rɪdʒ] *(n)* - бороздка, линия
ridiculous [rɪ'dɪkjələs] *(adj)* - нелепый, смешной
rifle ['raɪfl] *(n)* - винтовка
sniper rifle *(n)* - снайперская винтовка
rigid ['rɪdʒɪd] *(adj)* - жёсткий, твёрдый, несгибаемый
rigidity [rɪ'dʒɪdətɪ] *(n)* - жёсткость; твёрдость
rigor mortis ['rɪgə] *(n)* - *лат.* трупное окоченение
rim [rɪm] *(v)* - обод, край, оправа
rip [rɪp] *(v)* - потрошить, отрывать
ripper ['rɪpə] *(n)* - потрошитель (убийца, распарывающий тела своих жертв)

rival ['raɪv(ə)l] *(n)* - соперник; конкурент
roach [rəuʧ] *(n)* - таракан; окурок (*сленг.* бычок)
rob [rɔb] *(v)* - грабить
robber ['rɔbə] *(n)* - грабитель, разбойник
robbery ['rɔb(ə)rɪ] *(n)* - ограбление, грабёж ; разбой
rock [rɔk] *(n)* - скала, горная порода
rolled impressions [rəuld ɪm'preʃ(ə)ns] *(n)* - откатанные отпечатки
rough [rʌf] *(adj)* - грубый, черновой, в виде наброска
roughly ['rʌflɪ] *(n)* - грубо, приблизительно, на глаз
rubber ['rʌbə] *(n)* - резина, шина, покрышка
rubber tube *(n)* - резиновая трубка
run (tests) [rʌn] *(v)* - проводить (тесты)
rupture ['rʌpʧə] *(n)* - разрыв, прорыв

- S s -

sacred ['seɪkrɪd] *(adj)* - священный; святой
safe [seɪf] *(adj)* - безопасный
safety ['seɪftɪ] *(n)* - безопасность
saliva [sə'laɪvə] *(n)* - слюна
sample ['sɑ:mpl] *(n)* - образец, образчик, проба (для научного или медицинского исследования)
sand [sænd] *(n)* - песок; гравий
satellite ['sæt(ə)laɪt] *(n)* - спутник; сопровождающее лицо
savage ['sævɪʤ] *(n)* - *зд.* дикарь (человек, принадлежащий первобытному обществу)
scan [skæn] *(v)* - сканировать, внимательно изучать
scanner ['skænə] *(n)* - сканер
scanning ['skænɪŋ] *(n)* - сканирование
scar [skɑ:] *(n)* - рубец, шрам
schema ['ski:mə] *(n)* - набросок, чертеж
science ['saɪəns] *(n)* - наука
scientific [ˌsaɪən'tɪfɪk] *(adj)* - научный
scientific branch *(n)* - научная отрасль
scientific discipline *(n)* - научная дисциплина
scientifically [ˌsaɪən'tɪfɪk(ə)lɪ] *(adv)* - научно; с научной точки зрения
scientist ['saɪəntɪst] *(n)* - учёный; научный работник
scissors ['sɪzəz] *(n pl)* - ножницы
scope [skəup] *(n)* - масштаб, предел, размах
scrap [skræp] *(n)* - клочок, кусочек, обрывок
scrape [skreɪp] *(v)* - обдирать, царапать
scratch [skræʧ] *(v)* - царапать, расцарапать, скрести
screen-play ['skri:nplеɪ] *(n)* - сценарий, киносценарий
screwdriver ['skru:ˌdraɪvə] *(n)* - отвёртка
scrupulously ['skru:pjələslɪ] *(adv)* - скрупулёзно, досконально, тщательно, точно
seal [si:l] *(n)* - печать; клеймо
(v) - опечатывать, пломбировать
sealed tube *(n)* - герметично запечатанная пробирка
search [sɜ:ʧ] *(n)* - поиск, обыск, прочесывание (места преступления)
(v) - искать, обыскивать, прочесывать (место преступления)
searcher ['sɜ:ʧə] *(n)* - лицо, производящее обыск, досмотр
secondary ['sek(ə)nd(ə)rɪ] *(adj)* - вторичный
sedan [sɪ'dæn] *(n)* - седан (с закрытым кузовом)
sediment ['sedɪmənt] *(n)* - отстоявшийся слой, осадок
seemingly ['si:mɪŋlɪ] *(adv)* - по-видимому, на вид
semen ['si:mən] *(n)* - семя, сперма
sentence ['sentəns] *(n)* - приговор
(v) - приговаривать
separate ['sep(ə)reɪt] *(v)* - отделять, разделять
['sep(ə)rət] *(adj)* - отдельный, автономный
separately ['sep(ə)rətlɪ] *(adv)* - отдельно, раздельно
separation [ˌsep(ə)'reɪʃ(ə)n] *(n)* - отделение; разделение; разъединение
sequence ['si:kwən(t)s] *(n)* - последовательность; ряд; очерёдность
serial ['sɪərɪəl] *(adj)* - серийный
series ['sɪəri:z] *(n)* - серия; сериал
serology [sə'rɔlədʒɪ] *(n)* - серология
serum ['sɪərəm] *(n)* - сыворотка
servant ['sɜ:v(ə)nt] *(n)* - слуга, служащий
set up [set] *(v)* - устанавливать
setup ['setʌp] *(n)* - структура, система; установка
severe [sɪ'vɪə] *(adj)* - строгий; серьёзный, тяжёлый
severely [sɪ'vɪəlɪ] *(adv)* - строго, сурово, жёстко
shadow ['ʃædəu] *(n)* - тень
shallow (grave) ['ʃæləu] *(adj)* - неглубокая могила
shape [ʃeɪp] *(n)* - форма, очертание
shards [ʃɑ:ds] *(n)* - кусочки, черепки
share [ʃeə] *(v)* - делить(ся); разделять (что-л. с кем-л.
sharp [ʃɑ:p] *(adj)* - острый
shell [ʃel] *(n)* - *зд.* гильза (патрона)
shift [ʃɪft] *(n)* - сдвиг, передвижение
shire ['ʃaɪə] *(n)* - графство; жители графства
shoe covers [ʃu: 'kʌvəz] *(n pl)* - бахилы
shoeprint [ʃu: prɪnt] *(n)* - отпечаток обуви
shot [ʃɔt] *(n)* - выстрел
shotgun ['ʃɔtgʌn] *(n)* - дробовик
shriek [ʃri:k] *(n)* - пронзительный крик, вопль
sight [saɪt] *(n)* - зрение; взгляд; вид; прицел
sign [saɪn] *(n)* - знак; символ
(v) - подписывать (документ)
signature ['sɪgnəʧə] *(n)* - подпись
significantly [sɪg'nɪfɪkəntlɪ] *(adv)* - многозначительно
silent ['saɪlənt] *(adj)* - безмолвный, немой
similarity [ˌsɪmɪ'lærətɪ] *(n)* - подобие, сходство
simulate ['sɪmjəleɪt] *(v)* - имитировать, копировать
simultaneously [ˌsɪm(ə)l'teɪnɪəslɪ] *(adv)* - одновременно
sin (*сокр. от* sine) [sɪn] *(n)* - синус
single ['sɪŋgl] *(adj)* - один, единственный
site [saɪt] *(n)* - позиция, площадь, место, сайт
size [saɪz] *(n)* - размер, величина
skeletal ['skelɪt(ə)l] *(adj)* - скелетный
skeletal remains *(n pl)* - останки скелета
skeleton ['skelɪt(ə)n] *(n)* - скелет
skeletonisation [ˌskelɪt(ə)naɪ'zeɪʃ(ə)n] *(n)* - скелетирование
sketch [skeʧ] *(n)* - эскиз, набросок
(v) - рисовать эскиз, делать набросок
sketchist ['skeʧɪst] *(n)* - зарисовщик
skid marks [skɪd mɑ:ks] *(n)* - следы от юза, заноса (автомобиля)
skill [skɪl] *(n)* - умение; навык
skim [skɪm] *(v)* - едва касаться, нестись, скользить
skin [skɪn] *(n)* - кожа (человека)

skirt [skɜ:t] *(n)* - юбка
skull [skʌl] *(n)* - череп
slant [slɑ:nt] *(n)* - наклон
slide [slaɪd] *(n)* - *зд.* предметное стекло (микроскопа)
slight [slaɪt] *(adj)* - небольшой, незначительный
slip [slɪp] *(n)* - скольжение
(v) - скользить
sloping (forehead)['sləupɪŋ] *(adj)* - покатый (лоб)
smashed [smæʃt] *(adj)* - с силой сломанный, выбитый
smear (of blood) [smɪə] *(n)* - пятно, мазок (крови)
smell [smel] *(n)* - обоняние, запах; аромат
smooth [smu:ð] *(adj)* - гладкий, ровный
snapshot ['snæpʃɔt] *(n)* - снимок, кадр
soft [sɔft] *(adj)* - мягкий
soil [sɔɪl] *(n)* - грунт, земля, почва
sole [səul] *(n)* - подошва
solid ['sɔlɪd] *(adj)* - твёрдый, прочный, крепкий
solution (of a crime) [sə'lu:ʃn] *(n)* - решение, раскрытие (преступления)
solve (a crime) [sɔlv] *(v)* - раскрыть (преступление)
sound [saund] *(n)* - звук; громкость
sound wave - звуковая волна
source [sɔ:s] *(n)* - источник
space [speɪs] *(n)* - пространство, расстояние
spacing ['speɪsɪŋ] *(n)* - интервал, промежуток
span [spæn] *(v)* - *зд.* охватывать, распространяться
spatial ['speɪʃ(ə)l] *(adj)* - пространственный; занимающий какое-л. пространство
spatter ['spætə] *(n)* - небольшое количество, капля
spectator [spek'teɪtə] *(n)* - очевидец, свидетель
spectral ['spektr(ə)l] *(adj)* - спектральный
spectrograph ['spektrə¸graf] *(n)* - спектрограф
spectrometry [spek'træmətrɪ] *(n)* - спектрометрия
speculate ['spekjəleɪt] *(v)* - *зд.* полагать, допускать предполагать
speech [spi:ʧ] *(n)* -речь; выступление; обращение
speed [spi:d] *(n)* - скорость; темп
spilling ['spɪlɪŋ] *(n)* - проливание
spin [spɪn] *(n)* - крутить(ся), вертеть(ся)
spine [spaɪn] *(n)* - *зд.* игла, колючка, шип
spiny ['spaɪnɪ] *(adj)* - колкий, колючий
spiral ['spaɪər(ə)l] *(n)* - спираль
splash [splæʃ] *(n)* - пятно, брызганье
splinter ['splɪntə] *(n)* - щепка
wood splinters *(n pl)* -деревянные щепки
spot [spɔt] *(n)* - пятно, пятнышко, капля
spread [spred] *(v)* - распространяться
square [skwɛə] *(n)* - квадрат
stab [stæb] *(n)* - удар (ножом, кинжалом)
(v) - колоть, ранить кинжалом, ножом
staff [stɑ:f] *(n)* - штат служащих; личный состав; кадры
stain [steɪn] *(n)* - пятно
stainless-steel - нержавеющая сталь
stalk [stɔ:k] *(v)* - подкрадываться (к дичи); скрыто преследовать; выслеживать
stamp [stæmp] *(n)* - штамп, печать, клеймо
statement ['steɪtmənt] *(n)* - утверждение
stature ['stæʧə] *(n)* - рост
steady ['stedɪ] *(adj)* - прочный, твёрдый; надёжный
steal [sti:l] *(v)* - воровать, красть
steel [sti:l] *(n)* - сталь
cold steel weapon - холодное оружие
stick [stɪk] *(v)* - клеить; привязывать; заколоть
sticker ['stɪkə] *(n)* - стикер, наклейка, этикетка
sticky ['stɪkɪ] *(adj)* - клейкий, липкий; вязкий; тягучий
stiff [stɪf] *(adj)* - окоченелый
stiffening ['stif(ə)nɪŋ] *(n)* - окоченение (процесс)
stiffness ['stɪfnəs] *(n)* - окоченение
still [stɪl] *(adv)* - до сих пор, (всё) ещё
stopping distance *(n)* - тормозной путь
stranger ['streɪnʤə] *(n)* - незнакомец, посторонний, чужой человек
strangle ['strængl] *(v)* - задушить, удавить
strength [streŋθ] *(n)* - сила
striation [straɪ'eɪʃn] *(n)* - полоска; бороздка
strict [strɪkt] *(adj)* - строгий; жёсткий
strike [straɪk] *(n)* - удар
(v) - ударять(ся), наносить удар, бить
string [strɪŋ] *(n)* - верёвка, струна
stringing ['strɪŋɪŋ] *(n)* - натягивание нитей (в баллистике)
strip [strɪp] *(n)* - полоса
strong [strɔŋ] *(adj)* - сильный, прочный, твёрдый
struggle ['strʌgl] *(n)* - борьба
studious ['stju:dɪəs] *(adj)* - старательный, трудолюбивый, усердный
subdivision [¸sʌbdɪ'vɪʒn] *(n)* - *зд.* подраздел, подразделение
substance ['sʌbst(ə)ns] *(n)* - вещество
suffer ['sʌfə] *(v)* - страдать, пострадать
sugarcoat ['ʃugəkəut] *(v)* - приукрашивать
suggest [sə'ʤest] *(v)* - предлагать
suggestion [sə'ʤesʧn] *(n)* - предложение
suicide ['s(j)u:ɪsaɪd] *(n)* - самоубийство, самоубийца
suit [s(j)u:t] *(n)* - комплект, костюм
summary ['sʌm(ə)rɪ] *(n)* - краткое изложение, резюме
support [sə'pɔ:t] *(n)* - поддержка; помощь
(v) - поддерживать
supporter [sə'pɔ:tə] *(n)* - сторонник
surface ['sɜ:fɪs] *(n)* - поверхность
surgeon ['sɜ:ʤ(ə)n] *(n)* - хирург
surgery ['sɜ:ʤ(ə)rɪ] *(n)* - хирургия
suspect ['sʌspekt] *(n)* - подозреваемый
suspend [sə'spend] *(v)* - *зд.* арестовать; подвешивать
suspended [sə'spendɪd] *(adj)* - подвешенный
suspicious [sə'spɪʃəs] *(adj)* - подозрительный
swab [swɔb] *(n)* - тампон
cotton swab *(n)* - ватная палочка
SWAT (special weapons and tactics) [swɔt] *(n)* - полицейский спецназ
sweat [swet] *(n)* - испарина, пот
sweating ['swetɪŋ] *(n)* - потение
Swiss army knife *(n)* - швейцарский нож
sword [sɔ:d] *(n)* - меч; шпага
syringe [sɪ'rɪnʤ] *(n)* - шприц

- Tt -

tail [teɪl] *(n)* - хвост
tamper-evident tape - лента с защитой от вскрытия

tangent ['tændʒ(ə)nt] *(n)* - тангенс
tank [tæŋk] *(n)* - бак, резервуар, цистерна, чан
tape [teɪp] *(n)* - лента
tape lift *(n)* - клейкая лента для снятия отпечатков пальцев
target ['tɑ:gɪt] *(n)* - цель, мишень
task [tɑ:sk] *(n)* - задача
team [ti:m] *(n)* - команда
technician [tek'nɪʃ(ə)n] *(n)* - технический работник, лаборант
technique [tek'ni:k] *(n)* - техника, метод, способ
technology [tek'nɔlədʒɪ] *(n)* - технология
template ['templeɪt], [-lɪt] *(n)* - образец, трафарет, шаблон
temporal ['temp(ə)r(ə)l] *(adj)* - временный
temporarily ['temp(ə)r(ə)r(ə)lɪ] *(adv)* - временно, на время
term [tɜ:m] *(n)* - термин; срок; длительность, продолжительность
terminal ['tɜ:mɪn(ə)l] *(n)* - конец; конечный пункт
(adj) - заключительный, конечный
test [test] *(n)* - проверка, испытание; тест, исследование, анализ
(v) - тестировать; проводить тесты
test tube ['test tju:b] *(n)* - пробирка
testify ['testɪfaɪ] *(v)* - выступать в качестве свидетеля; давать (свидетельские) показания
testimony ['testɪmənɪ] *(n)* - свидетельское показание
texture ['tekstʃə] *(n)* - строение, структура; фактура
textured surface - текстурированная поверхность
theft [θeft] *(n)* - воровство, кража
thief [θi:f] *(n)* - вор, похититель
thirsty ['θɜ:stɪ] *(adj)* - томимый жаждой, испытывающий жажду
thread [θred] *(n)* - нитка
threat [θret] *(n)* - опасность, угроза
threaten ['θret(ə)n] *(v)* - грозить, угрожать
thrift store [θrɪft stɔ:] *(n)* - комиссионный магазин, секонд-хэнд
throat [θrəut] *(n)* - горло, гортань; глотка
through [θru: *(prep)* - через, сквозь; в течение
throughout [θru'aut] *(prep)* - через, по всей площади
(adv) - повсюду, везде
throw [θrəu] *(v)* - бросать, кидать, метать
throw away - упустить (возможность), тратить
throw off - выбросить
thumb [θʌm] *(n)* - большой палец (руки)
tick [tɪk] *(v)* - ставить «птичку», галочку
tie [taɪ] *(n)* - верёвка, шнурок; галстук; связка
(v) - завязывать, привязывать, связывать
time of the day *(n)* - время суток
timeline [tʌɪmlʌɪn] *(n)* - временная лента
tiny ['taɪnɪ] *(adj)* - очень маленький, крошечный
tire ['taɪə] *(n)* - шина, покрышка
tissue ['tɪʃu:] *(n)* - ткань, материя
title ['taɪtl] *(n)* - заглавие, название, наименование
toe [təu] *(n)* - палец ноги
tool [tu:l] *(n)* - инструмент; оборудование; станок
tooth (teeth) [tu:θ] *(n)* - зуб (зубы)
toothpick ['tu:θpɪk] *(n)* - зубочистка
topography [tɔ'pɔgrəfɪ] *(n)* - топография; географические особенности местности
torch [tɔ:ʧ] *(n)* - осветительный прибор, фонарь
torn [tɔ:n] *(adj)* - оборванный
torso ['tɔ:səu] *(n)* - корпус, торс, туловище
touch [tʌʧ] *(v)* - касаться, трогать, притрагиваться
toxicology [ˌtɔksɪ'kɔlədʒɪ] *(n)* - токсикология
toxin ['tɔksɪn] *(n)* - токсин, яд
trace [treɪs] *(n)* -след, отпечаток; незначительное количество, остатки (чего-л.); следы
(v) - следить; выслеживать
trace evidence *(n)* - следы, трасологическая улика
track [træk] *(n)* - след, отпечаток (шин)
(v) - отслеживать, выслеживать
trail [treɪl] *(v)* - идти по следу, преследовать
training ['treɪnɪŋ] *(n)* - обучение, образование, подготовка
trait [treɪt] *(n)* - характерная черта, особенность
trajectory [trə'dʒekt(ə)rɪ] *(n)* - траектория
transfer [træn(t)s'fɜ:], [trɑ:n-] *(v)* - перевозить, транспортировать
transient ['trænzɪənt], ['trɑ:n-] *(adj)* - недолговечный
transit ['træn(t)sɪt] *(n)* - поездка, перевозка, транзит
trash [træʃ] *(n)* - хлам, отбросы; мусор; макулатура
trauma ['trɔ:mə] *(n)* - травма
treatment ['tri:tmənt] *(n)* - обращение; обработка; трактовка
trial ['traɪəl] *(n)* - испытание; судебный процесс
triangle ['traɪæŋgl] *(n)* - треугольник
trigger ['trɪgə] *(n)* - спусковой крючок (у оружия)
true [tru:] *(adj)* - верный, правильный, достоверный
truth [tru:θ] *(n)* - правда; истина, истинность
trunk [trʌŋk] *(n)* - ствол (дерева); туловище, тело (человека или животного)
try [traɪ] *(v)* - пытаться, стараться; рассматривать (дело в суде)
tsunami [tsu'nɑ:mɪ] *(n)* - цунами
tube [tju:b] *(n)* - трубка, пробирка
tweezers ['twi:zəz] *(n pl)* - пинцет
twins [twinz] *(n pl)* - близнецы; двойники, двойня
identical twins *(n pl)* - однояйцевые близнецы
typewriting ['taɪpˌraɪtɪŋ] *(n)* - печатание на машинке; напечатанный текст

- U u -

ultimately ['ʌltɪmətlɪ] *(adv)* - окончательно; в конечном счёте, в конце концов
ultraviolet [ˌʌltrə'vaɪələt] *(n)* - ультрафиолетовый свет
(adj) - ультрафиолетовый
ultraviolet light *(n)* - ультрафиолетовый свет
unbreakable [ʌn'breɪkəbl] *(adj)* - неломкий, небьющийся
unchanged [ʌn'ʧeɪndʒd] *(adj)* - неизменившийся, оставшийся прежним
unconscious [ʌn'kɔnʃəs] *(adj)* - без сознания, в обмороке; бессознательный
unconsciousness [ʌn'kɔnʃəsnəs] *(n)* - бессознательность; бессознательное состояние
un-contract [ʌnkən'trækt] (v) - расслаблять(ся)
uncountable [ʌn'kauntəbl] *(adj)* - неисчислимый
undamaged [ʌn'dæmɪdʒd] *(adj)* - неповреждённый

undergo [ˌʌndə'gəu] *(v)* - испытывать, подвергаться (чему-л.)
underline [ˌʌndə'laɪn] *(v)* - подчёркивать
undestroyed [ʌndɪ'strɔɪd] *(adj)* - целый, неразрушенный
undetected [ˌʌndɪ'tektɪd] *(adj)* - необнаруженный, неоткрытый, скрытый
undetonated [ʌn'detəneɪtɪd] *(adj)* - невзорвавшийся
undisturbed [ˌʌndɪ'stɜ:bd] *(adj)* - непотревоженный; ненарушенный, нетронутый
unfortunately [ʌn'fɔ:ʧ(ə)nətlɪ] *(adv)* - к несчастью, к сожалению
unidentified [ˌʌnaɪ'dentɪfaɪd] *(adj)* - неопознанный, неизвестный
unique [ju:'ni:k] *(adj)* - уникальный, единственный в своём роде, исключительный
uniquely [ju:'ni:klɪ] *(adv)* - единственно; однозначно
unmask [ʌn'mɑ:sk] *(v)* - обнаруживать; демаскировать
unnoticed [ʌn'nəutɪst] *(adj)* - незамеченный
unsigned [ʌn'saɪnd] *(adj)* - неподписанный
unpleasant [ʌn'plez(ə)nt] *(adj)* - неприятный
unrecognisable [ʌn'rekəgnaɪzəbl] *(adj)* - неузнаваемый
urgency ['ɜ:ʤ(ə)nsɪ] *(n)* - безотлагательность, срочность
urgent ['ɜ:ʤ(ə)nt] *(adj)* - срочный, неотложный
urine ['juərɪn] *(n)* - моча

- V v -

vacuum cleaner ['vækju:mˌkli:nə] *(n)* - пылесос
vain [veɪn] *(adj)* - напрасный, бесполезный, тщетный
valid ['vælɪd] *(adj)* - имеющий силу; правомерный; надёжный, действенный
validity [və'lɪdətɪ] *(n)* - юридическая сила, обоснованность
valley ['vælɪ] *(n)* - долина, низина
value ['vælju:] *(n)* - ценность; важность
van [væn] *(n)* - фургон
vegetation [ˌveʤɪ'teɪʃn] *(n)* - растительность
vehicle ['vɪəkl], ['vi:ɪkl] *(n)* - транспортное средство
vein [veɪn] *(n)* - вена; кровеносный сосуд
velocity [vɪ'lɔsətɪ] *(n)* - скорость; быстрота
veracity [və'ræsətɪ] *(n)* - правдивость
vessel ['ves(ə)l] *(n)* - *анат.* сосуд
view [vju:] *(n)* - вид, изображение, осмотр, точка зрения
violator ['vaɪəleɪtə] *(n)* - нарушитель
violent ['vaɪəl(ə)nt] *(adj)* - жестокий, бесчеловечный, насильственный
violent crime - насильственное преступление
visible ['vɪzəbl] *(adj)* - видимый, видный
visual ['vɪʒuəl] *(adj)* - зрительный, визуальный, видимый, зримый
vlogger ['vlɔgə] *(n)* - видеоблогер; пользователь, который занимается записью так называемых видеоблогов - постов, где основным видом контента является видеоизображение
voice [vɔɪs] *(n)* - голос
voiceprint ['vois˛print] *(n)* - голосовой отпечаток
volatile ['vɔlətaɪl] *(adj)* - *зд.* летучий, быстро испаряющийся

- W w -

waist [weɪst] *(n)* - талия
wallet ['wɔlɪt] *(n)* - бумажник
warm [wɔ:m] *(adj)* - тёплый
water supply ['wɔ:tə sə'plaɪ] - водоснабжение
wave [weɪv] *(n)* - волна
weapon ['wepən] *(n)* - орудие, оружие
wear [wɛə] *(v)* - носить
weigh [weɪ] *(v)* - взвешивать, оценивать, рассматривать
well [wel] *(n)* - ячейка, колодец, углубление
wet [wet] *(adj)* - мокрый, влажный; непросохший
wheel [wi:l] *(n)* - колесо
wherever [wɛə'revə] *(adv)* - где бы (то) ни было, куда бы (то) ни было
whole [həul] *(adj)* - весь, целый; полный, невредимый
wholly ['həulɪ] *(adv)* - полностью, целиком
whorl [wɜ:l] *(n)* - завиток
wide [waɪd] *(adj)* - широкий; обширный, большой
widely ['waɪdlɪ] *(adv)* - широко, в различных местах
widen ['waɪd(ə)n] *(v)* - расширять, расширяться
widespread ['waɪdspred] *(adj)* - широко распространённый
width [wɪtθ], [wɪdθ] *(n)* - ширина, широта
wildfire ['waɪldfaɪə] *(n)* - пожар (разрушительной силы)
will [wɪl] *(n)* - *зд.* завещание
wireless ['waɪələs] *(adj)* - беспроводной, беспроволочный
witness ['wɪtnəs] *(n)* - свидетель, очевидец
wood [wud] *(n)* - дерево (материал); древесина
(adj) - деревянный, древесный
worm [wɜ:m] *(n)* - червяк; глист; гусеница; личинка
worth [wɜ:θ] *(adj)* - достойный, заслуживающий
wound [wu:nd] *(n)* - рана; ранение
(v) - ранить
wounded *(adj)* - раненый
wrist [rɪst] *(n)* - запястье

- Y y -

yard [jɑ:d] *(n)* - внутренний двор; ярд (мера длины, равная 3 футам или 91,44 см)

- Z z -

zip tie [zɪp taɪ] *(n)* - стяжка, хомут; пластмассовые наручники
zoology [zu'ɔləʤɪ], [zəu-] *(n)* - зоология

Figures references

1. https://www.cartoonstock.com/cartoon?searchID=CS205146
2. http://www.thinglink.com/scene/696406935133487105
3. https://www.pressreader.com/australia/the-australian/20180927/282239486553302
4. https://www.shutterstock.com/ru/editorial/image-editorial/roman-court-8739860a
5. https://i.pinimg.com/originals/80/45/29/804529b9a12e4d9104b091737322efdf.jpg
6. https://wellreadsherlockian.com/2018/06/22/certain-qualities-essential-to-an-investigating-officer-hans-gross-1883/
7. https://i.dailymail.co.uk/i/pix/2011/02/01/article-1352660-0D019BED000005DC-943_964x623.jpg
8. https://www.aiophotoz.com/photos/text-while-driving-cartoon.html
9. https://ru.pinterest.com/pin/49398927140576133/
10. https://www.psycho-criminologie.com/2018/03/edmond-locard.html
11. LaRousse , Dictionnaire du Français Langue Étrangère, Niveau 1, Librairie LaRousse, 1978, p.910
12. https://techonomy.com/wp-content/uploads/2016/05/shutterstock_289390853.jpg
13. http://rekvest.ru/wp-content/uploads/2020/03/ анализ-наука-коронавирус-1.jpg
14. https://s.hdnux.com/photos/03/10/46/821673/11/rawImage.jpg
15. https://www.washingtonian.com/2016/11/24/the-fbi-opened-its-crime-lab-here-in-dc-back-in-1932/
16. https://twitter.com/FBI/status/1246807419776389121
17. https://thumbs.dreamstime.com/b/отпечаток-па-ьцев-39903250.jpg
18. https://www.okorieokorocha.com/wp-content/uploads/2020/05/Forensic-Toxicology-1.jpg
19. https://istina.spb.ru/kriminalisticheskaya-ekspertiza/
20. https://gmpnews.ru/wp-content/uploads/2020/10/generium_0522-1280.jpg
21. https://www.thesun.co.uk/news/6240519/lazy-forensic-police-officer-derails-investigations-21-sexual-assaults/
22. https://teresadeberry.com/wp-content/uploads/2016/09/forensics-5-1024x576.jpg
23. https://img.bluefincharters.net//img/criminology-careers/discover-careers-in-forensic-science-13.jpg
24. https://fineartamerica.com/featured/forensic-entomology-philippe-psailascience-photo-library.html
25. https://24warez.ru/main/article/1157532589-s-tela-po-nitke-ili-kak-mertvye-mogut-pomoch-zhivym.html
26. https://rutube.ru/video/9192a3333571be16559d0bb0f8de2b2e/
27. https://rutube.ru/video/9192a3333571be16559d0bb0f8de2b2e/
28. https://www.google.ru/search?tbm=isch&q=physical%20map%20of%20the%20usa#imgrc=2L5V-7PG-lXF1M
29. https://bones-tv.000webhostapp.com/include/img/2season.jpg
30. https://www.imdb.com/title/tt0247082/
31. https://dzen.ru/a/XUkyiD9UhwCtwcq7
32. https://www.alamy.com/stock-photo/trace-evidence-shoe.html?page=2
33. https://1.bp.blogspot.com/-0O9Tpari_wk/X8WbjOBMslI/AAAAAAAAKrM/mJaQ_SR538UdONvcYFVT8L4mBwILtPpigCLcBGAsYHQ/s994/UPF021119-Cartoons3-popup.jpg
34. https://u-s-news.com/wiki/view_html.php?sq=Alex%20Jones&lang=fr&q=Baliste
35. https://анти-спид27.рф/wp-content/uploads/2018/10/iNOLF3WXL.jpg
36. https://www.igcuk.com/crime-scene-investigation-stage-1-course/
37. https://ecle.biz/category/news/
38. https://womanadvice.ru/25-samyh-gryaznyh-professiy
39. https://iecriminaldefense.com/crimes/other-crimes/
40. https://rutube.ru/video/0de416713809b2e010a764ff9ac2a425/
41. https://focusedcollection.com/ru/stock-photos/forensic-scientist.html
42. https://www.mintpressnews.com/sweeping-dna-collection-law-unsettles-federal-appeals-court/175053
43. http://xenac.blogspot.com/2008/11/
44. http://es-trade.kiev.ua/uk/universal-sv-1-sv-2-criminalist-np.6X6MMF/
45. http://cdn.lifedaily.com/wp-content/uploads/2018/10/6-gypsy-hill-killer.jpg
46. https://osbi.ok.gov/sites/g/files/gmc476/f/bigstock-Forensic-Science-Female-Scien-203861503.jpg
47. https://www.masterfile.com/search/en/forensic+box
48. http://plugin-magazine.com/living/is-it-possible-for-glass-to-be-as-strong-as-steel/
49. https://i.pinimg.com/originals/15/b8/e6/15b8e66908a8ac687ea97e55a750727d.jpg
50. https://www.picfair.com/tags/forensic
51. https://ru.depositphotos.com/44774741/stock-photo-fingerprint.html
52. https://cscriminalistica.blogspot.com/
53. https://www.dailyherald.com/storyimage/DA/20151107/news/311079897/EP/1/6/EP-311079897

54.-56. https://www.evi-fl.com/crimescene

57.-58. https://rutube.ru/video/76fb3408fe5c9b8c1738ee373e87f46b/

59. https://rutube.ru/video/397ab91dda7ccb1f466edf970ce92079/
60. https://www.reference.com/science/spectrophotometry-used-forensics-6299312a9e4fb3ad

61.-62. https://alchetron.com/Gerald-Mason

63.-65. https://murderpedia.org/male.M/m/mason-gerald-fit.htm

Figures references

66. https://archive.org/details/pdfy-Ur-c1lNbnIBx7gou/page/n243
67. https://cdn.alphacomedy.com/15/2016/10_13_16_16de303ead62837244b84052f27b8fa2.jpg
68. https://www.thebalancecareers.com/crime-scene-investigator-job-information-974470
69. https://www.freepik.com/premium-vector/cartoon-detective-man-looking-crime-board-with-murder-investigation-elements-evidence-suspect-photographs-connected-by-red-thread-illustration_10159174.htm
70. https://theslide.ru/img/thumbs/94835c116a4ba680fb2cf337f81ba96e-800x.jpg
71. https://cdn-st4.rtr-vesti.ru/vh/pictures/hd/117/774/7.jpg
72. https://img.gazeta.ru/files3/463/10609463/vagon-pic905-895x505-64078.jpg
73. https://sun9-86.userapi.com/impg/Bjj-Us2slplOzYGcmL7QCaUPOp1TjBDB6ySWzw/XDFihmBt1DY.jpg?size=1150x602&quality=95&sign=c9966c7d69e179eb5b5a889142bca502&c_uniq_tag=DLCK3bPc4U-XTb8-OZkAxKsxAqjHULDeGm64GpJ9YCY&type=album

74.-75. https://rutube.ru/video/9f2b0d3c3fdf577d713d305ed6afcf8e/

76. https://tocana.jp/2015/02/post_5769_entry.html
77. https://forensics4educators.wordpress.com/tag/search-patterns/

78.-83. https://archive.org/details/pdfy-Ur-c1lNbnIBx7gou/page/n243

84. https://www.rasmussen.edu/degrees/justice-studies/blog/crime-scene-careers-qualifications
85. https://rutube.ru/video/ea58dfb753286a7995e5ad521883f66c/
86. https://s.hdnux.com/photos/14/65/76/3366800/3/920x920.jpg
87. http://www.my-quito.com/images/Quito_apartment_plan.jpg
88. https://i.pinimg.com/736x/af/fd/ac/affdac16decb730f0ec5855931587c1e--spanish-teacher-teaching-spanish.jpg
89. https://www.factinate.com/wp-content/uploads/2017/10/GettyImages-93192527-1.jpg
90. http://c-jump.com/bcc/t155t/Week01/W01_0390_challenges.htm
91. https://cdn2.cincinnatimagazine.com/wp-content/uploads/sites/5/2018/01/Crime-Scene.jpg
92. http://c-jump.com/bcc/t155t/Week01/W01_0390_challenges.htm
93. https://www.httpswww.readcomics.xyzcsi-crime-scene-investigation-bad-rapchapter-3full

94.-95. http://getdrawings.com/silhouette-tag/lying

96. http://teachermuriel.eu/hotpot/5_voc_crime_evidence.htm
97. https://mir-s3-cdn-cf.behance.net/projects/max_808/7669031.54732b0021654.jpg
98. https://www.rasmussen.edu/degrees/justice-studies/blog/crime-scene-careers-qualifications/

99.-100. https://graphs.net/solving-crimes-with-modern-technology.html

101.-103. https://rutube.ru/video/f713923b7a41ae84d793c615dd9dab7f/

104. -
105. https://www.freepng.ru/png-rjfn01/
106. Premsa libre: Guatemala, 3 de Julio de 2011, p.12-13

107.-108. https://www.youtube.com/watch?v=dntO3YANo18

109. https://graphs.net/solving-crimes-with-modern-technology.html
110. https://s01.yapfiles.ru/files/1856327/9_yapfiles.ru.png
111. https://alchetron.com/Wilton-M-Krogman
112. https://www.abebooks.co.uk/9780398010546/Human-Skeleton-Forensic-Medicine-Wilton-0398010544/plp
113. https://slideplayer.com/slide/10968758/
114. https://aloxthefox.tumblr.com/post/150688746526/goatmeats-sixpenceee-3d-printing-is-now
115. https://www.rankred.com/facts-about-forensic-science/

116-125. https://rutube.ru/video/d4626985f4db70b304660b30057e00da/

126. https://mir-s3-cdn-cf.behance.net/projects/max_808/7669031.54732b0021654.jpg
127. https://save.pejuang.net/blank-autopsy-report-template/
128. https://bloximages.chicago2.vip.townnews.com/napavalleyregister.com/content/tncms/assets/v3/editorial/2/96/296d236d-553c-50f6-ba20-a3a0c6f6e2fa/5ae38a335c00b.image.jpg?resize=1200%2C800
129. https://cluehack.com/criminal-case-hack-updates-june-25-2018-at-0747pm-3/
130. https://www.youtube.com/watch?v=Mn-a_ImLR40&app=desktop
131. https://crimcongress.com/portretnaya/3743/
132. https://smcrew.com/posts/status/s-m-crew/u-s-police-have-shot-dead-385-people-in-five-months-report/
133. https://hdfootagestock.com/videos/identity%20theft/popular
134. https://www.shutterstock.com/ru/video/clip-27426073-personal-items-left-bloody-crime-scene-slow
135. https://www.wicid.tv/2016/04/12/eye-witness-testimony-helpful-or-deadly/amp/
136. LaRousse , Dictionnaire du Français Langue Étrangère, Niveau 1, Librairie LaRousse, 1978, p.910
137. istockphoto.com

138.-141. https://www.casdschools.org/site/handlers/filedownload.ashx?moduleinstanceid=7201&dataid=6177&FileName=02-TypesOfEvidence.pdf

142. https://rutube.ru/video/ca0a66f444187b207878fda59a794fd5/
143. http://www.bbcamerica.com/shows/sherlock/season-1/episode-01-a-study-in-pink

Figures references

144.-151. https://rutube.ru/video/7fe04eb777921ce414a3e81cdd849a05/
152. https://rutube.ru/video/38a4fb387ace55641e60af6b3f980a1d/
153. https://rutube.ru/video/a8d2cc34ee93e929135617c8534af8ba/
154. https://rutube.ru/video/ea4a743725a62ea754e8dbbcf769e9b2/
155. https://images.app.goo.gl/DaLCjqazhdpXzgTMA
156. http://infografiable.blogspot.com/2011/06/la-escena-del-crimen-grafico-acerca-del.html
157. https://ya-webdesign.com/explore/prison-vector-broken-cage/
158. https://www.allposters.com/-sp/Anthropometric-Visit-Posters_i10302544_.htm
159. http://janinetissot.fdaf.org/jt_locard.htm
160. https://www.partyofchicago.com/ark-gangsters/
161. https://avatars.dzeninfra.ru/get-zen_doc/5250440/pub_60fead07083df24ed65d60e0_60feb8b10191a72d068f58c1/scale_1200
162. https://avatars.dzeninfra.ru/get-zen_doc/50840/pub_62e21289efd3e21b6e081295_62e212e61f7e273a88fea4b5/scale_1200
163. -
164. https://www.liveabout.com/forensic-scientist-524869
165. https://bstudy.net/htm/img/11/15746/13.png
166. http://www.uturn.org/Prisonshow/prishow2.htm
167. https://fr.wikisource.org/wiki/Page:Bertillon_-_Identification_anthropom%C3%A9trique_(1893).djvu/8
168.-169. https://www.thevintagenews.com/2017/12/16/will-and-william-west-fingerprints/
170. https://media.baamboozle.com/uploads/images/76947/1620126487_363396.png
171. https://www.flinnsci.ca/globalassets/flinn-scientific/all-product-images-rgb-jpegs/fb1739etc.jpg?v=d702cd5cf8244c399f157a369f8e99d0
172. https://i.pinimg.com/originals/64/bf/0a/64bf0a97c670fbfae6fe137f720cee3f.jpg
173. https://i.pinimg.com/originals/2b/33/7d/2b337da4feff7d969ebba343b023266c.jpg
174. https://slideplayer.com/slide/4418153/
175. https://astronomiareal.wordpress.com/2017/01/16/francis-galton-o-primo-de-darwin-responsavel-por-inumeras-mortes/
176.-177. https://www.flinnsci.ca/globalassets/flinn-scientific/all-product-images-rgb-jpegs/fb1739etc.jpg?v=d702cd5cf8244c399f157a369f8e99d0
178. https://www.gutenberg.org/files/19022/19022-h/images/fig361a.jpg
179. https://web.archive.org/web/20100409174557/http://www.fbi.gov/wanted/topten/fugitives/hires_images/FBI-046-FredWilliamBowerman-poster.jpg
180. https://www.alux.com/pieces-of-expensive-art-found-in-unusual-places/5/
181.-183. https://www.offgridweb.com/survival/bloodstain-pattern-analysis/
184. https://www.dreamstime.com/stock-illustration-bloody-victim-puddle-blood-forms-under-cartoon-image41987077
185. https://rutube.ru/video/26a5cb635eecbd41f4d910af03c1eff6/
186.-187. https://www.emaze.com/@AOFWRLRW
188. http://e-wiki.org/tr/images/Karl_Landsteiner_forensics
189. https://www.saasta.ac.za/biosciences/images/dna_finger_big.gif
190. https://taf.fi/millennium-technology-prize/winners-2008/
191. https://slideplayer.com/slide/4836910/
192. https://i.ytimg.com/vi/2rC2i2L0rp4/maxresdefault.jpg
193. https://acoustics.org/challenges-when-using-mobile-phone-speech-recordings-as-evidence-in-a-court-of-law-balamurali-b-t-nair/
194. https://www.cxtoday.com/contact-centre/what-is-voice-biometrics-and-why-should-your-contact-centre-have-it/
195.-196. https://www.forensicsciencesimplified.org/docs/why.html
197. https://www.wikihow.com/images/b/ba/Write-a-Constitution-for-a-Club-Step-18.jpg
198. https://quotesgram.com/quotes-by-frederick-hopkins/
199. https://ru.pinterest.com/pin/97882991886996057/
200. https://ru.pinterest.com/pin/348958671120211786/
201. https://archives.fbi.gov/archives/about-us/lab/forensic-science-communications/fsc/oct2009/
202. http://www.vexil.org/wp-content/uploads/2016/02/6666.png
203. https://thumbor.prod.vidiocdn.com/o7YFpy_ELPMvZmhwjdS5doTvYf8=/288x416/filters:quality(70)/vidio-web-prod-film/uploads/film/image_portrait/5456/mission-impossible-iii-f3aa14.jpg
204. https://i1.wp.com/www.4kfilmizlesene.com/wp-content/uploads/2020/12/Mission-Impossible-Rogue-Nation-2015-1-scaled.jpeg
205. https://thumbs.dreamstime.com/b/иллюстрация-мультфильма-смешной-собаки-bloodhound-132456358.jpg
206. https://i.pinimg.com/originals/f3/81/c1/f381c11d78650286e6357babae6a9d53.jpg

Figures references

207. https://voenper2020.site/wp-content/uploads/2021/02/Hammer-1080x675.png
208. https://studref.com/494483/pravo/obschie_polozheniya_sudebno_ballisticheskoy_ekspertizy
209. https://slideplayer.com/slide/14884505/91/images/17/Bullet+Anatomy.jpg
210.-216. https://rutube.ru/video/54f64047097861d875414411c0dfef1b/
217. https://www.thegrapevine.co.ug/fighting-crime-how-guns-can-be-linked-to-a-crime-scene-how-finger-printing-guns-is-done/
218. https://venisonmedia.files.wordpress.com/2015/01/612478a83d7e89ec3.png
219. https://www.firearmsid.com/jpgs/A0284.jpg
220. https://caseguard.com/wp-content/uploads/2020/08/caseguard_ballistics_science_of_firearms.jpg
221. https://taylor.raack.info/wp-content/uploads/Pasted-into-Gun-violence-in-the-United-States-Impact-Trends-and-Defensive-Use-2.png
222. https://twitter.com/TheMobMuseum/status/955555709332180992
223. https://projects.nfstc.org/firearms/module02/fir_m02_t11.htm
224. http://www.allianceforensics.com/srv_fbcc.shtml
225. https://printableworksheets.in/worksheet/ballistics
226. https://images.fineartamerica.com/images/artworkimages/mediumlarge/2/st-valentines-day-massacre-chicago-tribune-1929-daniel-hagerman.jpg
227. https://i.ytimg.com/vi/Q-_4zNz0vsA/maxresdefault.jpg
228. https://secure-images.rarenewspapers.com/ebayimgs/10.97.2017/image035.jpg
229. https://cdn.imagearchive.com/okshooters/data/MetaMirrorCache/chicagotruecrime.com_uploads_3_5_6_2_3562988_6711197.png_3435c378bb76d4357324dd7e69f3cd18.png
230. https://kartinkin.net/uploads/posts/2022-03/1648229461_9-kartinkin-net-p-al-kapone-kartinki-9.jpg
231. https://stmuscholars.org/wp-content/uploads/2016/09/George-22Bugs22-Moran.jpg
232. https://study.com/academy/lesson/trace-evidence-definition-analysis-examples.html#transcriptHeader
233. https://www.youtube.com/watch?v=Mn-a_ImLR40&app=desktop
234. https://rutube.ru/video/3119e48c07f9478a14b1da95689e3177/
235. https://www.californiabicyclesafety.com/wp-content/uploads/2014/07/car-and-cyclist-accident.jpg
236. -
237. https://funsteria.com/wp-content/uploads/shutterstock_1470328991.jpg
238. https://www.igrandtheftauto.com/img/content/3882.jpg
239. https://upload.wikimedia.org/wikipedia/commons/e/e0/2017_Washington_License_Plate.jpg
240. https://i.ytimg.com/vi/T5Dwtnr586A/maxresdefault.jpg + https://i.ytimg.com/vi/pv4_Rml7ySs/maxresdefault.jpg

References

1. Bell S. Forensic Science: An Introduction to Scientific and Investigative Techniques: textbook, 5th Edition. CRC Press, 2019. 366 p.
2. Garrett B. L. Autopsy of a Crime Lab: Exposing the Flaws in Forensics: textbook. University of California Press, 2021. 224 p.
3. Genge N. E. The Forensic Casebook: The Science of Crime Scene Investigation: textbook. Random House, 2004. 340 p.
4. James S. H., Nordby J. J. Forensic Science: An Introduction to Scientific and Investigative Techniques: textbook. Boca Raton, Fla.: CRC PRESS, 2003. 728 p.
5. Lee H. C. Forensic Science Today: textbook, Teacher's Edition. LAWYERS & JUDGES PUBL CO, 2006. 242 p.
6. Lyle D. P. Forensics For Dummies: textbook. 2nd edition. Hoboken, NJ: Wiley, 2019. 390 p.
7. Martin C. I Can Be a Science Detective: Fun Stem Activities for Kids (Dover Science for Kids). Dover Publications, 2019. 64 p.
8. Meloan C. E., James R. E., Saferstein R. Lab Manual for Criminalistics: An Introduction to Forensic Science: textbook, 11th edition. REARSON, 2014. 404 p.
9. Mirakovits K., Siegel J. A. Forensic Science: The Basics: textbook, 5th Edition. CRC Press , 2021. 714 p.
10. Mirakovits K., Londino-Smolar G. The Basics of Investigating Forensic Science: a Laboratory Manual, 2nd edition. CRC Press, 2021. 218 p.
11. Okuda M. M., Stephenson F. H. A Hands-On Introduction to Forensic Science: Cracking the Case, 2nd edition. CRC Press , 2021. 528 p.
12. Saferstein R. Criminalistics: An Introduction to Forensic Science: textbook, 10th edition: Upper Saddle River, N.J.: Prentice Hall, 2010. 626 p.
13. Saferstein R. Forensic Science: From the Crime Scene to the Crime Lab: textbook. Upper Saddle River: Pearson 2016. 580 p.
14. Swanson Ch., Chamelin N., Territo L., Taylor R. W. Criminal Investigation: textbook. McGraw-Hill Companies, 2018. 800 p.
15. Online Etymology Dictionary https://www.etymonline.com/
16. Forensic Science https://en.wikipedia.org/wiki/Forensic_science
17. What is Forensics? https://www.crimesceneinvestigatoredu.org/what-is-forensic-science/
18. Forensics vs Forensic Science http://www.articlesfactory.com/articles/science/forensics-vs-forensic-science.html
19. What-is-criminalistics? Why study it? https://www.forensicscolleges.com/blog/resources/what-is-criminalistics
20. What is Forensic Science? https://www.wisegeek.com/what-is-forensic-science.htm
21. Forensic Science Timeline http://www.softschools.com/timelines/forensic_science_timeline/99/
22. Forensic Science timeline https://studylib.net/doc/8175711/forensic-science-timeline
23. Forensic Science timeline http://www.dplylemd.com/articles/forensic-science-timeline.html
24. History of Forensic Science https://www.preceden.com/timelines/297676-history-of-forensic-science
25. Forensic Science timeline https://www.tiki-toki.com/timeline/entry/331856/Forensic-Science-Timeline/
26. The History of Forensic Science: Timeline & Facts https://study.com/academy/lesson/the-history-of-forensic-science-timeline-facts.html
27. History & Development of Forensic Science https://slideplayer.com/slide/12441930/
28. The Bertillon Anthropometric System https://studylib.net/doc/6904003/lab--the-bertillon-anthropometric-system
29. Will and William West conundrum https://www.thevintagenews.com/2017/12/16/will-and-william-west-fingerprints/
30. Francis Galton https://en.wikipedia.org/wiki/Francis_Galton
31. Fingerprints: The First ID https://criminal.findlaw.com/criminal-procedure/fingerprints-the-first-id.html#sthash.QeQhvnr0.dpuf
32. 30 interesting facts about fingerprints https://www.kickassfacts.com/interesting-fingerprints-facts/
33. Hacker fakes German minister's fingerprints using photos of her hands https://www.theguardian.com/technology/2014/dec/30/hacker-fakes-german-ministers-fingerprints-using-photos-of-her-hands
34. Who the $&% Is Jackson Pollock? https://en.wikipedia.org/wiki/Who_the_$%26%25_Is_Jackson_Pollock%3F
35. Sir William Herschel, 2nd Baronet https://en.wikipedia.org/wiki/Sir_William_Herschel,_2nd_Baronet
36. Why Does a Policeman Touch a Tail Light? https://legalbeagle.com/7160567-policeman-touch-tail-light.html
37. Worlds Oldest Fingerprint Found In Kuwait https://www.liveleak.com/view?t=7e0_1479671634&language_code=ru
38. Hans Gustav Adolf Gross and Criminology https://profilesofmurder.com/tag/hans-gross/
39. Pioneers in Criminology XIII--Hans Gross https://pdfs.semanticscholar.org/45b9/2d46781ca81cdbff49861a07fd2f9f02b0c0.pdf
40. Criminal profiling https://www.lawteacher.net/free-law-essays/criminology/criminal-profiling.php
41. Criminal Profiling http://www.e-criminalpsychology.com/criminal-profiling/
42. Criminal Profiling http://what-when-how.com/forensic-sciences/criminal-profiling/

References

43. Goddard, Calvin Hooker https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/goddard-calvin-hooker
44. Ballistics https://printableworksheets.in/worksheet/ballistics
45. Ballistics and Explosives https://slideplayer.com/slide/4799830/
46. Professor Victor Balthazard and bullet comparison in France https://www.bevfitchett.us/forensic-science/professor-victor-balthazard-and-bullet-comparison-in-france.html
47. Balthazard, Victor https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/balthazard-victor
48. The History and Basic Facts of Polygraph http://www.polygraphexaminer.com/polygraph-history.html
49. John Augustus Larson https://everipedia.org/wiki/lang_en/John_Augustus_Larson/
50. John Larson https://ru.scribd.com/document/136671333/John-Larson
51. The Invention of the Polygraph https://americacomesalive.com/2014/11/08/invention-polygraph/
52. Sound spectrograph and voice prints - a new paradigm in the criminal judicial administration http://www.lawyersclubindia.com/articles/SOUND-SPECTROGRAPH-AND-VOICE-PRINTS-8211-A-NEW-PARADIGM-IN-THE-CRIMINAL-JUDICIAL-ADMINISTRATION-255.asp
53. Forensic Voiceprints https://studylib.net/doc/8521281/forensic-voiceprints
54. Lawrence Kersta https://prezi.com/bqxiaadeao3c/lawrence-kersta/
55. Willton Marion Krogman https://www.nap.edu/read/4560/chapter/14#293
56. Face reconstruction https://visual.ly/community/infographic/how/face-reconstruction
57. DNA pioneer Alec Jeffreys: drop innocent from database https://www.theguardian.com/politics/2009/apr/15/jeffreys-dna-database-human-rights-police
58. DNA Use in Criminal Investigation https://www.allbestessays.com/essay/Dna-Use-in-Criminal-Investigations/36306.html
59. From paternity to criminal cases DNA fingerprinting has been 30 years of 'eureka' https://www.dw.com/en/from-paternity-to-criminal-cases-dna-fingerprinting-has-been-30-years-of-eureka/a-17911987
60. First crime solved using DNA forensics https://studylib.net/doc/9575149/first-crime-solved-using-dna-forensics
61. Interesting Facts About DNA Fingerprinting https://sciencing.com/interesting-dna-fingerprinting-5343431.html
62. DNA Fingerprinting/ Worksheet http://bookmarkurl.info/images/dna-fingerprint-worksheet/dna-fingerprint-worksheet-25.jpg
63. Crime Lab Activities http://bighow.org/536062-Crime_Lab_Activities.html
64. Crime lab https://everipedia.org/wiki/lang_en/Crime_lab/
65. Crime lab. Body farm https://www.sciencenewsforstudents.org/article/crime-lab
66. Academic Dictionaries and Encyclopedias https://enacademic.com/dic.nsf/enwiki/3062667
67. Bones (TV series) https://en.wikipedia.org/wiki/Bones_(TV_series)
68. CSI: Crime Scene Investigation https://en.wikipedia.org/wiki/CSI:_Crime_Scene_Investigation
69. Fields of Forensic Science https://slideplayer.com/slide/4766462/
70. Forensic Laboratory Analyst https://alis.alberta.ca/occinfo/occupations-in-alberta/occupation-profiles/forensic-laboratory-analyst/
71. How to Become a Crime Scene Investigator https://www.wikihow.com/Become-a-Crime-Scene-Investigator
72. Introduction to crime scenes http://www.forensicmed.co.uk/science
73. Definition of «crime scene» https://linguazza.com/definition/crime+scene
74. Body Farms https://www.forbes.com/sites/kristinakillgrove/2015/06/10/these-six-body-farms-help-forensic-anthropologists-learn-to-solve-crimes/?sh=37f32dcd489f
75. Unearthing Stories for 20 Years at the 'Body Farm' https://www.fbi.gov/news/stories/body-farm-20th-anniversary-032019
76. Crime Laboratories https://law.jrank.org/pages/12036/Crime-Laboratories.html
77. FBI. Laboratories Positions https://www.fbi.gov/services/laboratory/laboratory-positions
78. FBI. Laboratory services https://www.fbi.gov/services/laboratory
79. The FBI Laboratory: 75 Years of Forensic Science Service https://archives.fbi.gov/archives/about-us/lab/forensic-science-communications/fsc/oct2007/research/2007_10_research01_test4.htm
80. Special Investigation Division https://infopedia.su/7x1e02.html
81. Crime laboratory https://www.britannica.com/science/crime-laboratory
82. Proper Crime Scene Handling. A Comprehensive Guide https://forums.baystation12.net/threads/proper-crime-scene-handling-a-comprehensive-guide.2434/crime
83. Sheriff https://en.wikipedia.org/wiki/Sheriff
84. Searching and Examining a Major Case Crime Scene https://www.crime-scene-investigator.net/searchingandexamining.html
85. The Ghosts Of El Segundo https://web.archive.org/web/20050315085130/http://www.election.cbsnews.com/stories/2004/10/01/48hours/main646786.shtml

References

86. Gerarl fit Mason https://murderpedia.org/male.M/m/mason-gerald-fit.htm
87. Cambridge dictionary https://dictionary.cambridge.org/
88. Death: Bodies, Bugs & Bones https://slideplayer.com/slide/3461077/
89. Impact Of Bloodstain Pattern Analysis In Crime Scene Investigation http://www.journalijar.com/uploads/672_IJAR-14698.pdf
90. How Handwriting Analysis Works https://science.howstuffworks.com/handwriting-analysis.htm
91. Handwriting analysis, Forgery and Counterfeiting https://slideplayer.com/slide/13435867/
92. A Simplified Guide To Forensic Document Examination https://www.forensicsciencesimplified.org/docs/QuestionedDocuments.pdf
93. Voice Analysis https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/voice-analysis\
94. Forensic Voice and Tape Analysis https://www.encyclopedia.com/politics/encyclopedias-almanacs-transcripts-and-maps/forensic-voice-and-tape-analysis
95. Forensic Ballistics – Reconstructing a Crime using Bullets https://ifflab.org/the-application-of-forensic-ballistics-in-criminal-investigations/
96. Introduction to Forensic Ballistics https://www.forensicscienceexpert.com/2019/12/introduction-to-forensic-ballistics.html
97. Firearms & Ballistics https://aboutforensics.co.uk/firearms-ballistics/
98. The St. Valentine's Day Massacre https://www.myalcaponemuseum.com/id27.htm
99. The St. Valentine's Day Massacre https://jimfishertruecrime.blogspot.com/2013/07/the-st-valentines-day-massacre-in.html
100. The Valentine's Day Massacre of 1929 https://curioushistorian.com/the-valentines-day-massacre-of-1929
101. A Simplified Guide To Trace Evidence https://www.forensicsciencesimplified.org/trace/how.html
102. Trace Evidence in the Real Crime Laboratory http://eknygos.lsmuni.lt/springer/658/265-290.pdf
103. How is Trace Evidence Analyzed in Forensic Cases?
104. https://www.news-medical.net/life-sciences/How-is-Trace-Evidence-Analyzed-in-Forensic-Cases.aspx
105. Biometric Authentication Now and Then: History and Timeline https://www.bayometric.com/biometric-authentication-history-timeline/
106. Types of Biometrics https://www.biometricsinstitute.org/what-is-biometrics/types-of-biometrics/
107. Types of Evidence https://taxguru.in/corporate-law/types-evidence.html
108. Types of evidence https://www.casdschools.org/site/handlers/filedownload.ashx?moduleinstanceid=7201&dataid=6177&FileName=02-TypesOfEvidence.pdf
109. Types of Evidence: Different Types of Important Evidences https://financialcrimeacademy.org/types-of-evidence-important/
110. What are some examples of criminal profiling in famous cases? https://www.quora.com/What-are-some-examples-of-criminal-profiling-in-famous-cases
111. Forensics Making a Case. Offender Profiling https://www.youtube.com/watch?v=5POzN5urKvw
112. Norbert Ebisike The Use of Offender Profiling Evidence in Criminal Cases, CALIFORNIA,2007
113. Cesare Lombroso https://en.wikipedia.org/wiki/Cesare_Lombroso
114. Origins of criminology; Cesare Lombroso and the Face of Crime https://psychlite.wordpress.com/2015/04/09/origins-of-criminology-cesare-lombroso-and-the-face-of-crime/
115. ABO Blood Type Identification and Forensic Science (1900-1960) https://embryo.asu.edu/pages/abo-blood-type-identification-and-forensic-science-1900-1960
116. Blood groups. Basic principles http://ctle.hccs.edu/biologylabs/AP2/02Blood/02BloodGroupIndex.html
117. Bloodstain science https://www.flipsnack.com/9CEBDD97C6F/blood-stain-science.html
118. What's my type? (Blood Typing Lab) https://slideplayer.com/slide/689667/
119. Solving crimes using forensic blood typing https://prezi.com/3oafdvyatvik/copy-of-solving-crimes-using /
120. Handwriting analysis & Forensic document examination education guide https://www.forensicscolleges.com/blog/resources/handwriting-analysis-education-guide
121. Forensic document examination https://infopedia.su/13xc124.html
122. Questioned Document and Handwriting Examination https://slideplayer.com/slide/9717492/
123. Albert S. Osborn https://prezi.com/2zif72uzl_y3/albert-s-osborn/
124. Albert S. Osborn https://en.wikipedia.org/wiki/Albert_S._Osborn
125. How make-up helped this chemist catch a killer https://www.youtube.com/watch?v=Mn-a_ImLR40&app=desktop
126. The Locard exchange principle https://slideplayer.com/slide/9285575/
127. How Locard's Exchange principle works https://science.howstuffworks.com/locards-exchange-principle1.htm
128. Trace evidence: definition, analysis & examples https://study.com/academy/lesson/trace-evidence-definition-analysis-examples.html#transcriptHeader

Учебное издание

Хисматулина Наталья Владимировна;
Илакавичус Марина Римантасовна,
доктор педагогических наук

АНГЛИЙСКИЙ ЯЗЫК

Учебник

Редактор *Фролова А. В.*
Компьютерная вёрстка *Хисматулина Н. В.*
Дизайн обложки *Шеряй А. Н.*

Подписано в печать 31.03.2023. Формат 60×84 $^{1}/_{8}$
Печать цифровая. Объем 22 п. л. Тираж 100 экз. Заказ № 25/23

Отпечатано в Санкт-Петербургском университете МВД России
198206, Санкт-Петербург, ул. Летчика Пилютова, д. 1