The John of Gaunt School
A Community Academy

Name TG

# Year 11

# Knowledge Organisers

# Term 2 - 2023

# Year 11 Term 2 Quizzing Homework - Question Bank

## Business Studies

Production Processes
1. What is job production?
2. Give an example of a product made using job production
3. State one advantage of job production
4. State one disadvantage of job production
5. What is batch production?
6. Give an example of a product made using batch production
7. State one advantage of batch production
8. State one disadvantage of batch production
9. What is flow production?
10. Give an example of a product made using flow production
11. State one advantage of flow production
12. State one disadvantage of flow production
13. What is meant by automated production?

Working with suppliers
1. What is procurement?
2. What is meant by the supply chain?
3. State 2 factors affecting the choice of supplier
4. Is price always the most important factor when choosing a supplier?

The concept of quality
1. State 2 factors customers use to judge quality
2. What is quality assurance?
3. What is quality control?
4. State one problem for the business, if goods are poor quality
5. State one benefit of high quality to the business

Business Location
1. A manufacturing business will need easy access to R M
2. A manufacturing business will need skilled L so being near to skilled workers is important.
3. True or false: A town centre is a good place for a hairdresser to locate
4. State 2 reasons why a town centre is a good place for restaurant to locate
5. State 2 reasons why an out of town industrial estate is a good place for a T shirt designer/manufacturer to locate

## Child Care

1. State 1 safety label you should look for when selecting suitable toys for your activity
2. You are planning to play Simon Says outside on a sunny day. Name 1 safety consideration for the activity
3. You are planning a water play activity. Name 1 safety consideration you should consider
4. State 1 way you could introduce a painting activity to a child
5. State 3 sections you MUST include in your planning

When planning the activity, you need to think about what areas of development you are focussing on. **State 1 activity that could help develop:**

6. Physical development – the child's gross motor skills
7. Physical development – the child's fine motor skills
8. Intellectual development – the child's problem solving skills
9. Social skills – the child's sharing skills
10. Social skills – the child's confidence and self esteem
11. Creative skills – the child exploring their own ideas

**Which method of observation uses:**

12. A brief note recording a skill the child has demonstrated
13. A list of possible skills so the observer can check these off as they are observed
14. Capturing information about what a child is doing at particular times of the day
15. A detailed written description of what is being observed over a short period of time

**Methods of recording information**

16. State 2 ways you might record information when observing a child
17. You are observing a child playing in the sand pit. Name 1 method of recording information that you could use? Why did you choose this method?
18. You are observing a child painting a picture. Name 1 method of recording information that you could use? Why did you choose this method?

## Drama

1. Name all five types of staging.
2. What is one concern when staging a performance?
3. What does a stage position determine?
4. Where is centre stage?
5. How can you tell stage left from stage right?
6. Why is 'Upstage' referred to as 'Upstage' and 'downstage' as 'downstage'?
7. Where can you find 'Backstage'?
8. Who is responsible for the concept of the play?
9. What are the four design elements?
10. What is the difference between a stage manager and a theatre manager?

Term 2: Devising

1. Name five style/practitioners. Stanislavski, Brecht, Artaud, Physical Theatre, Documentary drama.
2. Which practitioner uses an episodic structure (not linear) placards and intends to teach with performance? Brecht.
3. Which practitioner has the "fourth wall" intact so that actors might create as realistic performance as possible? Stanislavski.
4. Which practitioner uses ritualistic movement and aims to make the audience uncomfortable? Artaud.
5. What is split stage?
6. What is thought-track?
7. What is "marking the moment"?
8. What is slow motion?
9. What is choral speech or movement?
10. What is multi-roll?

## Engineering

1. Name a safety precaution for using a centre lathe?
2. What do the yellow safety symbols indicate?
3. Why do we use engineers blue?
4. Name three tools used to mark out materials?
5. What symbol do you use for indicating a diameter?
6. Where would you find a Three Jaw Chuck?
7. Name the tool used to draw an arc on a piece of BMS?
8. What saw can we use to cut woods?
9. What do we use to help check that materials are at the correct size?
10. Name a ferrous metal used to make tools?
11. What alloy is used to make some cars?
12. Name a common Non-Ferrous metal that is a good conductor?
13. What type of Steel does not corrode in the environment?
14. What is the process used to form steel in to the shape of a hook?
15. What is the tool used to make an internal thread in a hole?
16. When making a thread what product do we use to ensure the tools do not wear out?
17. What is a tolerance when looking at material sizes?
18. What drill speed would you need for drilling a 7mm hole in mild steel?
19. Why is the correct cutting speed important?
20. What tool can we use to cut sheet metal?

## English

Dr Jekyll and Mr Hyde

1. What genre is the novel?
2. List 3 features you would expect to find in a text from this genre.
3. Where is the novel set?
4. What was the industrial revolution?
5. What is Darwin's Theory of Evolution?
6. What does 'troglodytic' mean and who is referred to in this way?
7. What does regression mean and how does it link to the novel?
8. What is duality?
9. List 2 ways duality is highlighted in the novel.
10. What 2 themes are shown to be in conflict with each other throughout the novel?
11. Reputation was extremely important to a Victorian Gentleman – true or false?
12. What technique is used in the quotation: "shopfronts...like rows of smiling saleswomen" – describing the front of Jekyll's house?
13. What technique is used in the quotation "Sinister block of buildings thrust forward its gable"- describing the laboratory entrance?
14. What does the lack of/high windows in the laboratory symbolise?
15. What is pathetic fallacy?
16. List one place where Stevenson uses pathetic fallacy.

## English

17. What does the fog symbolise in the novel?
18. What is Utterson's profession?
19. Who is Dr Jekyll?
20. Who is Mr Hyde?
21. Who is Dr Lanyon?
22. What is Poole's position?
23. At the beginning of the novel, what reason is given for the Lanyon and Jekyll not being as close as they used to be?
24. Who says "I have had a shock," he said, "and I shall never recover." And what does this refer to?
25. Write a quotation that suggests Hyde is evil (the devil).
26. Write a quotation that shows Hyde is primitive.
27. Write a quotation about the fog.
28. Who says: "I am the chief of sinners. I am the chief of sufferers too"
29. Who says: "'If he be Mr. Hyde,' he had thought, 'I shall be Mr. Seek.'"
30. In C4, Hyde's cane splits in 2 as he attacks Sir Danvas Carew – what theme does this link to?
31. Who is referred to as a 'dammed juggernaut' and what does it mean?
32. The novel plays heavily on the fears of the Victorians: list some of these fears highlighted in the text.

| Food | French |
| --- | --- |
| 1. What are Macronutrients?<br>2. What are Micronutrients?<br>3. State one function of fat?<br>4. Where do we see the Lion Mark?<br>5. What are the two main groups of fats?<br>6. How many calories per gram does fat provide?<br>7. What is a free sugar?<br>8. Proteins are made up of what?<br>9. Vitamins can be found in water?<br>10. What is protein complementation?<br>11. State the 3 groups of carbohydrates.<br>12. Explain the term – denature / denaturation.<br>13. Explain the term – coagulate / coagulation.<br>14. Explain why we cook food.<br>15. Explain – conduction, convection, radiation.<br>16. What are the 3 ways in which we can denature a protein?<br>17. List 3 functions of fats in food.<br>18. What is gelatinisation?<br>19. Name 3 food products where we create a foam.<br>20. Name a chemical and biological raising agent. | |

| Geography | Health and Social Care |
| --- | --- |
| 1. Draw and label the tricellular model of atmospheric circulation<br>2. Where do hurricanes form?<br>3. How warm must the sea be for them to form?<br>4. Name our typhoon example<br>5. When did this typhoon take place?<br>6. How many people were killed?<br>7. Give two primary impacts<br>8. List two secondary impacts<br>9. What was the response to the typhoon?<br>10. What caused the flooding of the Somerset levels?<br>11. List three impacts of the flooding<br>12. List 3 pieces of evidence for climate change<br>13. List 2 greenhouse gases<br>14. Sketch a diagram to show the enhanced greenhouse effect<br>15. What can be done to manage climate change?<br>16. Name our LIC case study of an earthquake<br>17. When did it occur?<br>18. How many people were killed?<br>19. How strong was it?<br>20. List three impact<br>21. What was the response to the earthquake?<br>22. Name our HIC case study of an earthquake<br>23. When did it occur?<br>24. How many people were killed?<br>25. How strong was it?<br>26. List three impact<br>27. What was the response to the earthquake?<br>28. Why do people continue to live in hazardous areas?<br>29. Why are the impacts of earthquakes greater in LICS | |

| Media Studies | Music |
| --- | --- |
| | 1. What is the structure of Badinerie?<br>2. What key does Badinerie begin in?<br>3. Who composed Badinerie?<br>4. What era was Badinerie composed in?<br>5. What is the main texture of Badinerie?<br>6. What are the dynamics like in Badinerie?<br>7. What rhythmic device is used at the start of Badinerie?<br>8. What is the time signature of Badinerie?<br>9. Name the instruments used in Badinerie<br>10. The harmony in Badinerie is diatonic throughout – true or false?<br>11. Name the four voice types and what they sound like<br>12. What instruments would you usually find in a Popular/Rock band?<br>13. What is the typical structure of a Popular song?<br>14. What is a riff?<br>15. What is the musical word for how the music is organised?<br>16. What is the musical word for the main tune?<br>17. What is the musical word for how loud or quiet the music is?<br>18. What is the musical word for how fast of slow the music is?<br>19. What is the musical word for how many layers there are in a piece?<br>20. What are the two main types of tonality?<br><br>Also recognising images of the following instruments:<br>Violin Viola Cello Double Bass<br>Flute Harpsichord |

## Science

B5.

1. What is the endocrine system?
2. What are hormones?
3. Where are hormones produced?
4. Where is the pituitary gland?
5. How is blood glucose monitored?
6. What is insulin?
7. What is glycogen?
8. Where is glycogen stored?
9. What is glucagon?
10. What is diabetes?
11. What is type 1 diabetes?
12. What is type 2 diabetes?
13. How is type 1 diabetes treated?
14. How is type 2 diabetes treated?
15. Which hormones are involved in puberty?
16. Which secondary sexual characteristics are triggered in females at puberty?
17. Which secondary sexual characteristics are triggered in males at puberty?
18. What is the menstrual cycle?
19. How long is a typical menstrual cycle?
20. Which hormones are involved in the menstrual cycle?

C7.

1. What is crude oil?
2. What is a hydrocarbon?
3. What is fractional distillation?
4. How does fractional distillation work?
5. Which property allows us to separate crude oil?
6. Why do we need to separate crude oil into fractions?
7. How does boiling point change with chain length?
8. How does viscosity change with chain length?
9. How does flammability change with chain length?
10. What are alkanes?
11. What is the general formula for an alkane?
12. What are alkenes?
13. What is the general formula for alkenes?
14. Write the word equation for complete combustion of methane
15. What is incomplete combustion

## Science

C7 – Cont:

16. What are the products of incomplete combustion?
17. What is cracking?
18. What conditions are needed for cracking?
19. Why do we need to crack long hydrocarbons?
20. How do we test for alkanes and alkenes?

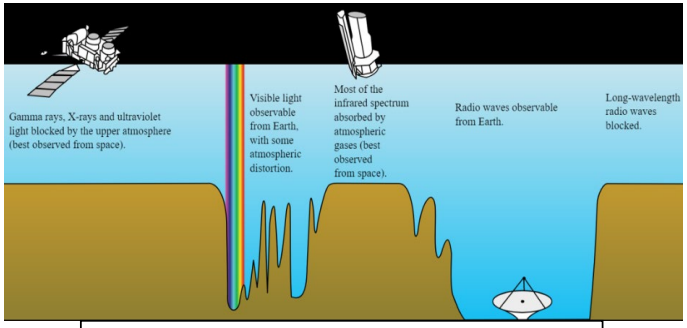
P5.

1. What is the SI unit of force?
2. Define "force" in the context of physics.
3. Explain the difference between contact and non-contact forces.
4. Give an example of a non-contact force and explain how it works.
5. Describe how to calculate the weight of an object.
6. What is the relationship between mass and weight?
7. Explain how friction affects the motion of an object.
8. What are the two main factors that affect the strength of friction between two surfaces?
9. Define "air resistance" and explain how it affects falling objects.
10. What is terminal velocity, and when does it occur for a falling object?
11. How does the force of gravity change as you move further from the Earth's surface?
12. What is the difference between balanced and unbalanced forces?
13. Describe Newton's first law of motion and provide an example.
14. According to Newton's second law of motion, what is the relationship between force, mass, and acceleration?
15. Explain how a parachute works in terms of forces.
16. What is the conservation of momentum, and why is it important in collisions?
17. Define "momentum" and provide the formula to calculate it.
18. Describe the action and reaction forces in Newton's third law of motion, giving an example.
19. How does the mass of an object affect its inertia?
20. Explain how seat belts in cars work to protect passengers during collisions.

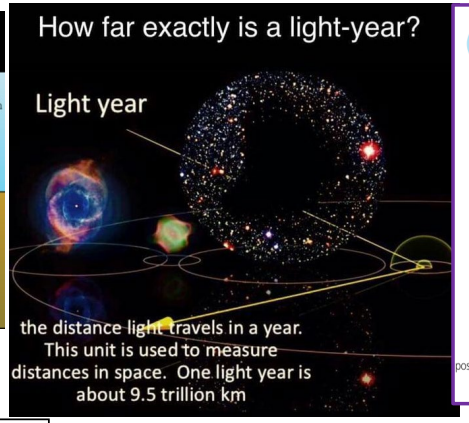
| Spanish | Sports Science |
| --- | --- |
| A] Learn the yellow and green sections on the left of your KO and then translate these into Spanish:<br><br>1. If I could, I'd visit<br>2. If I had the opportunity, I'd go to<br>3. when I'm 20<br>4. when I'm older<br>5. If I had lots of money<br>6. If I won the lottery<br>7. I'd travel around the world<br>8. I've just returned from Spain<br>9. before going to the beach<br>10. after arriving at the hotel<br><br>B] Answer these questions about your holidays in Spanish in full sentences. Use your KO (and the KS3 KOs) to help you create your answers, then learn your answers and practise writing them from memory:<br><br>1) **¿Adónde vas de vacaciones normalmente?** (Where do you go on holiday normally?)<br>2) **¿Qué tipo de vacaciones te gustan? ¿Por qué?** (What type of holiday do you like? Why?)<br>3) **¿Qué haces de vacaciones cuando hace buen tiempo?** (What do you do on holiday when the weather is good?<br>4) **¿Qué haces cuando hace mal tiempo?** (What do you do when the weather is bad?)<br>5) **¿Cómo serían tus vacaciones ideales?** (What would your ideal holiday be like?) | |

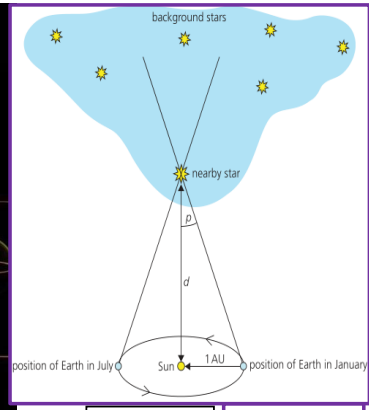
| Star name | Bayer Classification | Apparent magnitude |
|---|---|---|
| Sirius | α CMa | -1.5 |
| Rigel | B Ori | 0.1 |
| Polaris | α UMi | 1.8 |
| Ruchbah | ς | 2.7 |
| No name | ζ | 3.4 |
| No name | ψ | 5.5 |
| Lower magnitude = brighter star | | |

| magnitude difference | Ratio of brightness |
|---|---|
| 1.0 | 2.5 |
| 2.0 | 2.5 x 2.5 = 6.25 |
| 3.0 | 2.5 x 2.5 x 2.5 = 16 |
| 4.0 | 40 |
| 5.0 | 100 |
| 6.0 | 250 |




**EM Spectrum absorption by the atmosphere**



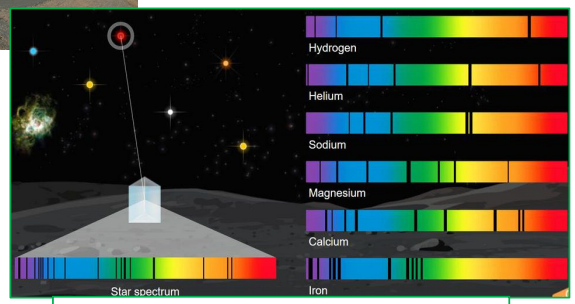

**Parallax**

$$d = \frac{1}{p}$$

d = in parsecs

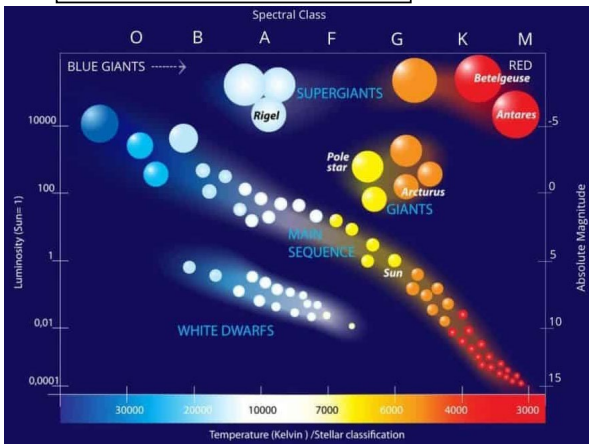
# Exploring Starlight

**Aperture synthesis** – using arrays of telescopes




**Spectroscopy**: Collecting light with a telescope and splitting it up using a diffraction grating to obtain a

**Hertzsprung-Russel diagram**




**apparent magnitude (m):** How bright a star **appears** in the sky depends on four main factors:

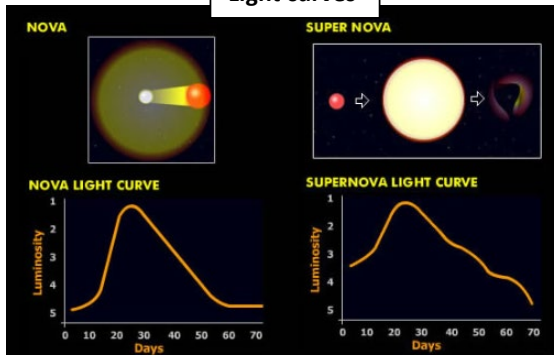
- The total energy radiated by the star in the visible region;
- The distance to the star;
- The amount of interstellar gas and dust that reflects and absorbs light;
- The amount of light absorbed and scattered by the Earth's atmosphere.

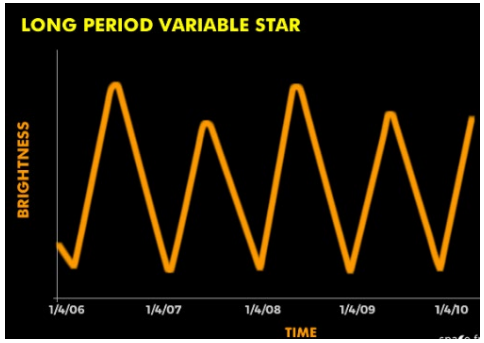
**absolute magnitude (M)**: The true brightness of a star. Defined as the star's **apparent magnitude** at a distance of **10 parsecs** from us:

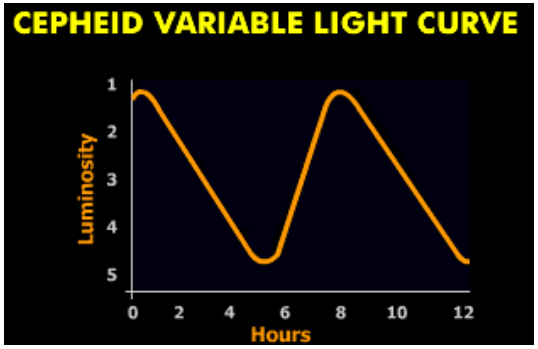
$$M = m + 5 - 5 \log d$$

d is measured in parsecs.

**Light curves**



Knowledge Organiser

Unit 4: Operations

**Consumer law is:** the are of law which protects customers.

***Fit for purpose***
*This means that goods must do what they are meant to do*
**As described**
*This means goods must be as the business describes*
**Satisfactory quality of goods**
*This means that how the goods are made will reflect the price*
**Reputation**
*What customers say about a business*

## 4:4 Consumer Law

Customers are protected by the **Consumer Rights Act 2015**. This Act of Parliament gives customers protection when they buy goods and services.

They must be:

- Fit for purpose
- As described
- Satisfactory quality

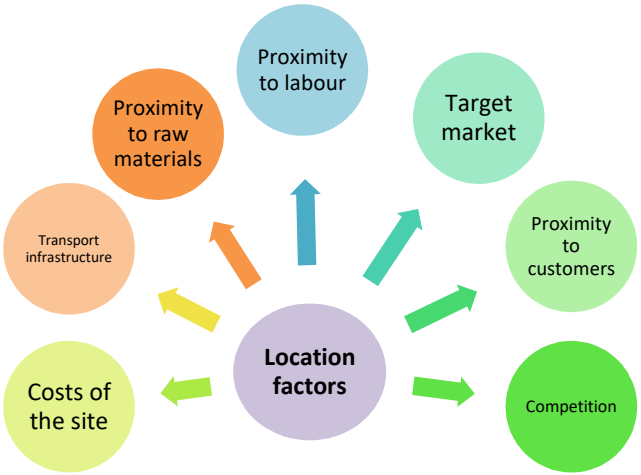
| Impact of consumer law on business | |
|---|---|
| Production | A business must make sure that the quality of the goods is up to standard. They must not be faulty or damaged when bought. If they are not customer could return products and this will affect their reputation. |
| Safety of goods | If goods are produced in a defective way customers can claim compensation for damage or personal injury. This could result in huge costs for the business and a loss of reputation. |

**Location:** refers to the place where a business is sited

**Proximity**
*Means 'nearness to'*
**Labour**
*The people employed by the business to produce goods and services*
**Raw materials**
*Materials needed to produce saleable goods and services*
**Transport infrastructure**
*The provision of roads, railways, ports and airports*

## 4:5 Business Location

For many businesses, the decision of where to locate is one of the most important decisions it takes. There are a number of factors that influence the location of a business

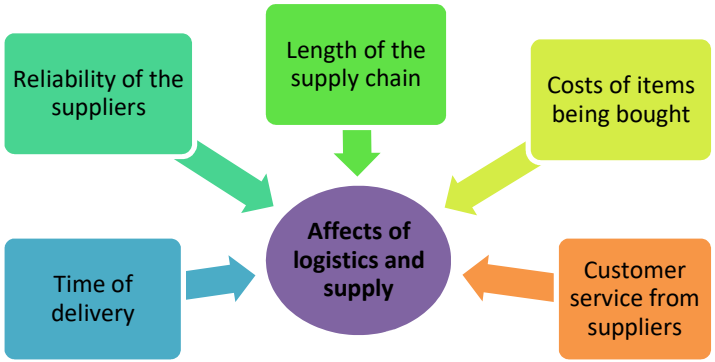



**Logistics**
*The management of the transportation and storage of goods*
**Procurement**
*The management of purchasing within a business*
**Suppliers**
*Parties who supply goods and/or services to a business*

## 4:6 Working with Suppliers

Procurement has a number of roles within a business:

1. Identifying goods and services to buy
2. Choosing suppliers
3. Ordering goods and services
4. Receiving deliveries from suppliers




## Assessment Information

Your assessment will take place during a normal timetabled lesson but you should be revising at home.

Number of marks available: 40
Time allowed: 50 minutes

Answer **ALL** of the questions

The first 10 questions will be multiple choice - you must only select **ONE** answer, selecting two will score 0 marks.

The other questions will include a range of 2, 3, 4, 6, 7, & 9 mark questions

**Possible questions**

1. State one way consumers are protected by law.
2. Explain why quality is important to businesses.
3. Analyse one benefit of using batch production.
4. Recommend one type of production a business could use for a product.
5. Evaluate the importance of selling good-quality products.

**State** **Explain** **Analyse** **Recommend** **Evaluate**

**R059 Plan and evaluate play activities**

1: **Add details**: name of child (initials only) age of child, when the activity will take place, where the activity will take place

**2. Briefly describe the activity you have planned**. Give it a **clear title.**
This could include: mark making, gardening. What's the time Mrs Wolf?, ride on bikes, stepping stones, collage, model making…..

3. **Developmental area** What area of development are you targeting/promoting?

**4. Reasons for choice.** Explain how this activity will help the children's development in the area you have chosen. Explain how it will relevant to a particular child and their developmental norms

**5. Aims:** Identify what area of the child's development needs support/developing. Focus on the specific skill you wish to promote and link it to the area of development. E.g. The aim may be to develop the fine motor skill of fastening and unfastening buttons. Make sure the aim is measurable

**6. Timing** Take into consideration the time it will take. Break the activity into parts and think about the time needed for each one e.g. the introduction, developing the activity, time for the child to put things away, time for the child to talk about what they have done.

**7. Safety considerations** Think carefully about any safety issues there may be and explain how you will reduce this risk. Consider: where the activity will take place, the equipment needed, how you will supervise it. Consider the weather if you are doing the activity outside. Think about safety labels

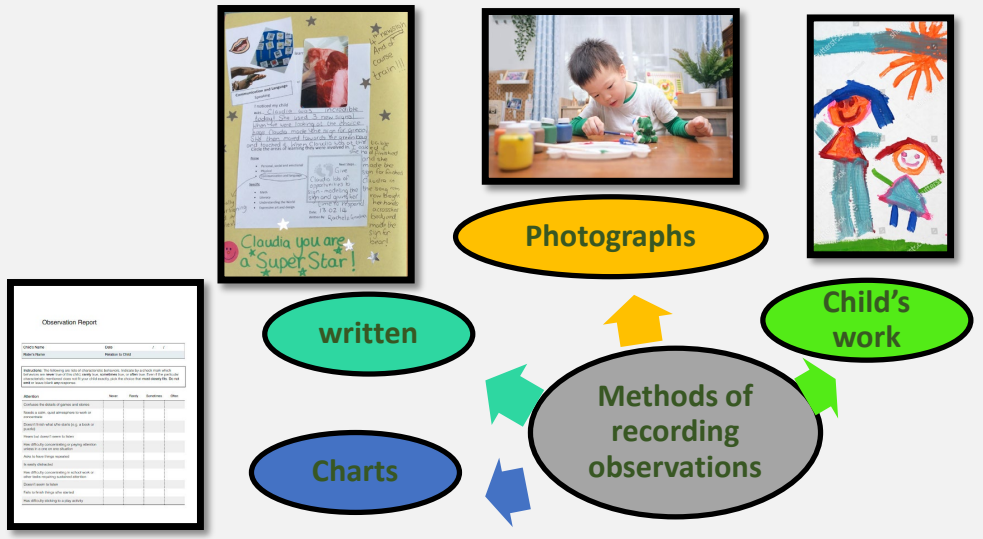
**8. Resources** This includes everything you need to carry out the activity. Eg. Space needed, materials, equipment**,** List all the equipment you will need for the activity. Check that these will be available and are in usable condition.

9. **How will you introduce the activity to the child?** You need to capture the child's interest so they are keen to be involved. You might start by reading a story to inspire them, or show resources or material they could use, Think about if you will introduce the activity and step back or play alongside the child.



## Child Development Year 11 term 3

| Method of observation | What the method involves |
|---|---|
| Narrative | A detailed written description of what is being observed over a short period of time. |
| Checklist | A list of possible skills is produced so that the observer can check off the child's skills as they are observed. |
| Snapshot | A brief note is made about a child to capture something they do or a skill they use. |
| Time sample | Capturing information about what a child is doing at particular times of the day. It could be how they play or how they behave. |



## Revision Summary Sheet - The British Constitution

| | | | |
|---|---|---|---|
| **Government** | The Government runs the country. It is made up from elected members of the House of Commons and sometimes unelected members of the house of Lords. Ministers are chosen by the PM (Prime Minister) | **Monarch** | Head of state – King or Queen |
| **Parliament** | Decision and law-making body of the UK. Includes the House of Commons, Lords and the Monarch. | **Bicameral** | Meaning two chambers – House of Commons and Lords |
| **Legislature** | The name for Parliament as a whole. Place where laws are made. | **Scrutiny** | Examining in detail what governments are doing. |
| **Parliamentary Sovereignty** | Parliament in the supreme authority on law-making in the UK. | **Bill** | Document published buy the Government – set out the plans to create a new law |
| **Executive** | Powerhouse of the government. PM is the head and chooses people to run the big government departments. | **White Paper** | Document setting out the Governments policy on an issue and inviting opinions |
| **Judiciary** | The system of courts and judges through which the law is applied. | **Act** | A law that has been passed through Parliament |
| **Uncodified Constitution** | A constitution in which not all parts are collected together in one document, but are found is many different sources. | **Veto** | The power to reject a proposal |
| **Civil Service** | Makes sure that the government runs properly and that decisions are carried out. Civil Servants provide advice and support to ministers | **Oversight** | The process of checking that something is bring carried out properly. |
| **Accountability** | The responsibility to explain how or why something is being done | **Official Opposition** | The Official Opposition is the party who is not in government but has the second largest number of seats. |
| **Commons Speaker** | Special MP is the highest authority in the Commons. They chair debates and keep order in the chamber | **Party Whips** | MPs whose role it is to enforce party discipline. They persuade MPs and threaten them with isolation if they decide to vote against their party's policy. |
| **Black Rod** | An officer of the House of Lords who is responsible for security, and controlling order within the Housed of Lords,. Plays a key role on the State Opening of Parliament. | **Parliamentary Select Committee** | Hold governments to account. The can ask ministers to appear before them and answer questions about their decisions and the workings of their departments. |

- The Queen is the UK's Monarch and Head of State, but the Prime Minister is the head of the Government.
- Parliament scrutinises the PM's decision, votes on the proposals and makes new Laws.
- A constitution is a set of rules that sets out how a country is run. It regulates the relationship between the government and the people.
- Most countries have what is called codified constitution. This means that all the rules about how that country is governed are set out in one document. The USA has a famous constitution that is codified,. However, the UK has an **Uncodified Constitution.** The rules and important guidelines about how the country should be rune are not found in one single document, nit are scattered across many different sources. This reflects the UK's complex Union of four different nations – England, Scotland, Wales and Northern Ireland.

**The impact of bicameralism on the quality of the Government**

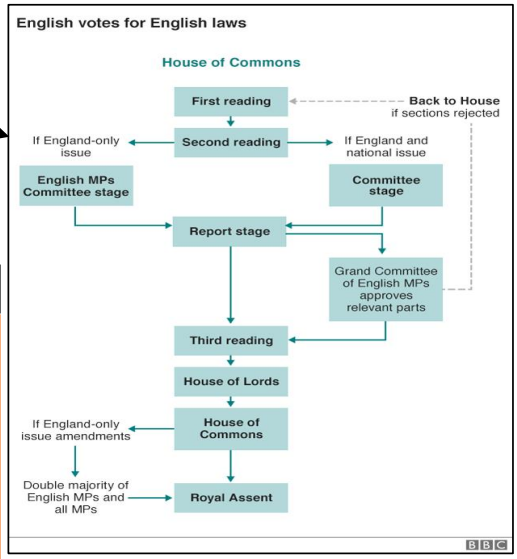
| Advantages | Disadvantages |
|---|---|
| Improves scrutiny of legislation – a second chamber provides a way to review bills and check them. | The Commons has democratic legitimacy because its members have been elected by the British people. The Lords lack this as it is made up of people who were born into rich families, have been appointed or are high in the church. |
| As the Lords is largely an appointed chamber, it is possible to recruit expertise from the worlds of business, arts, sport, science and industry to help create better laws. | The Lords can hold up the passing of new laws, which slows government down. |
| The Lords allow groups that are under-represented in the Commons to have a voice | It costs a lot to run the Lords as each one can claim £300 per day in expenses to attend the chamber. |
| It is traditional for the UK to have a bicameral system. | |

# Revision Summary Sheet
# The British Constitution

## The structure of UK Government

There are several branches o the UK's system of government. At the centre in the Monarchy. We have a constitutional monarchy, which means that the Queen does not get involved in the day-to-day running of the country and their power is limited. However, laws cannot be passed without the agreement of the Monarch.

How laws are made




**The electorate**

Citizens directly elect representative s every 5 years.

| Elected Legislature & | The Executive |
|---|---|
| **The House of Commons** | **HM Government** |
| **Primary role**<br>Creates/designs laws<br>Scrutinizes/approves laws | **Primary role**<br>Puts forward laws.<br>Runs Government |
| **Represents**<br>The will of the people | **Represents**<br>The Will of the majority |

The executive, legislature and judiciary are separated in our constitution. This helps to spread power throughout the system so that one part of the government does not become too powerful. Each part helps to hold the others to account.

| Appointed Legislature | The Crown | Judiciary |
|---|---|---|
| **The House of Lords** | **The Monarch** | **The UK Courts of Law** |
| **Primary Role**<br>Scrutinizes/approves Laws.<br>Acts as a safeguard | **Primary Role**<br>Represents the UK.<br>Signs bills into law | **Primary Role**<br>Upholds the law |
| **Represents**<br>The unwritten constitution | **Represents**<br>Ceremony/tradition | **Represents**<br>The rule of Law |

**Relationship between branches of government**

Conflict between politicians and judges can occur over the sentencing of offenders. It is the job of judges, with help from the Sentencing Council, to decide of custodial sentences. Judges refer to the key constitutional principle that the judiciary should have a high degree of independence from the executive.

| How the Constitution works: Parliament in action | |
|---|---|
| **Different types of MP** | On the other side of the House of Commons in the opposition. They have 'shadow' MPs to shadow the work of the minister. Each week, the opposition leader has the chance to hold the PM to account for their government at Question Time. |
| The Commons Speaker | Sits in the Speaker's chair between the Government and the Opposition benches. They are supposed to be impartial. In debates, the Speaker chooses MPs to speak and ensures they follow the rules of the House. |
| Party Discipline | Party whips are used to ensure that everyone follows the party line and that everyone works together. |
| State Opening of Parliament | The Monarch travels froth Buckingham Palace to Parliament to officially open each session of parliament. |
| The Budget | The budget speech is delivered by the Chancellor of the Exchequer every year and sets out the budget. There is then several days of debate before its agreed on. |
| The Civil Service` | Administrative body that follows governments instructions, implements government decision and provides policy advice to ministers. |

# Computer Science

# Data Storage

## Key content

| BIT DEPTH = NUMBER OF COLOURS | |
|---|---|
| Bit depth | Available colours |
| 1 bit (Monochrome) | $2^1 = 2$ |
| 2 bits | $2^2 = 4$ |
| 3 bits | $2^3 = 8$ |
| 8 bits | $2^8 = 256$ |
| 16 bits (High Color) | $2^{16} = 65,536$ |
| 24 bits (True Color) | $2^{24} = 16.7$ million |
| 32 bits (Deep Color) | $2^{32} = 4.3$ billion |

**ESTIMATING FILE SIZES**

IMAGES:

**width X height X colour depth = size**

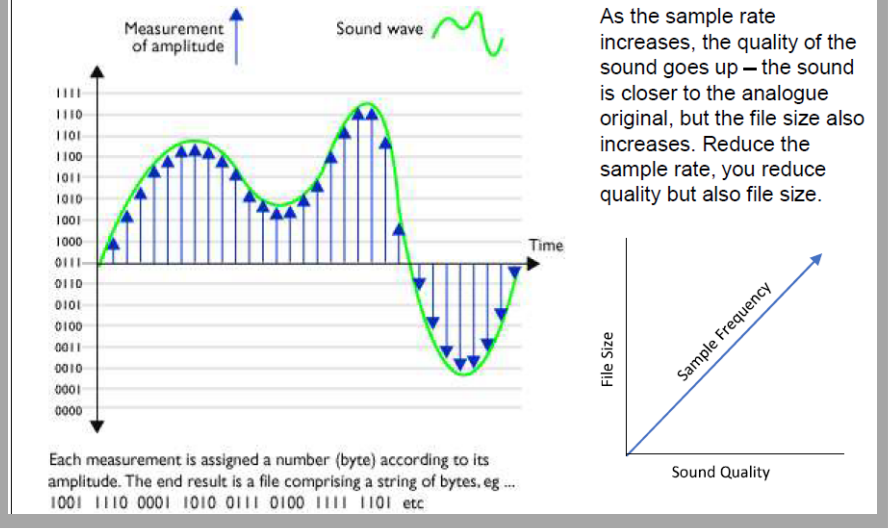
SOUND:

**N° of channels X sample rate X bit depth**

To get the value into mB, you divide by **1,000,000!**

## Diagrams

**SOUND SAMPLING**




As the sample rate increases, the quality of the sound goes up – the sound is closer to the analogue original, but the file size also increases. Reduce the sample rate, you reduce quality but also file size.




## Key vocab

| Word | Definition |
|---|---|
| Denary | Base 10 number system. Uses digits 0,1,2,3,4,5,6,7,8,9 |
| Binary | Base 2 number system. Uses digits 0 and 1 only. |
| Hexadecimal | Base 16 number system. Uses characters 0-9 and A,B,C,D,E and F |
| BIT | Contraction of BINARY DIGIT a single value of 0 or 1 |
| Bit Depth | The number of bits used to store the Sound |
| Character Set | A list of unique values, stored in binary, which represent the letters, numbers and symbols a computer can show/use. |
| ASCII | A list of unique values, stored in binary, which represent the letters, numbers and symbols a computer can show/use. |
| Extended ASCII | A character set which uses 8 bits to store 256 characters |
| Unicode | A characters set which uses 16 bits to store 65,535 characters |
| Integer | A whole number (value written to 0 decimal places) |
| Float | A decimal value |
| Exponent | Mathematical term which tells you how many time to multiply a BASE by itself. |
| JPEG | Joint Photographic Experts Group Compression for images lossy |
| GIF | Graphics Interchange Format Lossless bitmapped image format for limited colours. |
| Bit rate | The number of bits used to store 1 second of sound |
| Sample Rate | The number of times the sound is sampled in 1 second; measured in kHz |
| Resolution | The number of pixels used per unit eg pixels per inch (ppi) |
| Colour Depth | The number of bits used to represent each pixel. Shown in bits per pixel (bpp) |

More info can be found here:

https://youtu.be/KzgbVfnJ7I4
https://youtu.be/6EfxuAOKZKc
https://youtu.be/Ed7AFAzB8PM
https://youtu.be/9oYV4JvSsok

| *QLA* |
|---|
| Create and develop ideas to communicate meaning for theatrical performance (AO1) |
| Apply theatrical skills to realise artistic intentions in live performance (AO2) |
| To know and demonstrate knowledge and understanding of how drama and theatre is developed and performed (AO3) |
| Analyse and evaluate their own work (AO4) |
| Analyse and evaluate the work of others, professional or peers (AO4) |

**Devising Process—PERFORMANCE REQUIREMENT**

- Combine and apply vocal and physical skills which are highly dynamic and engaging.
- Vocal control - use of clarity, pace, inflection, pitch & projection
- Physical control—use of space, gesture, stillness and stance
- Characterisation— supporting the communication of your performance aim with focus, energy, confidence and commitment. Shows an accomplished level of refinement and range of moods and emotions
- Understanding of style, genre and theatrical conventions. (Brecht, Stanislavski, Physical Theatre, Artaud, documentary-drama).

**Physical skills:** Body-language, facial expression, eye-contact, gait, demeanour, movement, gesture, posture, spatial relationships, interaction, proxemics.

**Vocal skills:** pace, pitch, pause, tone, volume, delivery, emphasis, accent, rhythm, timing

**Theatrical Conventions**

Choral movement/speech: two or more actors doing the same movement at the same time
Canon: two or more actors doing the same movement one after another
Sound-scape: layering sound to create atmosphere
Hot-seating: an actor answering questions in character
Thought-tracking: pausing the action to reveal a characters' innermost secret thoughts and feelings
Direct address: talking directly to the audience e.g. narrator, reporter
Still image: stopping the action to highlight a moment
Slow motion: slowing down the action to highlight a moment
Cross-cutting: splitting the stage into two scenes/ locations

**How to give constructive feedback**

- **I/the actor used the skill [WHAT]**
- **I/the actor used the skill in the following way [HOW]**
- **I/the actor used the skill because... creating the effect of… [WHY]**
- **This means that I/the actor succeeded because… [LINK]**
- **HOWEVER, I/the actor did not use the skill [WHAT]**
- **I/the actor could have used the skill in the following way [HOW]**
- **This would've created the effect that…[WHY]**

**Section 1: Response to Stimulus**

What do you need to include:
- Initial response to stimuli (pick 3 of the stimulus we looked at, sum up each in a sentence).
- Stimulus you chose, why?
- Research you did, what did you find?
- Style? Technique? Aim?

**Section 2: Development and Collaboration**

What do you need to include?
- Specific scene: intention of and how you developed it?

Specific scene: intention of and how you developed it?
- Character you are playing, aim of role, use of physical skill, use of vocal skill, use of technique
- Style chosen, why it's working/not work-

**Section 3: Analysis and Evaluation**

What do you need to include?
- EVALUATE success of a scene
- EVALUATE success of a scene
- Physical and vocal skills you used, how this added to the performance?
- Link back to group aims, style, audience reaction, overall success

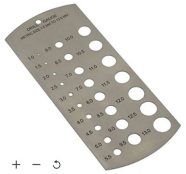
ENGINEERING YEAR 11 MODULE 2
Key Machining techniques

For your NEA tasks you will need to demonstrate a range of key making and machining skills.

1. Marking out different materials
2. Cutting different materials
3. Shaping materials to a tolerance
4. Drilling
5. Turning
6. folding / bending
7. Threading
8. Laser cutting / 3D printing
9. Joining (brazing)

## Templates

Templates are used to help you mark out shapes more accurately. They also allow you to repeat a part using the same template.



Templates can be made from different materials such as paper, card, plastic, wood.

## Finishing

Finishing is where you ensure that the surface of a material has no sharp edges and is looks attractive and is protected from its environment.
Many materials require finishing so that they do not rot or rust other materials can be just polished.

| | | |
|---|---|---|
| Polishing | Lacquering | Varnishing |
| Buffing | Oiling | Knurling |
| Staining varnishing | Waxing | Oil blacking |

### Finishing materials

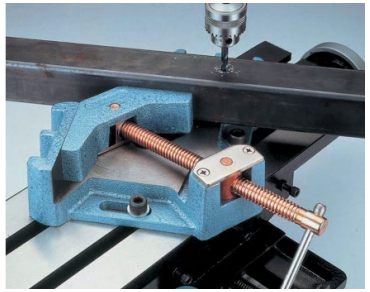
**Metals**
Emery cloth
Wet and dry carbide paper
Wire wool

**Woods**
Glass paper

**Plastics**
Wet and dry carbide paper
Brasso

## Jigs

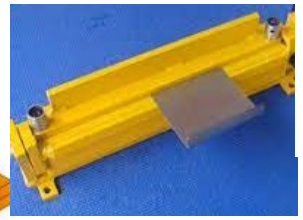
Jigs are used to control the location and movement of a part. So that you can cut or join the part accurately.



Drilling Jig, Brazing Jigs etc.

## Former

Formers are used to help you shape a part to a required shape / angle or tolerance.



## Machine Cutting Speeds

| | |
|---|---|
| Cutting Speed (V) | $= \frac{\pi \times D \times S}{1{,}000}$ |
| Spindle Speed (S) | $= V \div \pi \div D \times 1{,}000$ |
| Feed (F) | $= S \times f \times N$ |
| feed per Tooth (f) | $= \frac{F}{S \times N}$ |

V = Cutting Speed
π = The Circular Constant
D = Diameter
S = Spindle Speed
F = Feed
f = Feed per Tooth
N = Number of Flutes

## Metric Coarse Tapping Drill Sizes

| Size | Pitch | Drill |
|---|---|---|
| M1 | 0.25 | 0.75 |
| M2 | 0.4 | 1.6 |
| M3 | 0.5 | 2.5 |
| M4 | 0.7 | 3.3 |
| M5 | 0.8 | 4.2 |
| M6 | 1 | 5 |
| M7 | 1 | 6 |
| M8 | 1.25 | 6.75 |

| Contexts and writer's intentions |
|---|
| **Genre/form:** This is a gothic novel, with elements of the detective crime genre. Gothic novels were popular in Victorian times; they usually included dark and mysterious settings; terrifying, violent and supernatural events; and they often used various narratives to tell the story. The 'mystery' in a detective novel is to find the murderer, in J&H the mystery surrounds the character of Hyde – Stevenson does not reveal all until the final chapter. |
| **Setting** – A divided society: Stevenson grew up in Edinburgh and some think the city of London in J&H is actually based on Edinburgh. Both Edinburgh and London were divided cities—made up of areas of extreme wealth side by side with areas of extreme poverty. The co- existence of these two very different worlds interested Stevenson. |
| **London:** A dirty, smoggy, dark and dangerous city at the time of writing. Sometimes covered in a brown fog from the factories of the Industrial Revolution. Riddled with crime which went largely unsolved by a relatively new and ineffective police force. |
| **The Victorian Gentleman:** Social conventions were so strict in Victorian times that the criminal underworld developed—an outward appearance of dignity was valued more than genuine humanity. There was some hypocrisy around the idea of the Victorian gentleman, as many of these men indulged their vices in poor areas so as not to be seen. |
| **Science and Darwinism:** Darwin's book 'The theory of Evolution', suggested that perhaps we did not come from God, but evolved from apes. The thought of being linked to the primitive (troglodytic), beasts frightened the Victorians. Scientific developments were rapid at this time, including in medicine and there was a growing conflict between religion and science. New beliefs such as phrenology led people to have unusual beliefs about what facial features/head shapes might mean about your personality and character. |
| **The Industrial revolution:** The building of factories drove mass migration of people from country to city to find work. Housing was crowded and low quality and it was a time of rapid social change. This led to fears of depravity and crime; Londoners were concerned about the pace of change. There was also a fear of new technology and its implications for mankind. |

| Key Themes |
|---|
| **Duality:** A belief that humans aren't necessarily always as they appear but are multi-layered. |
| **Science, Reason and the supernatural:** Science is often placed against beliefs of religion and it is often thought there is a tension between the two. Stevenson explores this through Jekyll's experiments and Dr Lanyon. Dr Lanyon = rational; Dr Jekyll = mystical/spiritual. |
| **Reputation and regression:** Victorian society was founded upon ideas of respectability, with a fear we may revert back to more animalistic tendencies if we don't adhere to strict values. |
| **Appearances vs reality/secrets:** Few things are as they appear. J is respectable, yet he has his secret inner identity. Hyde appears to be a normal 'person' (if a bit ugly) but he's actually a product of a potion. It appears Jekyll is being blackmailed, yet he isn't. Lanyon's illness looks to be physical, however it is the effects of seeing Hyde's transformation. As readers we are also taken in by what appears to be real but turns out not to be. |
| **Good Vs Evil:** Evil is personified in Hyde in the novel. He is entirely selfish, indulging in his own appetites without regard for others. Good is shown in the novel as being generous and kind. Jekyll is a "good" religious man and a "good" friend when not under the influence of Hyde. Hyde is frequently contrasted to his innocent victims (Carew/young girl). |

# Knowledge Organiser: Jekyll and Hyde

| Key characters | Quotations |
|---|---|
| **Dr Jekyll**: His changing behaviour causes suspicion all round as to his mental state. He is introduced as a kind, professorial gentleman, but comes under criticism from Lanyon for his "unscientific" ideas. | "I swear to God I will never set eyes on him again<br>"that man is not truly one, but truly two"<br>"I am the chief of sinners. I am the chief of sufferers too"<br>"The moment I choose, I can be rid of Mr Hyde." |
| **Mr Hyde**: He appears in the gruesome anecdotes of Enfield and the maid, as a horrifically violent gentleman, with little remorse and, most noticeably, a strangely powerful appearance of evil and deformity. | "it was some damned juggernaut."<br>"Mr. Hyde was pale and dwarfish."<br>"with ape-like fury he was trampling his victim under foot"<br>"If I ever read Satan's signature on a face"<br>"He broke out in a great flame of anger" |
| **Mr Utterson:** A lawyer whose perspective the novel follows for most of the story as he tries to uncover the mystery of Dr. Jekyll connection to Mr. Hyde. | "I let my brother go to the devil in his own way."<br>"'If he be Mr. Hyde,' he had thought, 'I shall be Mr. Seek.'"<br>"That won't hold water; it doesn't comment itself to reason." |
| **Dr Lanyon:** Dr. Jekyll's old friend and fellow scientist. He disagrees with Jekyll's scientific experiments, calling them "devilish". He dies from shock after seeing Hyde transform back to Jekyll. | I have had a shock," he said, "and I shall never recover.<br>I must die; and yet I shall die incredulous."<br>"Unscientific balderdash" |
| **Poole:** is the loyal servant of Dr. Jekyll, who greets visitors at the house and eventually is instrumental in the discovery and confession of his master. | "No, sir; master's made away with!"<br>"Well, when that masked thing like a monkey jumped from among the chemicals and whipped into the cabinet" |

| | |
|---|---|
| **Setting and symbolism:** The house is a key symbol of the duality in Victorian society. Jekyll's house is symbol of man's respectable public face. Hyde's entrance and the laboratory represent the darker, hidden side of man. Consider windows as another symbol the lack of windows/high windows indicating secrecy. | "shopfronts...like rows of smiling sales- women"<br>"Sinister block of buildings thrust forward its gable…blind forehead of discoloured wall"<br>"like a district of some city in a nightmare" |
| **Pathetic Fallacy:** Used extensively to create a dark and mysterious mood and to create tension. London is often shrouded in fog which represents the central mystery in the novella—the characters cannot see clearly. | "the flog slept on the wing above the drowned city"<br>"the night was brilliantly lit by the full moon"<br>"The fog rolled in"<br>"a great chocolate-coloured pall lowered over heaven." |

**Revision resources:**

**BBC Bitesize:**
https://www.bbc.co.uk/bitesize/topics/z8642p3

**JOG revision booklet and activities:**
https://www.johnofgauntschool.org/page/?title=English+%26amp%3B+Media+Studies&pid=23

**Audiobook:**
https://www.youtube.com/watch?v=PcczA9Cwbow

Remember that you will get an extract in this exam – a great revision exercise is to find different extracts, annotate them and practise writing analytical paragraphs.

**Example Q:** Starting with this extract, how does Stevenson use settings to create tension in the novel?

# Food Science

**Functions of ingredients**
Ingredients provide a variety of functions in recipes.

**Carbohydrate, protein and fat**
Carbohydrate, protein and fat all have a range of properties that make them useful in a variety of food products.

**Carbohydrates perform different functions in food.**
They can:
- help to cause the colour change of bread, toast and bakery products (dextrinisation);
- contribute to the chewiness, colour and sweet flavour of caramel;
- thicken products such as sauces and custards (gelatinisation).

**Maillard reaction**
Foods which are baked, grilled or roasted undergo colour, odour and flavour changes. This is primarily due to a group of reactions involving amino acids (from protein) and reducing sugars.

**Dextrinisation**
When foods containing starch are heated they can also produce brown compounds due to **dextrinization**. **Dextrinisation** occurs when the heat breaks the large starch polysaccharides into smaller molecules known as dextrins which produce a brown colour.

**Caramelisation**
When sucrose (table sugar) is heated above its melting point it undergoes physical and chemical changes to produce caramel.

**Gelatinisation**
When starch is mixed with water and heated, the starch granules swell and eventually rupture, absorbing liquid, which thickens the mixture. On cooling, if enough starch is used, a gel forms.

**Proteins perform different functions in food products.**
They:
- aerate foods, e.g. whisking egg whites;
- thicken sauces, e.g. egg custard;
- bind ingredients together, e.g. fishcakes;
- form structures, e.g. gluten formation in bread;
- gel, e.g. lime jelly.

**Gluten formation**
Two proteins, **gliadin** and **glutenin**, found in wheat flour, form **gluten** when mixed with water. Gluten is strong, elastic and forms a 3D network in dough. In the production of bread, **kneading** helps untangle the gluten strands and align them. Gluten helps give structure to the bread and keeps in the gases that expand during cooking.

**Gelation**
Gelatine is a protein which is extracted from collagen, present in animal connective tissue. When it is mixed with warm water, the gelatine protein molecules start to unwind. On cooling, a stable, solid network is formed, trapping the liquid.

**Denaturation**
Denaturation is the change in structure of protein molecules. The process results in the unfolding of the protein's structure. Factors which contribute to denaturation are heat, salts, pH and mechanical action.

**Coagulation**
Coagulation follows denaturation. For example, when egg white is cooked it changes colour and becomes firmer (sets). The heat causes egg proteins to **unfold** from their coiled state and form a solid, stable network.

**Aeration**
Products such as creamed cakes need air incorporated into the mixture in order to give a well-risen texture. This is achieved by creaming a fat, such as butter or baking spread, with sugar. Small bubbles of air are incorporated and form a stable foam.

**Fats performs different functions in food.**
They help to:
- add 'shortness' or 'flakiness' to foods, e.g. shortbread, pastry;
- provide a range of textures and cooking mediums;
- glaze foods, e.g. butter on carrots;
- aerate mixtures, e.g. a creamed cake mix;
- add a range of flavours.

**Plasticity**
Fats do not melt at fixed temperatures, but over a range. This property is called plasticity.

**Colloidal systems**
Colloidal systems give structure, texture and mouthfeel to many different products.

| System | Disperse phase | Continuous phase | Food |
|---|---|---|---|
| Sol | Solid | Liquid | Unset jelly |
| Gel | Liquid | Solid | Jelly |
| Emulsion | Liquid | Liquid | Mayonnaise |
| Solid emulsion | Liquid | Solid | Butter |
| Foam | Gas | Liquid | Whipped cream |
| Solid foam | Gas | Solid | Meringue |

**Raising agents**
Raising agents include anything that causes rising within foods, and are usually used in baked goods. Raising agents can be:
- biological, e.g. yeast;
- chemical, e.g. baking powder;
- mechanical, e.g. adding air through beating or folding.

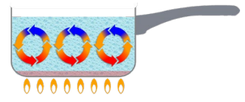
**Functional ingredients**
These are ingredients that are specifically included in food for additional health benefits. They include:
- probiotics – 'good' bacteria that may have a positive impact on human health;
- prebiotics – food ingredients that promote the growth of beneficial microorganisms in the gut;
- sterols/stanols – compounds that can lower cholesterol;
- healthy fats (e.g. omega-3);
- added vitamins and minerals (more than in the original food).

**Why is food prepared and cooked?**
Food is prepared and cooked to:
- make the food more palatable – improves flavour, texture and appearance;
- reduce the bulk of the food;
- provide variety and interest to meals.

**Methods of cooking food**
The methods of cooking are divided up into groups. These are based on the cooking medium used.
They are:
- moist/liquid methods, e.g. boiling;
- dry methods, e.g. grilling;
- fat-based, e.g. frying.

Selecting the most appropriate way of preparing and cooking certain foods is important to maintain or enhance their nutritional value.
- Vitamins can be lost due to oxidation during preparation or leaching into the cooking liquid.
- Fat-based methods of cooking increase the energy (calories) of the food.
- The use of different cooking methods affects the sensory qualities of the food.

**There are three ways that heat is transferred to food.**
- Conduction – the exchange of heat by direct contact with foods on a surface.
- Radiation – energy in the form of rays.
- Convection – currents of hot air or hot liquid transfer the heat energy to the food.



**Key terms**
**Conduction**: The exchange of heat by direct contact with foods on a surface.
**Convection**: Currents of hot air or hot liquid transfer the heat energy to the food.
**Functional ingredients**: Included in food for additional health benefits.
**Heat transfer:** Transference of heat energy between objects.
**Radiation**: Energy in the form of rays.

**Tenderisation**
- Mechanical tenderisation – a meat cleaver or meat hammer may be used to beat the meat. Cutting into small cubes or mincing can also help.
- Chemical tenderisation (marinating) –the addition of any liquid to flavour or soften meat before cooking.

**Tasks**
1. Choose a recipe that you enjoy or have made recently and explain in detail the functions of the ingredients.
2. Explain the function of raising agents, giving examples of recipes.

To find out more go to: https://bit.ly/2SPqWEG

## Food Preparation & Nutrition

# Unit 2c

# The Challenge of Resource Management

AQA

## Resource Challenges

**Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.**

### Significance of Water

**Resources such as food, energy and water are what is needed for basic human development.**

| FOOD | WATER | ENERGY |
|---|---|---|
| Without enough nutritious food, people can become **malnourished**. This can make them ill . This can prevent people working or receiving education. | People need a supply of **clean and safe water** for drinking, cooking and washing. Water is also needed to produce food, clothes and other products. | A good supply of energy is needed for a basic standard of living. People need **light and heat** for cooking or to stay warm. It is also needed for industry. |

### Demand outstripping supply

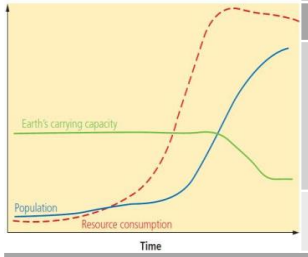
**The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations**

#### 1. Population Growth

- Currently the global population **is 7.3 billion**.
- Global population has risen **exponentially** this century.
- Global population is expected to reach **9 billion by 2050**.
- With more people, the **demand** for food, water, energy, jobs and space **will increase**.

#### 2. Economic Development

- As **LICs** and **NEEs** develop further, they require **more energy** for industry.
- **LICs** and **NEEs** want similar lifestyles to **HICs**, therefore they will need to **consume more resources**.
- Development means **more water is required** for food production as diets improve.




#### Resource Reliance Graph

**Consumption** – The act of using up resources or purchasing goods and produce.
**Carrying Capacity** – A maximum number of species that can be supported.

**Resource consumption exceeds Earth's ability to provide!**

#### 3. Changing Technology and Employment

- The demand for resources has driven **the need for new technology** to reach or gain more resources.
- More people in the **secondary and tertiary industry** has increased the **demand for resources** required for electronics and robotics.

## Food in the UK

#### Growing Demand

- The UK imports about 40% of its food. This increases people's **carbon footprint**.
- There is growing demand for greater choice of **exotic foods** needed all year round.
- Foods from abroad are often cheaper.
- Many foods can't be grown in the UK, due to our climate.

#### Impact of Demand

**Foods can travel long distances (food miles). Importing food adds to our carbon footprint.**
+ Supports workers with an income.
+ Supports families in LICs.
+ Taxes from farmers' incomes.
contribute to local services.
- Less land for locals to grow their own food.
- Farmers exposed to chemicals.

#### Agribusiness

**Farming is being treated like a large industrial business. This is increasing food production.**
+ Intensive faming maximises the amount of food produced.
+ Using machinery which increases the farms efficiency.
- Only employs a small number of workers.
- Chemicals used on farms damages habitats and wildlife.

#### Sustainable Foods

**Organic foods that have little impact on the environment and are healthier have been rising.**
**Local food sourcing is also rising in popularity.**

- **Reduces emissions** by only eating food from the UK.
- **Buying locally sourced** food supports local shops and farms.
- A third of people **grow their own food**.

## Energy in the UK

#### Growing Demand

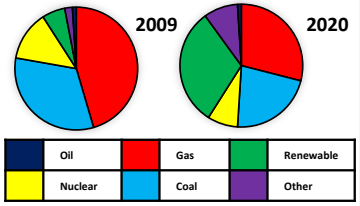
The UK **consumes less energy** than compared to the 1970s despite a smaller population. This is due to the **decline of industry**.

#### Energy Mix

The majority of UK's energy mix comes from **fossil fuels**. By 2020, the UK aims for 15% of its energy to come from **renewable sources**. These renewable sources do not contribute to **climate change**.

#### Changes in Energy Mix

- 75% of the UK's oil and gas has been used up.
- Coal consumption has declined.
- UK has become too dependent on imported energy.




## Water in the UK

#### Growing Demand

**The average water used per household has risen by 70%. This growing demand is predicted to increase by 5% by 2020.**
**This is due to:**

- A growing UK population.
- Water-intensive appliances.
- Showers and baths taken.
- Industrial and leisure use.
- Watering crops.

#### Deficit and Surplus

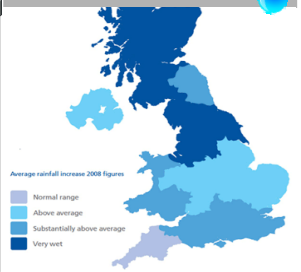
The north and west have a **water surplus** (more water than is required).
The south and east have a **water deficit** (more water needed than is actually available).
More than half of England is experiencing **water stress** (where demand exceeds supply).

#### Pollution and Quality

**Cause and effects include:**

- Chemical run-off from farmland can destroy habitats and kills animals.
- Oil from boats and ships poisons wildlife.
- Untreated waste from industries creates unsafe drinking water.
- Sewage containing bacteria spreads infectious diseases.

#### Water stress in the UK




#### Management

UK has **strict laws** that limits the amount of discharge from factories and farms.
**Education campaigns** to inform what can be disposed of safety.
**Waste water treatment plants** remove dangerous elements to then be used for safe drinking.
Pollution traps catch and filter pollutants.

#### Water Transfer

Water transfer involves moving water through pipes from areas of surplus (Wales) to areas of deficit (London).
**Opposition includes:**

- Effects on **land and wildlife**.
- High maintenance **costs**.
- The **amount of energy** required to move water over long distances.

## Energy in the UK (continued)

#### Significance of Renewables

+ The UK government is investing more into low carbon alternatives.
+ UK government aims to meet targets for reducing emissions.
+ Renewable sources include wind, solar and tidal energy.
- Although infinite, renewables are still expensive to install.
- Shale gas deposits may be exploited in the near future (Fracking)

#### Exploitation

| | |
|---|---|
| **Nuclear** | New plants provide job opportunities.<br>Problems with safety and possible harm to wildlife.<br>Nuclear plants are expensive. |
| **Wind Farm** | Locals have low energy bills.<br>Reduces carbon footprint.<br>Construction cost is high.<br>Visual impacts on landscape.<br>Noise from wind turbines. |

## Option 2: WATER

**Water security is when people have good access to enough clean water to sustain well-being and good health. Water insecurity is when areas are without sufficient water supplies. Water Stress is when demand exceeds supply.**

### Human

- **Pollution caused** by human and industrial waste being dumped into peoples water sources.
- **Poverty prevents** low income families affording water.
- **Limited infrastructure** such as a lack of water pipes and sewers.
- **Over-abstraction** is when more water is taken than is replaced.

### Physical

- **Climate** needs to provide enough rainfall to feed lakes and rivers. Droughts affect supply of water.
- **Geology** can affect accessibility to water. Permeable rock means sourcing water from difficult aquifers, whereas impermeable allows water to run-off into easily collected basins.

### Impact of Water Insecurity

| Food production | Industrial output |
|---|---|
| The less water available for irrigating crops the less food that will be produced. This could lead to starvation. | Manufacturing industries depend heavily on water. A severe lack of water can impact economic output. |
| **Disease and Water Pollution** | **Water conflict** |
| Inadequate **sanitation** systems (toilets & sewers) pollutes drinking water causing diseases such as cholera and typhoid. | Water sources that cross national borders can create tensions and even war between countries. E.g. Ethiopia's Grand Renaissance Dam |

### Increasing Water Supply

**Water diversion -** Involves diverting water to be stored for longer periods. Often water is pumped underground to prevent evaporation.
**Dams and Reservoirs -** Dams control flow and storage of water. Water is released during times of water deficit.
**Water transfer –** includes schemes to move water by canals and pipes from areas of surplus to areas of deficit.
**Desalination –** Involves the extraction of salt from sea water to produce fresh drinking water.

### Sustainable Water Supply

**Ensures water supplies don't cause damage to the environment whilst also supporting the local economy.**

**Water conservation -** Aims to reduce the amount of water wasted.
**Groundwater Management -** Involves the monitoring of extracting groundwater. Laws can be introduced.
**Recycling and 'Grey' Water -** Means taking water that has already been used and using it again rather than returning it to a river or the sea. This includes water taken from bathrooms and washing machines.

### C.S. Large scale water transfer scheme China's South to North Water Transfer Project

**China is one of the worlds largest countries by land area, and the largest by population with around 1.4 billion people. Northeast China includes the capital Beijing and is dangerously short of water.**

**Advantages**

- **27 trillion tonnes of water will be transferred to major cities in the north such as Beijing & Tianjin.**
- **China will be able to continue it's rapid economic growth by having enough water for industrial production.**
- **Agriculture will continue to be able to produce enough food to feed the huge amount of people in the north. Less reliance on food imports will be needed.**

**Disadvantages**

- **The water transfer project is expected to cost $62 billion when completed.**
- **330,000 people have been displaced from their homes due to construction. Many have complained about the low levels of compensation, poor quality farmland and unfamiliar new surroundings.**
- **There ae major concerns that droughts will be caused in the south of China, and water being transferred will be polluted by industry.**

### C.S. Local scale water transfer scheme Ethiopia's Hitosa project

**A project in Ethiopia that aims to improve water supply in rural areas with water shortages.**

**How does the project work?**

75 miles of piping carrying water by gravity from a mountain spring. The project was set up by **Water Aid** and it's local partner **Water Action** (both charities)

The project is an example of Appropriate Technology as local people are involved in digging trenches for the pipes and pay £5 towards the costs. This gives them involvement in the project from the start. It is **low cost & low tech.**

**Advantages**

- **New businesses established in local towns.**
- **Increase in number of students attending school regularly.**
- **Amount of water related diseases, stomach pain & diarrhoea greatly reduced.**

**Disadvantages**

- **There are still water supply issues in remote areas of Hitosa.**
- **Pipeline supplied by the UK so there are concerns over the affordability of it's replacement in 30 years time.**
- **Hygiene education was poorly implemented meaning local people do not often still understand the link between hygiene and good health.**

**Unit 2c**

AQA

# The Challenge of Resource Management

# Crime and punishment Knowledge Organiser. 1 Medieval period, c.1000-c.1500.

## Crimes

**Saxon period, c.1000 – 1066.**
- Crimes against the person, e.g. assault / murder
- Crimes against property, e.g. theft
- Crimes against authority, e.g. treason
- Moral crimes (links to Church / religion), e.g. drunkenness, adultery, etc.

**Normans, 1066 - c.1200, continuity and change.**
- William generally retained Edward the Confessor's laws
  Reason for continuity: stressed continuity and that William was Edward's legitimate successor
- Murdrum law - Saxon community collectively responsible for murder of a Norman: catch murderer or face fine
  Reason for change: Normans a tiny minority (7000 among 2m Saxons); deterrent through community pressure; placed responsibility for order on whole community.
- Forest Laws – banned hunting / collection of firewood / grazing of animals in forests; heavy punishments included blinding and execution for repeat offence
  Reason for change: to protect William's hunting which he loved
  Seen as unfair 'social crime'
- Wergild abolished; replaced by concept of the 'King's Peace'
  Reasons for change: crimes were against king so compensation paid direct to the king; raised money

**Later Medieval, c.1200 – c.1500, continuity and change.**
- Murdrum fine abolished c.1350
  Reasons for change: differences between Normans and Saxons faded over time
- Heresy Laws introduced from 1382 to deal with challenges to Church beliefs
  Reason for change: increasing challenges to the Church in England (Lollards) and over Europe
- Increased focus on treason

## Policing and trials

**Policing – community based:**
**Saxon period, c.1000 – 1066.**
- Hue and cry – witnesses / whole village expected to chase suspect; fines if failed to do so: no organised police force
- Tithings – all males over 12 in a group of 10 – responsible for each other's behaviour

**Normans, 1066 - c.1200, continuity**
- No change after Norman Conquest (1066)
  Reason for continuity: system cheap and reasonably effective.

**Later Medieval, c.1200 – c.1500, continuity and change**
- 1285, Parish Constable introduced
  Reason for change: to organise hue and cry and link with county Sheriff for more important crimes / crimes outside village boundaries
- Parish watch introduced - night-time patrols
  Reason for change: more organised efforts at policing
- Tithings fade out by the 1400s
  Reason for change: looser feudal ties of peasants after Black Death (1348/50)

**Trials - community-based plus religious influence:**
**Saxon period, c.1000 – 1066.**
- Local manor courts for most cases; King's Court in London existed for most serious cases
- Local jury (knew accused); made judgement based on witnesses / evidence and their knowledge of the character of accused / accuser
- Religious influence:
  - accused / accuser / witnesses / jurors took oath to ensure honesty
  - Trial by ordeal (hot / cold water, iron, consecrated bread): where jury could not reach verdict: 'God decides'.

**Normans, 1066 - c.1200, continuity and change**
- Trials essentially as before including trial by ordeal:
  Reason for continuity: court / jury system effective; trial by ordeal due to Normans' deep religious beliefs
- Addition of trial by combat to 'trial by ordeal'
  Reason for change: linked to traditional warlike Norman customs

**Later Medieval, c.1200 – c.1500, continuity and change.**
- 1166 creation of Assize / Circuit courts where Royal judges tried more serious crimes in circuits of important towns
- 1190 Coroners appointed to investigate suspicious deaths
- 1215 abolition by the Pope of Trial by Ordeal
- 1361, Justices of the Peace – centrally appointed local judges (magistrates)

## Punishment

**Saxon period, c.1000 – 1066.**
- *Early-Saxon Blood Feud - where victim's family took revenge - replaced by following punishments*
- Wergild – paid to victim's family; amount varied according to importance of victim; types and extent of damage done
- Fines
- Corporal punishment - stocks, pillory, whipping, maiming
- Capital punishment – hanging
- NOT prison

**Purpose**
- Compensation - Wergild
- Retribution – severity of punishment matched crime (treason – death; repeat offences maiming, etc.)
- Deterrent – painful / humiliating public punishment in front of community (linked to cost and lack of policing)

**Normans, 1066 - c.1200, continuity and change.**
- Wergild abolished
  Reason for change: fines paid to the king for breach of 'King's Peace'
- Increase in crimes punishable by death or mutilation (e.g. Forest Laws)
  Reason for change: Norman harshness and need for deterrent as a small minority
- Retribution and deterrent overwhelmingly main purposes

**Later Medieval, c.1200 – c.1500, continuity and change.**
- 1305, introduction of 'hung, drawn and quartered' punishment for treason
  Reason for change: retribution / deterrent - hideous punishment to stress enormity of crime

## Key considerations

**Saxon period, c.1000 – 1066.**
**Society:**
- Agricultural: vast majority lived in small villages.
- Massive importance of community in policing, trials and public punishment.
- Growth of towns during Middle Ages reduced effectiveness of community.
- Importance of Church / religion in all areas of life (and death)

**Institutions – government**
- Saxons – slow growth of royal power.
- Normans, 1066 - . increased harshness of laws and punishments, e.g. brutality (Harrying of the North); Forest Laws; Murdrum Law; castles, etc. Particularly linked to deterrence as Normans a tiny minority of c.7000 among 2m Saxons.
- Later Middle Ages: Norman / Saxon divisions faded; development of government institutions seen in courts / coroners, etc.

**Institutions – Church / religion**
- Christian religion massively influential in all areas of life and crime, etc.
- **Society:** profound belief in God; massive wealth and influence of Church; tension between Church and government (Thomas Becket – Church Courts)
- **Crimes:** Religious influence on moral crimes e.g. drunkenness, adultery, failure to attend church; Heresy – crimes against Church beliefs especially after 1382.
- **Policing:** Sanctuary linked to concept of mercy. Certain holy places left the criminal immune from arrest: had 40 days to decide whether to stand trial or go into exile.
- **Trials:** Oaths to 'prove' honesty of accused / witnesses / jury; Trial by Ordeal – 'God decides' until abolished in 1215; development of 'Church Courts' to try clergy:
  - The so-called 'Benefit of the Clergy' allowed those connected to the Church (or capable of reciting the 'neck verse' to be tried by Church Courts where sentences more lenient and excluded capital punishment.
- **Punishment:** mercy, especially in relation to crimes committed by the clergy.

**Individuals**
- William the Conqueror – Norman laws, harshness, personal love of hunting.

**Attitudes**
- Importance of religion
- Development of concept of 'social crime' under Normans. Unfair 'crime', e.g. Forest Laws.

**Science and technology**
- Domination by religion

| Key word | definition |
|---|---|
| Legislation | A collection of laws passed by government |
| Redress | To obtain justice after receiving inadequate care |
| Protected characteristics | Having a protected characteristic means you have a right not to be treated less favourably, or subjected to an unfair disadvantage, by reason of that characteristic, for example, because of your age, race, religion, sex or sexual orientation |
| Vulnerable | A person unable to protect themselves against harm or exploitation |
| Paramountcy principle | The child's best interest and welfare is the first and most important consideration |

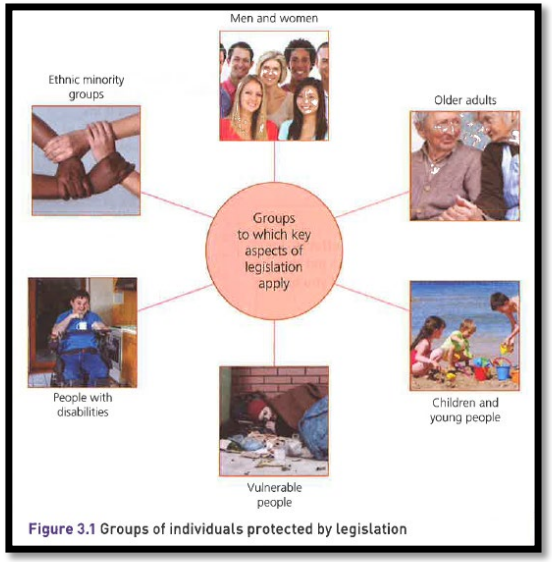
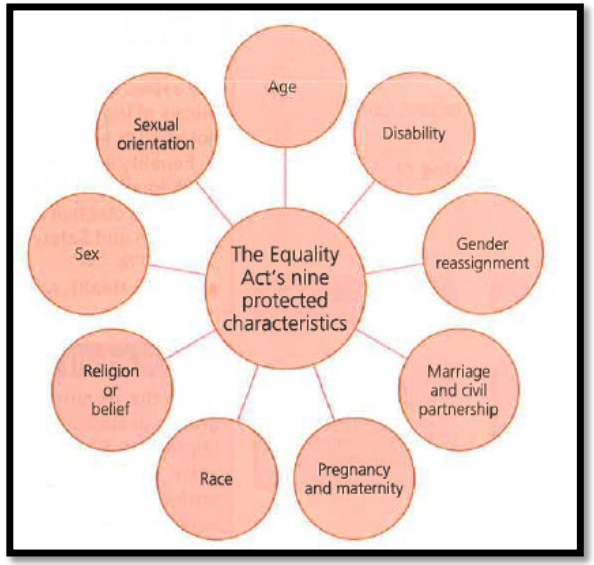


Figure 3.1 Groups of individuals protected by legislation




| Legislation | Brief overview |
|---|---|
| **Children Act 2004**<br><br>(you will not get a mark if you call it the Children's act) | Aims to protect all children from harm and keep them safe<br>Apply every child matters –<br>• Staying safe<br>• Healthy (being)<br>• Enjoying and achieving<br>• Economic well being<br>• Positive contribution (making a) |
| **Equality Act 2010** | • Aims to prevent discrimination based on 9 protected characteristics.<br>• Provides protections for people discriminated against because they are associated with someone who has a protected characteristic<br>• Makes discrimination in education, employment, access to goods and services and housing illegal |
| **Data Protection Act 1998** | • Data and information should be processed fairly<br>• only used for the purpose for which it was intended.<br>• kept for no longer than necessary. |
| **Health and Safety at Work Act** | • The working environment should not put anyone at risk. Employers must provide training for staff.<br>• A written health policy must be provided and shared with staff |
| **Mental Health Act 2007** | • Aims to protect those at risk to themselves or others.<br>• Prevents an individual from being able to harm themselves, or others, by allowing a compulsory section order.<br>• Provides a definition of mental disorder |

# Media studies knowledge organiser: Representation.

**Key terminology**

Use this to self-quiz

1. **Representation:** the way in which people, issues and events are depicted in media products.
2. **Mediation:** how media producers represent (rather than just present) the world to audiences.
3. **Reality:** 'real life', actual events, facts and truth - how aspects of reality and versions of reality are constructed.
4. **Stereotype:** an exaggerated, oversimplified representation, reducing a social group to a set of common characteristics e.g. grumpy older people or flat cap wearing northerners.
5. **Feminist:** supporting equal rights for women (society was traditionally male-dominated but there has been a move towards more equality, especially from the 1960s onwards).

**KEY CONTENT:**

**How representations reflect the contexts in which they were produced, e.g:**

**Social**: reflecting society at the time/place of production e.g. in terms of issues such as gender or racial equality, or economic prosperity.

**Historical**: the time/ period in which a product is created, e.g. the 1950s (*Quality Street*), the 1970s (*The Man With the Golden Gun*).

**Cultural** influences on a product, e.g. current trends or direct references (such as representations of *Countdown* in *The IT Crowd*).

Apply it... analyse how the representations in the set products reflect the time and place in which they were made.

e.g. *the representation of the active female on the This Girl Can poster differs from the passive females in the historical Quality Street advert, as women now have more power and equality in society.*

Key content:

**Read and summarise:**

The choices media producers make about how to represent:

**Events:** e.g. how the set newspaper front pages combine images and text to convey information about the issues and events in the main splash (story).

**Social groups:** categorised by age, gender and ethnicity. **Ideas:** e.g. how the set magazine front covers communicate ideas about gender/ identity in the use of media language.

**The ways aspects of reality may be represented differently depending on the purposes of the producers:** e.g. newspapers are informative and need to include factual detail, a sitcom might exaggerate/ subvert reality to entertain.

***Apply it... identify examples of stereotypes in the set products and think about how and why they are used. Now, try to find examples of representations that challenge stereotypes and consider why the producers might have made this decision.***


The John of Gaunt School
A Community Academy

# KNOWLEDGE ORGANISER

| MADTSHIRT | BADINERIE – BACH |
|---|---|
| **Melody**<br>- Direction (rising or falling)<br>- Type of movement (steps or leaps)<br>- Range (high or low, large or small)<br>- Ornaments (trills, mordents etc.)<br>- Repetition (of notes, motifs or phrases, riffs)<br>- devices | The movement is based on two short musical ideas called motifs (X and Y). Motif X is a descending B minor arpeggio/broken chord and motif Y is an ascending semiquaver figure consisting of both arpeggios/broken chords and conjunct movement<br>The flute part has a two-octave pitch range.<br>The movement includes ornaments and compositional devices typical of the Baroque era (trills, appoggiaturas & sequences) |
| **Articulation**<br>- Staccato (spiky) / legato (smooth)<br>- Accents (suddenly loud notes)<br>- Arco / Pizzicato / Tremolo (on string instruments)<br>- Tongued or slurred (on wind and brass instruments) | Arco.<br>Staccato and legato.<br>Accompanying instruments (violins/viola/cello) mainly staccato.<br>Mostly staccato (tongued) and legato (slurred) in parts. |
| **Dynamics**<br>- Fortissimo down to pianissimo<br>- Crescendo / diminuendo<br>- Sforzando | Mostly forte, including use of terraced dynamics (although very few markings appear on the score, which was typical of the period). |
| **Textures**<br>- Homophonic, polyphonic, melody and accompaniment, heterophonic, canon…<br>-What roles are instruments/parts playing (e.g. melody, accompaniment, continuo, countermelody)<br>-What relationships can you hear? (octaves, sixths, unison, call and response, contrary motion) | Largely homophonic (melody and accompaniment)<br><br>The flute and the cello provide the main musical material, but the 1st violin participates occasionally.<br><br>The 2nd violin and viola provide harmony with less busy musical lines.<br>Examples of Heterophony and imitation. |
| **Structure**<br>- Binary (AB – often with both sections repeated)<br>- Ternary (ABA)<br>- Verse-Chorus | BINARY FORM (AB), with each section repeated once (AABB):<br>Section A : Bars $0^2$ – $16^1$ (16 bars)<br>Section B: Bars $16^2$ – $40^1$ (24 bars) |
| **Harmony & tonality**<br>- Consonant ('nice' intervals) / Dissonant (clashy ones)<br>- Diatonic (notes from scale) / Chromatic (notes not from scale))<br>- Major / Minor<br>- Pentatonic | Section A begins in B minor and ends in F# minor whilst section B does the opposite, beginning in F# minor and ending in B minor. *Section A modulates from the tonic to the dominant minor and Section B does the opposite.*<br><br>In section A: Bm > A Major > F#m<br>In section B: F#m > Em > D Maj > G Maj > D Maj > Bm<br><br>Diatonic throughout.<br>Imperfect and perfect cadences are clearly presented throughout.<br>Chords frequently occur in inversion with occasional use of V7 in third inversion.<br>A Neapolitan sixth chord.<br>Suspensions also occur.<br>Use of pedal (harmonic device)<br>Fast harmonic rhythms |
| **Instrumentation**<br>Writing about what instruments you can hear and what they are doing | Flute, string orchestra and harpsichord (playing the basso continuo) |
| **Rhythms**<br>Tempo / Duration / Upbeat (or anacrusis) / Syncopation /Dotted rhythms / Swung rhythms./ Triplets | STARTS WITH AN ANACRUSIS<br>TEMPO: Allegro (not marked on the score)<br>Mainly quavers and semi-quavers used |
| **Time Signature**<br>- How many beats there are in a bar<br>- Whether the beats are divided into two or three | TIME SIGNATURE: 2/4 |

# PSHE Knowledge Organiser – year 11 careers

It's time to consider what your options are and what you are thinking of applying to do after year 11. Every young person has to apply for a course, or employment with training, until they are 18 years old. Here are your options after year eleven:

## Sixth form

Most sixth forms around us focus on academic qualifications (A-levels: the 'A' stands for advanced) and some vocational courses (or BTEC's). Remember that more academic courses focus on subjects that involve mostly exams, compared to a vocational qualification that does not. Be mindful that some subjects offered within a sixth form are not studied lower down the school, such as psychology and sociology. It's worth finding out more information about these subjects before applying for them. Usually, you apply for three subjects (or courses) if you want to go to a sixth form. Attending sixth form open evenings (usually around November time) are very important. These evenings will give you more information about the courses you may be interested in.

## College

College courses will focus more on vocational courses, with only a few more academic ones. Around Trowbridge, these courses are going to be BTEC courses. A BTEC course is a vocational course. A vocational course is just one course that focuses and prepares you for a specific job. It gives you the required skills you need to work in a specific area. So, if someone wanted to become a plumber or a hairdresser, for example, they would need to focus on a vocational course at college (unless you wanted to work towards an apprenticeship or T-level).

## T-levels and apprenticeships

Both of these courses are vocational courses. They prepare you for a specific job or career. A T-level (the 'T' stands for technical) is one of the newest qualifications that a young person can follow. They are designed specifically for 16-19 year olds, and employers and businesses have designed these courses to get someone ready for industry. Some of

your time will be in college learning the skills needed for your chosen level and the rest of your time will be spent with an employer putting the skills you have learnt in college into practice. T-levels can give you UCAS points to go to university with. However, not all universities accept T-levels as a qualification, so it's worth doing your research now.

An apprenticeship is very similar to a T-level, although anyone of any age can do an apprenticeship. There are three levels of apprenticeships. An intermediate apprenticeship is for someone with 1's, 2's and 3's for their GCSE results, an advanced apprenticeship is a level three course (the same as three A-levels or a level three BETC course) for someone with 4's and above for their GCSE's. A higher apprenticeship is the same level as a degree. So, someone who wishes to follow this route can still study the same level of course as someone who chooses an A-level route to university. Someone who studies an apprenticeship does get paid whilst they earn. This is something that does not happen at college or a sixth form. You are literally earning whilst you are learning. After an apprenticeship, a person can decide to work towards a higher apprenticeship which is the same level as a degree.

**Armed services**

Deciding to join the armed services is a big decision to make at any age, let alone someone who is sixteen years old. The armed services are made up of the Army (land), Navy (sea) and RAF (air). The armed services are not just involved in conflicts, but also offer humanitarian support for countries around the world and spend time involved in peacekeeping. However, being in an actual conflict is a real-life possibility. Someone can decide to join the armed services at 16/17 years old, depending on which part of the armed services they are interested in. At this age a young person will need their parents' consent for this. At the age of eighteen you do not. The armed services include a whole range of other careers, it's not just about conflicts. You can train to be a chef in the Army, for example. It's worth finding out about all the different careers within each of the armed services.

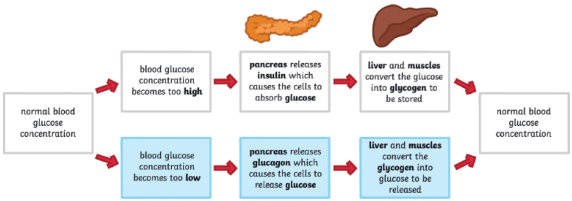
**Need more help in terms of your next steps?**

- Make an appointment for a careers interview careers@jogschool.org
- Visit Careerpilot to research a range of careers and find out about each of your options in more detail https://www.careerpilot.org.uk/
- If you are interested in an apprenticeship, then find out more information from the apprenticeship website https://www.gov.uk/become-apprentice
- Find out more information about T-levels on the government website https://www.tlevels.gov.uk/-
- If you are interested in the Armed Services then we have links with these organisations to give you more specific guidance
- Visit the websites for the sixth forms around us (John of Gaunt, Clarendon and St. Laurence to name just a few!)
- Visit the websites for Bath College and Wiltshire College, as well as checking out what Swindon College can offer.
- Make sure you find out when the open evenings are for sixth forms and colleges. They will advertise these on their website. These events are a great way to find out what sort of route and course will work for you.
- Ask your PSHE teacher, tutor, subject teacher, or Head of Year for more advice if you need it
- Talk to people at home about the world of work and what you want to work towards after school

## Control of blood glucose:

The pancreas is the organ and gland which monitors and regulates the blood glucose concentration.

If blood glucose becomes too low, the pancreas releases glucagon which causes the stored glycogen to be converted back into glucose.

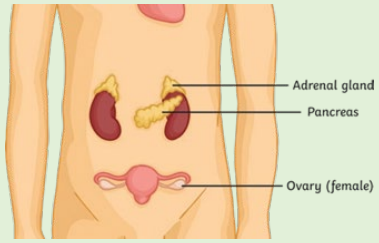



## Diabetes

There are two types of diabetes: type 1 and type 2.

Type 1 diabetes is a disorder affecting the pancreas. In type 1 diabetes, the pancreas does not produce enough insulin to control the blood sugar level and so the levels become higher than normal. Type 1 diabetes is usually treated by injections of insulin.

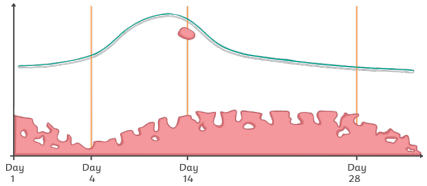
Type 2 diabetes is a disorder of effector cells which no longer respond to the hormones released from the pancreas. Type 2 diabetes can usually be managed through lifestyle choices such as maintaining a carbohydrate-controlled diet and regular exercise.




The risk of developing type 2 diabetes is higher in people who are obese (have a BMI >30).

## The Menstrual Cycle

The menstrual cycle occurs in females, approximately every 28 days. It is a cyclical process of the building
of the lining of the uterus and ovulation. If the egg become fertilised by a sperm, then pregnancy follows.
If the egg is not fertilised, then the lining of the uterus is shed away and leaves the body as the menstruation.




| Word | Definition |
|---|---|
| Homeostasis | is the regulation of a constant internal environment to ensure that conditions are optimum for metabolism. |
| Neurone | They use electrical impulses and chemical signals to transmit information between different areas of the brain, and between the brain and the rest of the nervous system. |
| Regulation | is the controlling of an activity or process, usually by means of rules. |
| Hormone | are your body's chemical messengers. They travel in your bloodstream to tissues or organs. They work slowly, over time, and affect many different processes. |

Depending on the reason for the infertility, there are different methods of treatment and technologies to help women become pregnant.

The hormones FSH and LH can be given in a 'fertility drug' to help stimulate the normal cyclic processes and enable the woman to become pregnant naturally.

In Vitro Fertilisation (IVF) is a treatment which involves several stages:

The woman is given FSH and LH to stimulate the ovaries to mature and release several eggs.

The eggs are then collected from the woman and fertilised using sperm collected from the man. This is done in the lab (in vitro means "outside the living organism").

The fertilised eggs develop into embryos. At the early stage of development (blastocyst), one or two embryos are inserted into the woman's uterus for implantation.

Fertility treatments offer couples the chance to have their own baby. However, the processes are often very stressful and emotional. The success rates are low. The underlying causes of the infertility are not usually being treated. Fertility treatments can carry a higher chance of multiple births (twins, triplets or more), which carries a risk to both the mother and the unborn babies.

## Crude oil and alkanes:

Hydrocarbons are compounds that are made up of the elements hydrogen and carbon only.

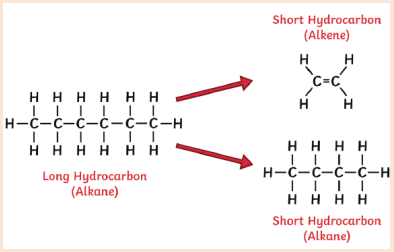
Crude oil is a non-renewable resource, a fossil fuel. It is made up of a mixture of compounds, most are long chained hydrocarbons.

Alkanes are held together by single bonds and form a homologous series. This means that they are a family of hydrocarbons that share similar chemical properties. The general formula is CnH2n+2.

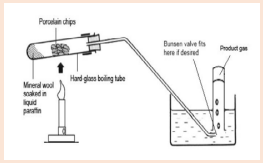
The first four alkanes are: methane, ethane, propane and butane.

## Cracking:

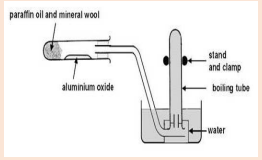
Long-chain hydrocarbons can be broken down into shorter, more useful hydrocarbon chains.




Steam Cracking




Catalytic cracking



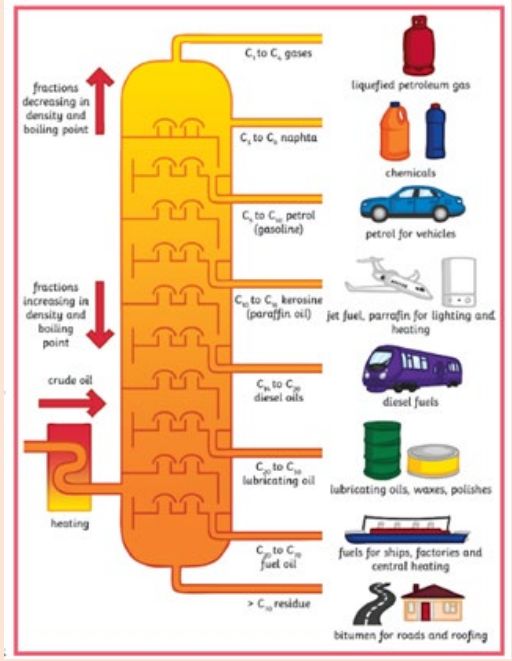

## Fractional distillation:

Fractional distillation is used to separate a mixture of long-chain hydrocarbons in crude oil into smaller, more useful fractions. The fractions boil at different temperatures due to the difference in the sizes of the molecules.

Crude oil is heated and enters the column. The column is hot at the bottom and cooler at the top.

Short chain hydrocarbons are found at the top of the column. This is because they are held together by weak intermolecular forces.

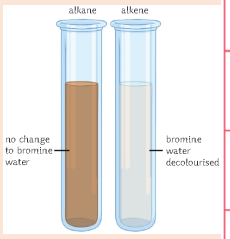
Long-chain hydrocarbons are found at the bottom of the column.




| Word | Definition |
|---|---|
| Alkane | held together by single bonds and form a homologous series. |
| Alkene | have a double bond |
| Boiling point | is the temperature at which a liquid changes into a gas. |
| Evaporate | when a liquid is heated and changes state into a gas. |
| Condensate | When a gas condenses into a liquid |

Combined science HT – chemistry - organic

Alkenes have a double bond. The general formula is CnH2n.




| Name of Alkene | Structural Formula | Molecular Formula |
|---|---|---|
| ethene |  | $C_2H_4$ |
| propene |  | $C_3H_6$ |
| butene |  | $C_4H_8$ |
| pentene |  | $C_5H_{10}$ |

Bromine, when added to an alkane, will remain brown/orange.

When added to an alkene, the bromine will change from brown/orange to colourless. This is because alkenes are unsaturated hydrocarbons.

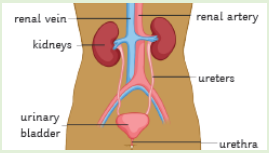
Triple Science extra content | Biology

## Filtration and Reabsorption by the Kidneys

Blood is transported to the kidneys through the **renal artery** and filtered at high pressure in the **kidneys**.

Useful materials such as **glucose, salt ions** and **water** are absorbed back into the body in a process known as **selective reabsorption**. Once filtered, the blood returns to the rest of the body via the **renal vein**.

The waste materials from the filtration process, including urea, are dissolved in water to form urine. This is carried along the ureter to the bladder where it is stored temporarily. When the bladder is filled, the urine leaves the body via the urethra.




### Dialysis

**Unfiltered blood** is taken from the body via a blood vessel in the arm. It is mixed with **anti-coagulants** to prevent the natural blood clotting and then pumped into the dialysis machine. Inside the machine is a **partially permeable membrane** which separates the patient's unfiltered blood from the **dialysis fluid**.

The blood flows in the opposite direction to the dialysis fluid to ensure a concentration **gradient** is maintained and exchange of substances can occur. The dialysis fluid contains **glucose, ions** and **no urea**.

This means that the urea moves across the partially permeable membrane, **down the concentration gradient** and into the fluid by **diffusion**. The **glucose** and **ion concentrations** in the dialysis fluid are similar to the concentrations within the blood plasma, so they are only exchanged across the membrane if there is an imbalance and safe levels are maintained.

Chemistry

## Alcohols

Alcohols have the same functional group (-OH) and similar properties.

All alcohols have the suffix 'ol'.

## Carboxylic acids

Carboxylic acids form acidic solutions. The pH of the solution is less than 7. They are weak acids, this means that they are only partially ionised in solution.

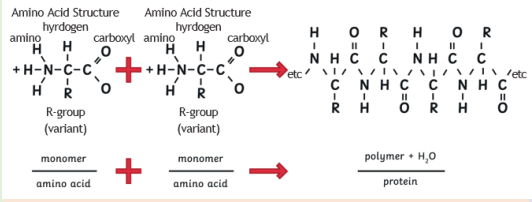
When a carboxylic acid is heated with an alcohol, an ester is formed. Esters typically smell fruity and are used in perfumes.

## Amino acids

An amino acid is a molecule that has two functional groups. The amine group ($NH_2$) and the carboxyl group (COOH). In between these two functional groups is a single carbon atom with a hydrogen atom bonded to it, along with another group.

Amino acids bond together through the process of a condensation polymerisation reaction.

For every monomer (amino acid) that is added to the growing chain of the polymer, a molecule of water is produced.




Physics

## Changes in momentum:

When a force acts on a moving or moveable object there is a change of momentum.

The equations for calculating force and acceleration can be combined:

**F= m x a and a = (v-u) ÷ t**

To give:

Force (N) = change in momentum ÷ time taken

$$\mathbf{F} = \frac{\mathbf{m\Delta V}}{\mathbf{\Delta t}}$$

This equation tells you that the force is equal to the rate of change of momentum in the object.

## Pressure in fluids:

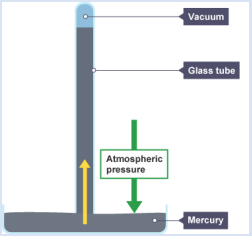
You can find the pressure produced by a column of liquid using the equation:

Pressure (Pa) = height of column (m) x density of liquid ($kg/m^3$) x gravitational field strength (N/Kg)

## Barometers:

Barometers can be used to predict the weather. They measure changes in atmospheric pressure over time.

- higher atmospheric pressure exerts a downward force on the mercury in the reservoir - and pushes the mercury up the tube
- lower atmospheric pressure cannot hold up the weight of the mercury column as effectively - so the mercury moves lower down the tube



## Scalars and vectors:

A **scalar** has magnitude only. Examples include temperature and mass.

A **vector** has both magnitude and direction. Examples include velocity. This can be shown as an arrow. The size of the arrow is relative to its magnitude.

## Gravity:

Weight (N) = mass (kg) x gravitational field strength (N/kg)

Mass is a scalar measure of how much matter the object is made up of.

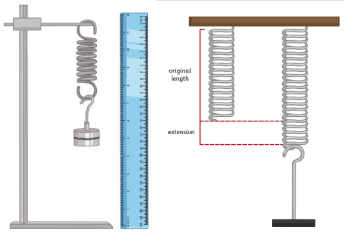
Weight is a vector measure of how gravity is acting on the mass.

## Resultant forces:

A resultant force is a single force which replaces several other forces. It has the same effect acting on the object as the combination of the other forces it has replaced.


The resultant force is 50N-30N = 20N to the right.

When an object is stationary, the forces acting upon it are balanced.


## Contact and non-contact forces:

**Contact forces** – the forces are touching. Examples: friction, air resistance, tension and contact force

**Non-contact forces** – the objects are not touching. Examples: gravitational, electrostatic and magnetic forces.

## Work done/energy transfer:

When a force acts on an object and makes it move, there is work done on the object. This movement requires energy.

Work done (J) = force (N) x distance moved (m)

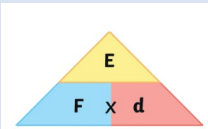
Example: A man is pushing a car with a force of 160N and the car is moved a total of 8m.

Calculate the energy transferred:

E = f x d

E = 160 x 8

E = 1280J




## Required practical – Hooke's law

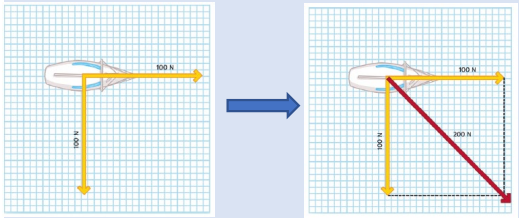
**Method:**

1. Set up the equipment as shown
2. Measure the original length of the elastic object and record this
3. Attach a mass hanger. Record the new length of the spring.
4. Continue to add masses to the hanger in regular intervals and record the length each time.

| Word | Definition |
|---|---|
| Scalar | has magnitude only |
| Vector | has both magnitude and direction |
| Weight | the weight of an object is the force acting on the object due to gravity. |
| Mass | the amount of matter present in any object or body |
| Energy | the capacity for doing work. |
| Elasticity | ability of a deformed material body to return to its original shape and size when the forces causing the deformation are removed. |

## Using scale vector diagrams:

We can use these to calculate resultant forces that are not acting directly opposite of one another.




1. Draw construction lines from the end of each arrow parallel to the other force arrow.
2. Where the construction lines intercept indicates the direction of the resultant force.

Combined science HT – physics – forces

# Spanish GCSE: Sport, Food and Eating Out

## Ordering food in a restaurant

**la carta** – the menu
**el menú del día** – fixed price menu with 1 or 2 choices per course
**quiero** … I want **quisiera** – I'd like
**para mí**… for me
**voy a tomar**… I'm going to have
**de primero**… for starter
**y después** … and afterwards
**de segundo**… for main course
**de postre**… for dessert
**un plato** – a dish
**una tapa** – a small portion
**una ración** – a large portion
**el pescado / la carne /las verduras** – fish/meat/veg
**para beber** - to drink
**¿y para ti?** - and for you?
**¿Qué vas a tomar?** What are you going to have?
**la cuenta** – the bill

## Drinks – las bebidas

**la sangría** – sangría (fruit/rum/red wine)
**la cerveza** - beer
**la limonada** - lemonade
**el vino tinto/ blanco** – red / white wine
**el agua con/sin gas** – water still/sparkling
**la naranjada** - orangeade
**el té** - tea
**el café** – coffee **con leche** – with milk
**el zumo de naranja** – orange juice
**el zumo de piña** – pineapple juice

## Types of food (note word order)

**la comida rápida / basura / china / italiana/ española / británica / griega / estadounidense / mejicana / india / vegetariana / vegana –** fast / junk / Chinese / Italian / Spanish / British / Greek / American / Mexican / Indian / veggie/ vegan food

## Forming regular adverbs

**-ly = mente**
*Take the adjective – make it feminine – add mente*
**desafortunadamente** - unfortunately
**normalmente** - normally
**generalmente** - usually
**tristemente** - sadly
**frecuentemente** - frequently
**rápidamente** - quickly
**lentamente** - slowly

## Eating / meal time verbs & nouns:

**desayunar** – to breakfast
**el desayuno** - breakfast
**comer / almorzar** – to lunch
**la comida / el almuerzo** - lunch
**cenar** – to dine
**la cena** - dinner
**merendar** – to snack / to picnic
**la merienda** – snack / picnic
**comer** - to eat
**la comida** - food / meal

## Description of food – ADJECTIVES – remember agreements!

**rico/a/os/as** - tasty
**sabroso/a/os/as** - tasty
**delicioso/a/os/as** - delicious
**salado/a/os/as** - salty
**soso/a/os/as** – bland
**graso/a/os/as** – fatty
**grasiento/a/os/as** – oily/greasy
**sano/a/os/as** - healthy
**malsano/a/os/as** – unhealthy
**dulce/s** - sweet
**picante/s** - spicy

## La fruta y las verduras - Fruit and veg

**las judías** – beans **las aceitunas** – olives **el ajo** - garlic
**la cebolla** - onion **la ensalada** – salad **el maíz** - sweetcorn
**el tomate** – tomato **los champiñones** – mushrooms
**los guisantes** – peas **una zanahoria** – a carrot
**las fresas** - strawberries **una piña** - a pineapple
**una pera** - a pear **un melocotón** - a peach
**un plátano** – a banana **una manzana** – an apple
**una naranja** – an orange

## La comida – food (general) de + flavour / filling / topping

**un bocadillo** – a sandwich **una tortilla** – an omelette
**una sopa** – a soup **una pizza** – a pizza
**el queso** – cheese **los huevos** - eggs
**los espaguetis** – spaghetti **la pasta** - pasta
**el arroz** – rice **el pan** – bread **una hamburguesa** – a burger
**un pastel / una tarta** – a cake / tart
**un yogur** – yogurt **un helado** – ice cream
**de chocolate / de vainilla** – of chocolate / of vanilla
**al ajillo** – cooked in garlic **unas patatas fritas** – chips / crisps
**la paella / el gazpacho / la tortilla española / el flan** – paella / cold veg soup / Spanish potato omelette / caramel custard = typical Spanish dishes

## La carne y el pescado – meat & fish

**el atún** – tuna **el bacalao** - cod
**el jamón** – ham **el tocino** - bacon
**el chorizo** - chorizo (spicy sausage)
**el pollo** – chicken
**los mariscos** - shellfish
**los calamares** - squid
**las gambas** - prawns
**las sardinas** - sardines
**la chuleta** - chop
**el cerdo** – pork **el cordero** - lamb
**una chuleta de cerdo** – a pork chop

**soy vegetariano/a; vegano/a; intolerante a…; alérgico/a a…; no puedo comer** - I'm veggie; vegan; intolerant to…; allergic to…; I can't eat…

## los deportes – sports / el ocio – leisure

**En mi tiempo libre** – in my free time
**me apasiona** - I'm passionate about
**me interesa** – I'm interested in
**me entusiasma** – I'm enthusiastic about
**hacer piragüismo** – to go canoeing
**hacer alpinismo** – to go climbing
**hacer ciclismo** – to go cycling
**hacer el esquí** – to go skiing
**jugar al baloncesto** – to play basketball
**montar a caballo** – to go horseriding
**hacer la equitación** – to go horseriding
**nadar** – to swim
**hacer la natación** – to go swimming
**hacer el patinaje** – to go skating

**soy aficionado/a al fútbol** – I'm a football fan
**soy miembro de un equipo de rugby** – I'm a member of a rugby team
**me gustaría probar** – I'd like to try

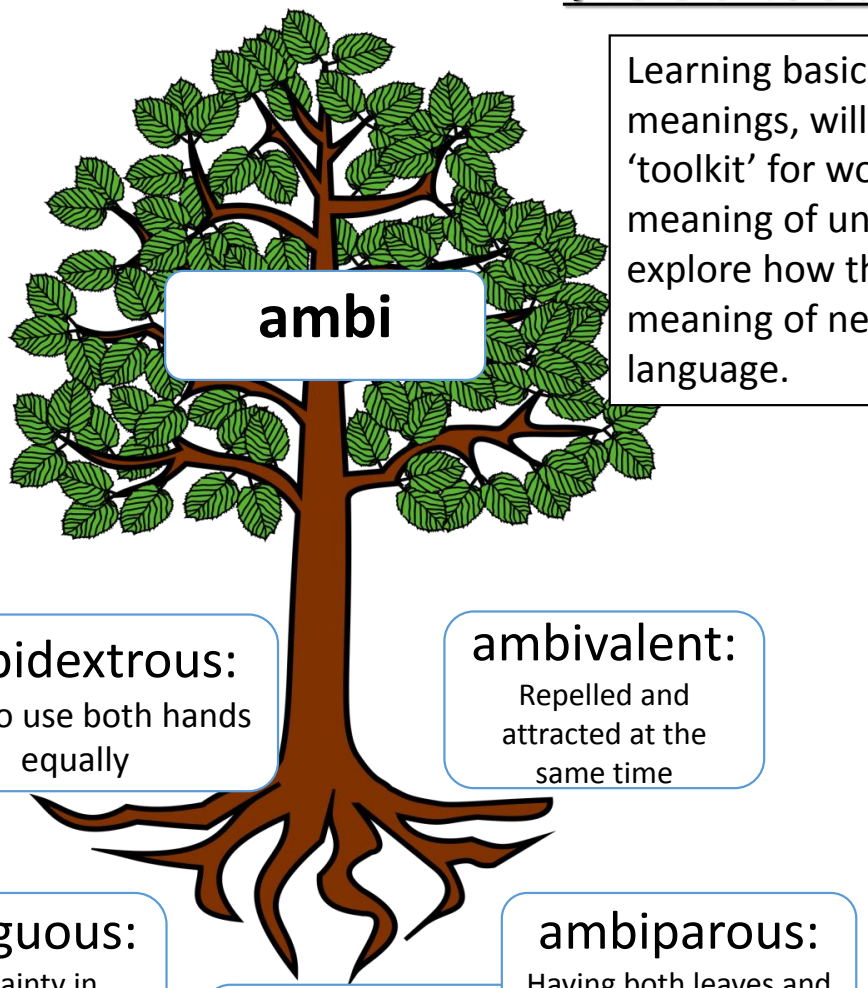
## Description of sports – ADJECTIVES – remember agreements!

**caro/a/os/as** - expensive
**barato/a/os/as** - cheap
**divertido/a/os/as** - fun
**aburrido/a/os/as** - boring
**activo/a/os/as** - active
**tranquilo/a/os/as** - calm
**peligroso/a/os/as** – dangerous
**competitivo/a/os/as** - competitive
**emocionante/s** - exciting
**relajante/s** - relaxing
**fácil / fáciles** – easy
**difícil / difíciles** - difficult
**aterrador / aterradores** - terrifying

# Root word families

Learning basic roots and their meanings, will help you to build a 'toolkit' for working out the meaning of unfamiliar language. explore how the roots shape the meaning of new and familiar language.

The root 'ambi' means **both**



**ambi**

**ambidextrous:**
Able to use both hands equally

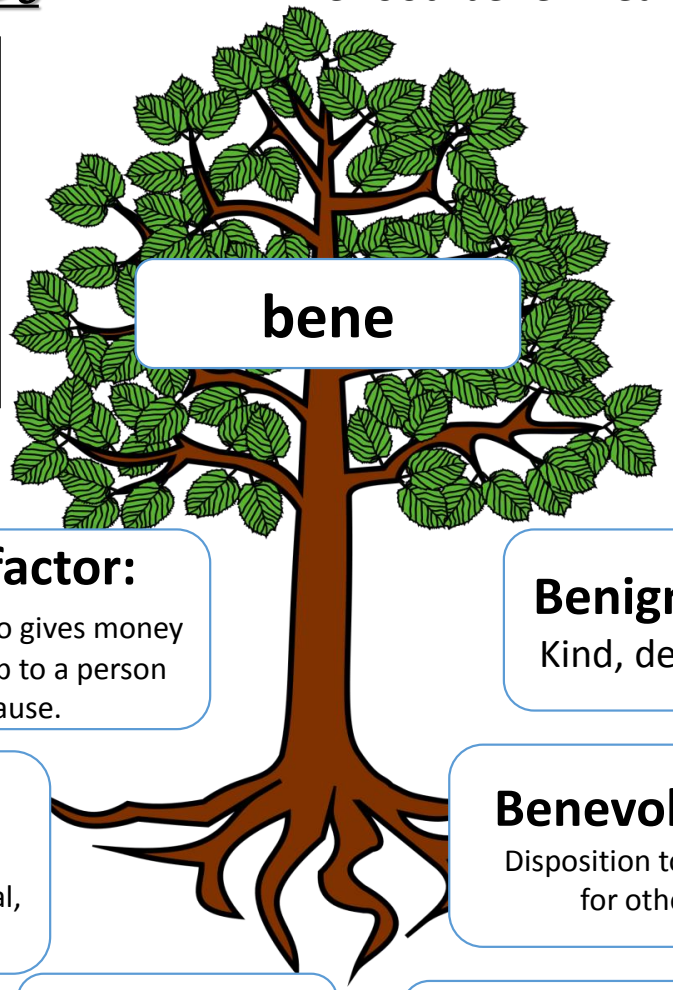
**ambivalent:**
Repelled and attracted at the same time

**ambiguous:**
uncertainty in meaning; multiple meanings

**ambient:**
surrounding on all sides

**ambiparous:**
Having both leaves and flowers

The root 'bene' means **good**



**bene**

**Benefactor:**
A person who gives money or other help to a person or cause.

**Benignant:**
Kind, desirable

**Benign:**
Kind or gentle disposition, neutral, harmless.

**Benevolence:**
Disposition to do good for others.

**Beneficiary:**
Recipient of gifts.

**Beneficial:**
That which brings about a positive result.

# LAST PAGE