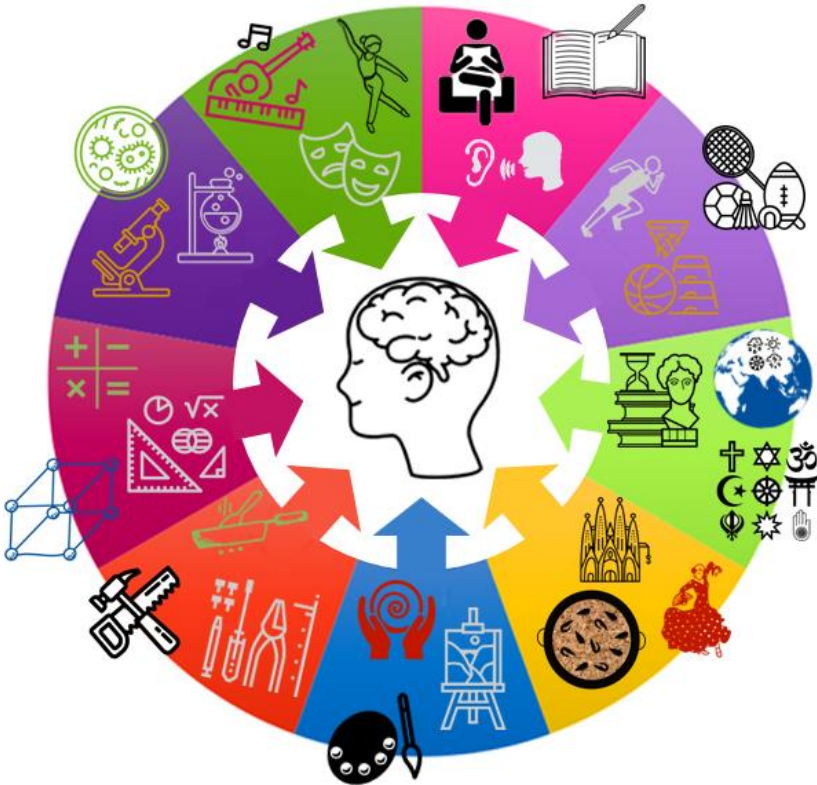


# 100% book - Year 10 Grammar

Aim to memorise 100% of the knowledge on these Knowledge Organisers.

## Term 4



Swindon Academy 2023-24	
Name:	
Tutor Group:	
Tutor & Room:	

*"If you are not willing to learn, no one can help you.  
If you are determined to learn, no one can stop you."*

# How to use your 100% book of Knowledge Organisers and Quizzable Organisers

## Knowledge Organisers

Knowledge Organisers contain the essential knowledge that you **MUST** know in order to be successful this year and in all subsequent years.

They will help you learn, revise and retain what you have learnt in lessons in order to move the knowledge from your short-term memory to long-term memory.

## Quizzable Knowledge Organisers

These are designed to help you quiz yourself on the essential Knowledge.

Use them to test yourself or get someone else to test you, until you are confident you can recall the information from memory.

### Top Tip

Don't write on your Quizzable Knowledge Organisers! Quiz yourself by writing the missing words in your prep book. That way you can quiz yourself again and again!

## Expectations for Prep and for using your Knowledge Organisers

1. Complete all prep work set in your subject prep book.
2. Bring your prep book to every lesson and ensure that you have completed all work by the deadline.
3. Take pride in your prep book – keep it neat and tidy.
4. Present work in your prep book to the same standard you are expected to do in class.
5. Ensure that your use of SPAG is accurate.
6. Write in blue or black pen and sketch in pencil.
7. Ensure every piece of work has a title and date.
8. Use a ruler for straight lines.
9. If you are unsure about the prep, speak to your teacher.
10. Review your prep work in green pen using the mark scheme.

# How do I complete Knowledge Organiser Prep?

## Step 1

Check Epraise and identify what words /definitions/facts you have been asked to learn. Find the Knowledge Organiser you need to use.

The image shows a screenshot of the Epraise website. On the left is a 'Planner' for the week of 20th May to 26th May 2020, with a grid for different subjects. On the right is a 'Knowledge Organiser' for 'Particle Theory'. It contains various sections: 'What is particle theory?', 'What is the law of conservation of mass?', 'What are the different states of matter?', 'What are the differences between the states of matter?', and 'What is the difference between a solid, liquid and gas?'. Each section has a brief definition and a diagram.

## Step 2

Write today's date and the title from your Knowledge Organiser in your Prep Book.

This image shows a printed version of the knowledge organiser from Step 1. Handwritten in blue ink, the date '29th May 2020' and the title 'Particle theory' are written at the top. The page includes the same sections as in Step 1, with diagrams for solid, liquid, and gas states of matter, and a phase change diagram showing melting, freezing, evaporation, and condensation.

## Step 3

Write out the keywords/definitions/facts from your Knowledge Organiser in FULL.

Handwritten notes on lined paper. At the top, the date '29th May 2020' is written. Below it, the title 'Properties of the states of matter' is underlined. The notes define particle theory as 'all matter is made of particles'. It then describes the three states: 'Solid = regular pattern particles vibrate in fixed position', 'Liquid = particles are arranged randomly but are still touching each other particles can slide past each other and move around', and 'Gas = Particles are far apart and are arranged randomly. Particles carry a lot of energy'.

## Step 4

Read the keywords/definitions/facts out loud to yourself again and again and write the keywords/definitions/facts at least 3 times.

Handwritten notes on lined paper showing the definition of a solid: 'Solid = regular pattern particles vibrate in fixed position'. This definition is written three times in blue ink, demonstrating the repetition step.

## Step 5

Open your quizzable Knowledge Organiser. Write the missing words from your quizzable Knowledge organiser in your prep book.

This image shows a 'quizzable' version of the knowledge organiser. It has the same layout as the previous one but with some sections replaced by a 'Self quizzing' section. Handwritten in blue ink, the answers to the quizzable sections are: 'Arrangement/movement of matter' for the states of matter section, 'Solid = regular pattern pa' for the solid definition, 'Liquid =' for the liquid definition, and 'Gas =' for the gas definition. There are also small diagrams for solid, liquid, and gas states.

## Step 6

Check your answers using your Knowledge Organiser. Repeat Steps 3 to 5 with any questions you got wrong until you are confident.

Handwritten notes on lined paper, similar to Step 3, but with corrections and checkmarks. The definition for solid is checked. The definition for liquid is corrected from 'are still touching each other' to 'are still touching each other' (with a checkmark) and 'particles can slide past each other and move around' (with a checkmark). The definition for gas is corrected from 'are far apart' to 'far apart' (with a checkmark) and 'are arranged randomly' (with a checkmark). There are also some 'X' marks indicating corrections.

Make sure you bring in your completed Prep notes to demonstrate that you have completed your prep.

## ENGLISH –Poetry cluster 3: The Problem with Power - Grammar

Key Vocabulary		Poem	Context	Events in the poem	Message	Form/ structure
Patriotism	Being devoted to your country	<b>Kamikaze e-Beatrice Garland</b>	<ul style="list-style-type: none"> <li>During WW2, the term 'kamikaze' was used for Japanese fighter pilots who were sent on suicide missions. They were expected to crash their planes into enemy warships. The word 'kamikaze' literally translates as 'divine wind'.</li> <li>Flying a kamikaze mission was portrayed as a great honour by the Japanese government. It was claimed that there were many volunteers, although some have argued that not every kamikaze soldier would have been willing. By the end of the war, nearly 4,000 kamikaze pilots had died.</li> </ul>	<ul style="list-style-type: none"> <li>The narrator of this poem is a kamikaze pilot's daughter. Unlike many of his comrades, this pilot turns back from his target and returns home. The poem explores the moment that the pilot's decision is made and sketches out the consequences for him over the rest of his life. Not only is he shunned by his neighbours, but his wife refuses to speak to him or look him in the eye. His children gradually learn that he is not to be spoken to and begin to isolate and reject him.</li> </ul>	<ul style="list-style-type: none"> <li>The poem explores the conflict between personal and national duty and suggests that individual desire and extreme patriotism cannot be achieved together.</li> <li>Through the pilot, Garland may be expressing how it is not honour that gives life meaning, but rather being with loved ones.</li> <li>The poem explores the impossible situation that the pilots were put in by those in power- dying in glory or being shamed and rejected by your family. It also deals with the lasting effects that war can inflict on people, families, and communities. This poem not only deals with the kamikaze pilot's own story, but the implications for those around him.</li> </ul>	Kamikaze is a narrative poem. It begins as a report, summarising another conversation or story told by someone else. Sections of the poem are presented in italics as first-person narrative, where the storyteller speaks directly for herself. This has the effect of heightening the sense of sadness she feels.
Colonialism	When a powerful country takes control of a less powerful country	<b>Checking Out Me History-John Agard</b>	<ul style="list-style-type: none"> <li>Since the early 17<sup>th</sup> century, the country of Guyana has been colonised and controlled by the Dutch, French and British. The indigenous population spoke Arawak, but the British introduced English as the language of the government, courts and education system.</li> <li>For centuries, nations would repress the culture and identity of the countries that they colonised. They did this to control the population and get rid of any rebellion against the colonisers.</li> <li>Born in Guyana in 1949, Agard moved to Britain in 1977 and so sees the culture as both an insider from living there and an outsider from moving to Britain</li> </ul>	<ul style="list-style-type: none"> <li>The poem focuses on the omission of indigenous history and discusses how colonized people were forced to learn about <i>British</i> history—which had little to do with their actual lives. Not only does the poem call attention to the oppressive nature of colonial education, but it also praises important figures who were left out—figures such as Toussaint L'Ouverture, the leader of the Haitian revolution.</li> <li>The poem suggests the curriculum deliberately blinded colonized people to their own histories, and argues that in order to understand their own identity they must learn their own history.</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge should not be denied to anyone. No one has the right to oppress others by denying them facts about their past. This can lead to feelings of inferiority and there should be more equality in the world. History is important and there is power in knowing your heritage and culture. People should never exclude this from you – especially if it is replaced with less relevant examples.</li> <li>There is a sense of caution in this poem in relation to believing what you are told. We are reminded that we should always seek the truth for ourselves and question what others choose to teach us. The education system has power to mould our thinking and we should be aware of this.</li> <li>There is a warning that, when people are denied knowledge, they can become bitter and angry, and this could lead to rebellion, protests and uprisings.</li> </ul>	The open form highlights Agard's rebellion against the status quo and the restrictions of a colonial curriculum. His use of italics separates and celebrates the important historical figures from the history he was a taught. The sing-song rhyme scheme holds a bitterness and anger that he was taught trivial things whilst his own history was omitted.
Dominate	To have power and influence over others	<b>The Émigrée-Carol Rumens</b>	<ul style="list-style-type: none"> <li>Carol Rumens was born in South London in 1944</li> <li>Published her own poems and translations of Russian poems</li> <li>She has a 'fascination with elsewhere'</li> <li>The Émigrée is not autobiographical poem, but is inspired by living in London (a diverse society)</li> <li>The poem sympathises with people who have been exiled</li> <li>Emigrants are people who have left the country of their birth to settle elsewhere in the world.</li> </ul>	<ul style="list-style-type: none"> <li>A displaced person pictures the country and the city where they were born. The city and country are never named in order to increase the relevancy to as many people who have left their homelands as possible.</li> <li>The speaker's home country appears to be war-torn, or under the control of a dictatorial government that has banned the language the speaker once knew.</li> <li>Despite this, the émigrée's childhood memories are filled with light and happiness. Though there is a clear sense of fondness for the place, there is also a more threatening tone in the poem, suggesting that not all of her memories are happy and that the country she has emigrated to is not always welcoming.</li> </ul>	<ul style="list-style-type: none"> <li>Rumens presents the importance of empathy and sympathy. She reminds us of how traumatic conflict can be and that people are forced to make heart-breaking decisions when they live under cruel leadership.</li> <li>The poem highlights the importance of belonging and is a celebration of diversity – we should make people feel welcome when they move to a new home.</li> <li>Memories are shown to be powerful and to have a strong hold over us with the ability to bring both pain and comfort. The past can be difficult to escape and can restrict us from moving forward in life.</li> <li>There is also a sense of the power of the media – their portrayal of immigrants can lead to a lack of sympathy in society; it is important we do not become insensitive to the pain that can lead to people moving to a new home.</li> </ul>	The use of enjambment reflects the chaos and confusion of her situation. The poem consists of two stanzas with eight lines and a third stanza with nine lines. The added line in the final stanza could suggest she doesn't want to let her memories go, stop writing about her homeland or give up her past.
Defiance	Showing that you don't want to obey someone					
Isolated	To be far away from other people or places.					
Dictatorial	Telling people what to do in a forceful and cruel way	<b>Storm on the Island-Seamus Heaney</b>	<ul style="list-style-type: none"> <li>For many centuries, there has been conflict in Northern Ireland.</li> <li>The majority of Northern Ireland's population were unionists, who wanted to remain within the United Kingdom. Most of these were Protestant Christians.</li> <li>Seamus Heaney was a Catholic born in Northern Ireland in 1939. Catholics were seen as the underclass and were discriminated against by the government and police. This resulted in strong political and guerrilla warfare movements in an attempt to overthrow British rule and re-unite Ireland.</li> </ul>	<p><b>There are two interpretations of this poem- literal and metaphorical.</b></p> <p><b>Literal:</b> The narrator describes how well prepared they are for the storm. The storm attacks the island. As the poem progresses, the narrator's confidence decreases, and they begin to worry.</p> <p><b>Metaphorical:</b> Heaney uses the storm as a metaphor for the conflict in Northern Ireland. The 'Islanders' suffer under enemy occupation with quiet resignations.</p>	<ul style="list-style-type: none"> <li>Heaney portrays nature as a powerful force that humans should fear and not attempt to control.</li> <li>Heaney presents the idea that life under constant enemy occupation can leave people accepting this presence with sadness, but stop trying to do anything about it.</li> <li>He warns that the enemy can appear reasonable, but can quickly turn in to a dangerous threat – this threat may not always be physical; the gradual erosion of human rights and liberties is just as perilous.</li> </ul>	Heaney's use of iambic pentameter may appear strange given its use in traditional British poems. However he subverts the traditional structure by swapping the stressed and unstressed syllables on certain lines, resisting the regularity of British control.
Nostalgia	A warm feeling for the past, particularly a very happy time	<b>Tissue-Imtiaz Dharker</b>	<ul style="list-style-type: none"> <li>Imtiaz Dharker was born in Pakistan but grew up in Scotland. Her poetry often deals with themes of identity, the role of women in society and the search for meaning.</li> <li>Tissue is from her poetry collection called 'The terrorist at my table'. Most of the poems in that collection relate to religion, terrorism and global politics.</li> </ul>	<ul style="list-style-type: none"> <li>Tissue explores the varied uses of paper and how they relate to life.</li> <li>It is written from the point of view of someone looking out at the conflict and troubles of the modern world; destruction, war and politics, money and wealth as well as issues like terrorism and identity.</li> <li>The poem remarks how nothing is meant to last.</li> </ul>	<ul style="list-style-type: none"> <li>Human power is ephemeral. No matter how much we try to build structures to display our power, nature will always outlast it.</li> <li>Our relationship with paper is unhealthy. We rely on it too much to make records, document ownership and build debt. Instead, we should realise that the significance of human life will outlast the records we make of it on paper or in buildings.</li> <li>Human life is fragile, and not everything can last. We must understand our fragility and should not try to build our lives through making recordings or building with blocks and bricks; we should focus on living.</li> </ul>	The poem has an irregular structure and no rhyme scheme reflecting the irregularity of life and the lack of and predictability. The fragile structure is symbolic of the fragile nature of our lives.
Fragility	being easily broken or damaged.					

Key Vocabulary		The Big Ideas	Notes
<b>Patriotism</b>		Garland questions the importance of honour and patriotism and demonstrates how we must have the individuality to learn for ourselves and not just to follow others.	
<b>Colonialism</b>		Agard explores the importance of identity and the power of history and education.	
<b>Dominate</b>		Rumens demonstrates impact of dictatorial governments and the power of memory. She highlights the need for compassion and empathy.	
<b>Defiance</b>			
<b>Isolated</b>		Heaney warns of the dangers of enemy occupation and the emotional toll of silent resignation.	
<b>Dictatorial</b>			
<b>Nostalgia</b>		Dharker emphasises the fragility of life through the extended metaphor of paper.	
<b>Fragility</b>			

# B5 – Homeostasis and Response

## The nervous system

Job is to **detect** stimuli (changes in environment) and **respond** if needed.  
Consists of:

### Receptors

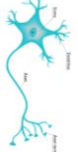


Specialised cells that detect stimuli, found in sense organs and internally

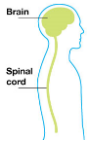
### Neurons

3 types – sensory, relay and motor

Carry **impulses** joining all parts of the nervous system

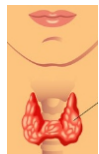


### Co-ordination Centres



Brain, spinal cord, pancreas.  
Coordinates the response

### Effectors



Organs that bring about a response

muscle or gland

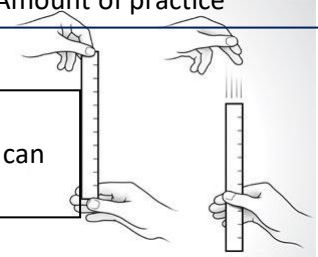
## RP 6 - Investigation into the effect of a factor on human reaction time.

1. Person A holds out hand with a gap between thumb and finger.
2. Person B holds ruler with the zero at the top of person A's thumb.
3. Person B drops ruler without telling Person A and Person A must catch it.
4. The distance on the ruler level with the top of person A's thumb is recorded
5. Repeat this ten times.
6. Repeat steps 1-5 after a factor has been changed
7. Use conversion table to convert ruler measurements into reaction time.

The 'factor' could be...

- Caffeine consumption
- Hours of sleep
- Alcohol consumption
- Amount of practice

A computer reaction test can also be used.



Control variables : distance above the hand, distance between finger and thumb, hand used (dominant or non-dominant, all other factors listed in the box above except the one being changed.

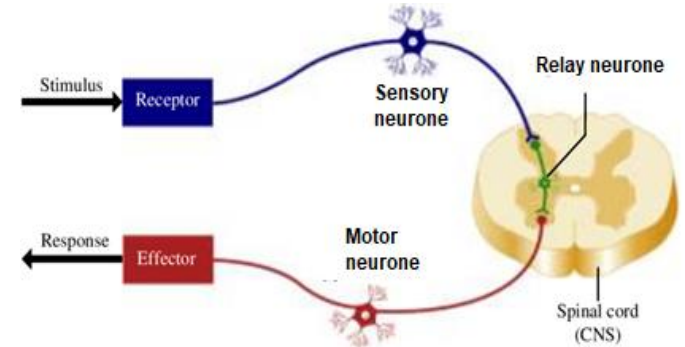
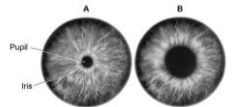
## Reflexes

A reflex is an automatic, rapid response

Reflexes do not involve the conscious part of the brain, so cannot be overridden

The response might be brought about by:

- muscle - e.g. pupil being constricted with bright light or knee jerk response
- gland – e.g. mouth watering or tears being released when something gets in your eye



## Reflex Arc

stimulus → receptor → **sensory neurone** → **relay neurone** → **motor neurone** → effector → response

## Example

Hot pan → pain receptors → **sensory neurone** → **relay neurone** → **motor neurone** → hand muscles → release pan

## B5 – Homeostasis and Response

1. What are the two main jobs of the nervous system?

2. What are receptors?

3. What are stimuli?

4. Name the 3 types of neurone?

5. What are the 3 coordination centres?

6. What is an effector?

7. What are the 2 types of effector?

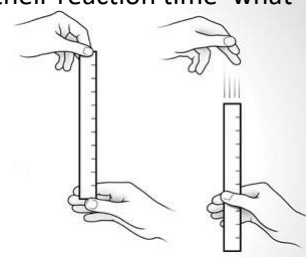
1. Where should the ruler be held at the start of the investigation?

2. What could be used instead of a ruler drop test?

3. If you are testing the hypothesis 'The amount of sleep a person has affects their reaction time' what would be the:

- independent variable
- Dependent variable
- 2 control variables

4. How is the distance the ruler travels converted into a reaction time?



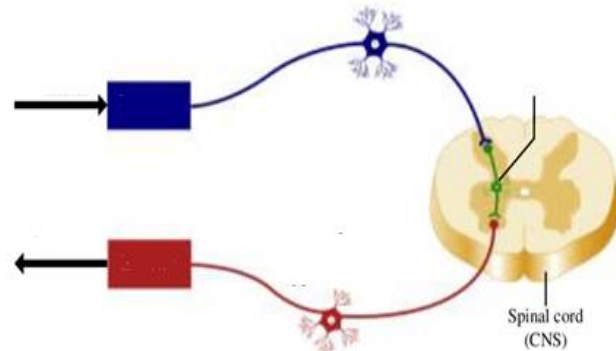
1. What is a reflex?

2. Which part of the nervous system is NOT involved in a reflex?

3. Give an example of a reflex reaction

4. Label the diagram using the labels below:

relay neurone    sensory neurone  
motor neurone    effector  
receptor    stimuli



### Reflex Arc

Complete the gaps to show the order of a reflex reaction:

stimulus →

→ **sensory neurone** →

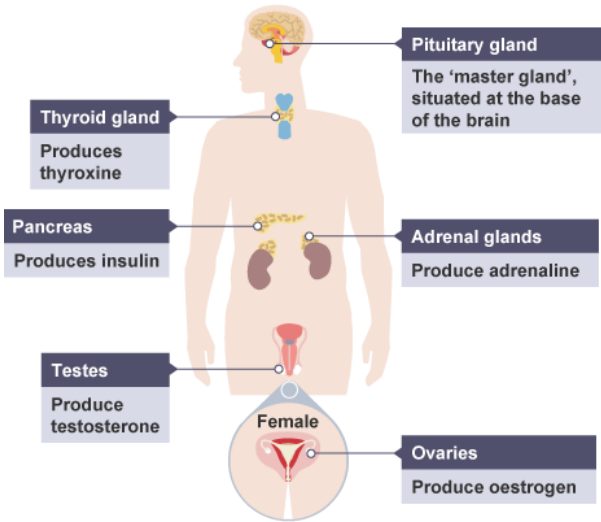
→ **motor neurone** →

→ response

# B5 – Homeostasis and Response

## Hormonal responses

Hormones are chemicals released by glands  
They are carried in the bloodstream.  
Hormonal responses are slower than nervous responses but they last longer.



## Homeostasis

This means keeping internal conditions (of the body or a cell) constant to ensure optimum functioning.

In humans, this includes regulating:

- temperature
- water levels
- blood glucose concentration

Homeostasis can involve nervous or hormonal responses.

**Receptors** detect changes in the body

**Coordination centres** (brain, pancreas, spinal cord etc) receive and process information

**Effectors** carry out responses to return to normal

## Blood glucose concentration

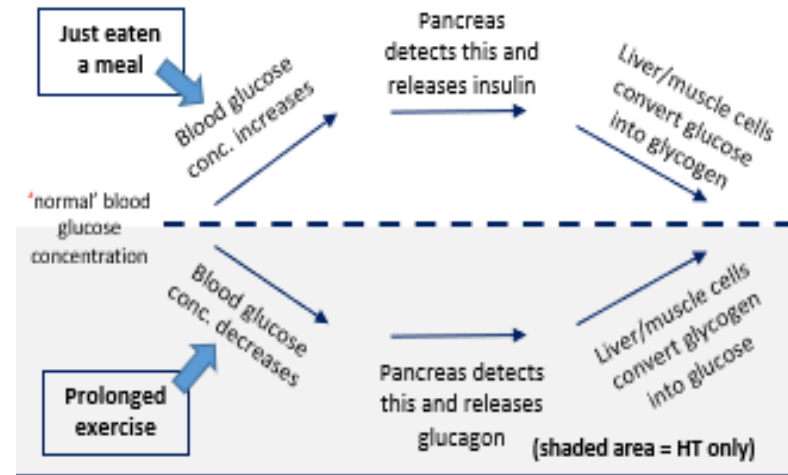
Blood glucose is monitored by the **pancreas**.

If glucose levels rise, the pancreas releases **insulin** into the blood.

This is a message to the liver to remove glucose and store it as **glycogen**.

If blood glucose is too low, **glucagon** is released.

The liver responds by breaking down glycogen into glucose and releasing it into the blood.



## Diabetes

There are two types – Type 1 and Type 2

Both result in a lack of control over blood glucose levels

	Type 1	Type 2
Cause	No insulin is made by the pancreas	Insulin is made, but the liver and muscle cells do not respond
Treatment	Injections of insulin Pancreatic transplant	Controlling carbohydrate intake Losing weight

### HT only

Negative feedback is when the release of something brings the levels back towards acceptable levels, it maintains a steady state.

E.g. if blood glucose increases, insulin is released to bring blood glucose back towards the normal range.



## B5 – Homeostasis and Response

1. What is a hormone?
2. Where are hormones released from?
3. Which gland is known as the 'master gland'?
4. How do hormones travel?
5. How does the speed and duration of a hormonal response compare to a nervous response?
6. Which hormone is made by the thyroid gland?
7. What is homeostasis?
8. Give two examples of conditions that are controlled within the human body

### **Blood glucose concentration**

1. Which organ monitors blood glucose?
  2. Which hormone is released when blood glucose increases?
  3. What causes blood glucose to increase?
  4. Which hormone is released when blood glucose falls?
  5. Which organ releases the hormones involved in blood glucose control?
- 
1. What are the two types of diabetes?
  2. Why are type 1 diabetics unable to control their blood glucose?
  3. What is the treatment for type 1 diabetes?
  4. What is the problem in type 2 diabetes?
  5. What is the treatment for type 2 diabetes?

# C7 – Organic Chemistry

## Crude oil

Crude oil = a mixture of **hydrocarbons**.

- It is a **non-renewable resource (fossil fuel)**
- Made from remains of dead sea creatures **compressed** over millions of years

**Hydrocarbons** - molecules containing **hydrogen** and **carbon only**.

Two types of hydrocarbons are **alkanes** and **alkenes**.  
The hydrocarbons in crude oil are mostly alkanes.

## Alkanes

- Alkanes = **saturated** hydrocarbons.
- Held together by **single covalent bonds**.
- General formula =  $C_nH_{2n+2}$
- Have different boiling points – longer the chain, higher the boiling point

**You need to remember the names, and formulas of the first 4 alkanes.**










Name of Alkane	Structural Formula	Molecular Formula
methane	$\begin{array}{c} \text{H} \\   \\ \text{H}-\text{C}-\text{H} \\   \\ \text{H} \end{array}$	$CH_4$
ethane	$\begin{array}{c} \text{H} \quad \text{H} \\   \quad   \\ \text{H}-\text{C}-\text{C}-\text{H} \\   \quad   \\ \text{H} \quad \text{H} \end{array}$	$C_2H_6$
propane	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$	$C_3H_8$
butane	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$	$C_4H_{10}$

## Fractional Distillation

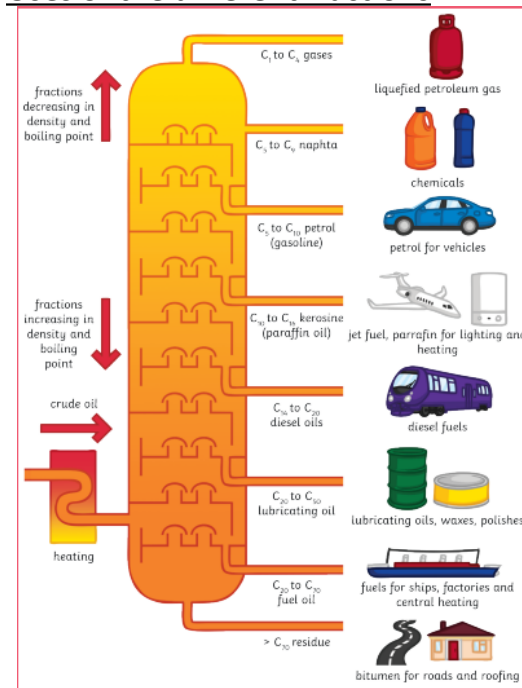
- Used to **separate** the mixtures of hydrocarbons in **crude oil**.

### Steps in Fractional Distillation

1. Crude oil enters **fractioning column** and is heated to boiling point so the hydrocarbons evaporate.
2. It is **cooler** at the **top** of the fractionating column and **hotter** at the **bottom**.
3. Vapours rise up the column and, as they rise, they cool
4. The different hydrocarbons condense at different **boiling points**
5. The different 'fractions' have different properties

Short-Chain Molecules	Increasing Chain Length	Long-Chain Molecules
		
thin	As chain length increases, the <b>boiling point</b> of the hydrocarbon chains also increases.	thick
		
	<b>Flammability</b> is a measure of how easily a substance burns.	
		

## Uses of the different fractions



## Supply and demand

Product	Supply in tonnes	Demand in tonnes
petrol	100	300
diesel	200	100
heating oil	250	50

After fractional distillation, we find:

- we have more of the long chain hydrocarbons than we need
- There are not enough short chain hydrocarbons.
- Short chain are more useful as they are more flammable so can be used as fuels.

## C7 – Organic Chemistry

- |   |  |   |
|---|--|---|
| <ol style="list-style-type: none"><li>1. What is crude oil?</li><li>2. What is a hydrocarbon?</li><li>3. What type of hydrocarbons are alkanes?</li><li>4. State the general formula for alkanes.</li><li>5. Name the first four alkanes.</li><li>6. What sort of bonding is found in hydrocarbons?</li></ol> | <ol style="list-style-type: none"><li>1. What is the name for the process that results in the separation of the fractions of crude oil?</li><li>2. What happens to the boiling point of hydrocarbons as the chain length <b>increases</b>?</li><li>3. What happens to the viscosity of hydrocarbons as the chain length <b>increases</b>?</li><li>4. What does flammable mean?</li><li>5. What are the two changes of state that occur during fractional distillation?</li><li>6. Which physical property is used to separate the fractions?</li></ol> | <ol style="list-style-type: none"><li>1. What is one use for the hydrocarbons that are between 14 and 20 carbons long?</li><li>2. What is the range of lengths of hydrocarbons in fuel oil?</li><li>3. What are the smallest hydrocarbons used for?</li><li>4. What happens to the flammability of hydrocarbons as the chain length <b>increases</b>?</li><li>5. What is the range of hydrocarbon lengths found in petrol?</li><li>6. What is the problem with supply and demand of the different hydrocarbon chains?</li></ol> |
|---|--|---|

# C7 – Organic Chemistry

## Cracking

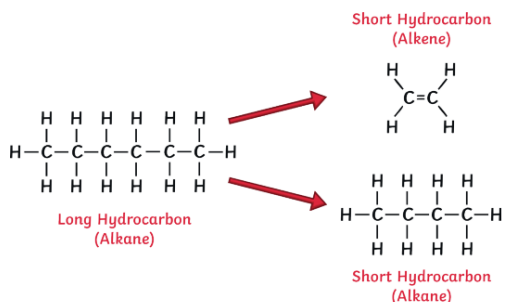
- This is done to solve the problem of having too many long chain hydrocarbons and not enough short ones
- Long hydrocarbons are **broken down** into smaller, more useful hydrocarbons.
- Short chain hydrocarbons are more useful as they are more flammable

Two types of cracking: catalytic and steam cracking.

**Catalytic cracking** – needs a **high temperature** and a **catalyst**.

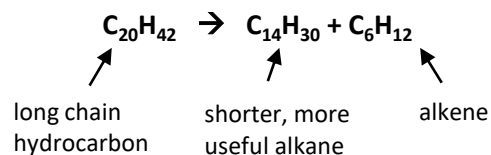
**Steam cracking** – high temperature and steam

- Cracking produces a **short-chain alkane** and an **alkene**.



## Cracking equations

Same number of carbon and hydrogen atoms on both sides of the equation:



## Alkenes

- Alkenes are **unsaturated** hydrocarbons.
- Contain carbon-carbon **double bonds**.

### Test for Alkenes

Use bromine water to test for alkenes. If an alkene is present, the bromine water turns from orange/brown to colourless. Alkanes do not react with bromine water.

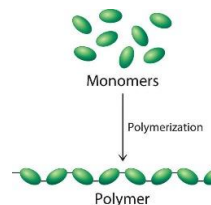


### Uses for alkenes:

- Can be used as fuels
- Can be used as a starting material for other chemicals
- Can be used to make polymers (e.g. plastic)

## Polymers

- Polymers are large molecules made of many repeating units (monomers)
- Alkenes (small molecules) are joined together to make polymers



**Poly(ethene)** – plastic bags/drinks bottles

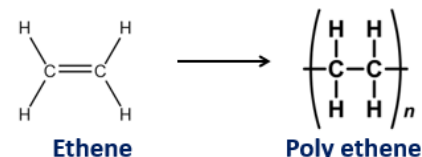
**Poly(propene)** – strong tough plastics

## Drawing and naming polymers

1. Redraw the **monomer given**, but without the double bond. Make sure to copy all other elements exactly.
2. Put brackets around the monomer and extend joining bonds out through the brackets on both sides
3. Add an 'n' at the bottom right of the bracket
4. To name the polymer, you put **poly** in front of the monomer name

E.g.:

Draw and name the polymer made from the monomer ethene:



## Combustion of Hydrocarbons

Combustion means burning.

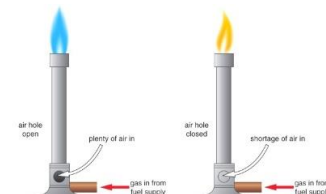
**Complete combustion** - when there is a good supply of **oxygen** for a fuel to burn.

**Fuel + oxygen → carbon dioxide + water**

**Incomplete combustion** - not enough oxygen

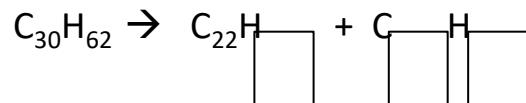
Products are **carbon monoxide** and water.

**Carbon monoxide = poisonous gas**



## C7 – Organic Chemistry

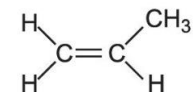
1. What is cracking?
2. Why is cracking done?
3. What are the two types of cracking?
4. What conditions are needed for catalytic cracking?
5. Complete this cracking equation by putting numbers in the boxes:



6. What two types of hydrocarbons are formed during cracking?

1. Why are alkanes called 'unsaturated'?
2. Which chemical is used to test for alkenes?
3. What is the colour change for a positive alkene test?
4. Give two uses for alkenes
5. What are polymers?
6. What is the name for the small molecules that make up polymers?

1. What is the name of the polymer formed from the monomer butene?
2. Draw the polymer made from the monomer propene given below:



3. Name the polymer made in question 2
4. What is combustion?
5. When does incomplete combustion happen?
6. What are the waste products of complete combustion?
7. Which toxic gas is formed during incomplete combustion?

## C7 – Organic Chemistry reactions

### Alkenes

Alkenes are hydrocarbons with a double carbon-carbon bond.

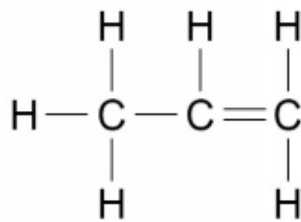
The general formula for the homologous series of alkenes is  $C_nH_{2n}$

Alkene molecules are unsaturated because they contain two fewer hydrogen atoms than the alkane with the same number of carbon atoms.

The first four members of the homologous series of alkenes are ethene, propene, butene and pentene.

Alkene molecules can be represented in the following forms:

$C_3H_6$  (propene)



It is the functional groups that determine the reactions of organic compounds.

Alkenes react with oxygen in combustion reactions in the same way as other hydrocarbons, but they tend to burn in air with **smoky flames** because of incomplete combustion.

Alkenes react with hydrogen, water and the halogens, by the addition of atoms across the carbon-carbon double bond so that the double bond becomes a single carbon-carbon bond



## C7 – Organic Chemistry

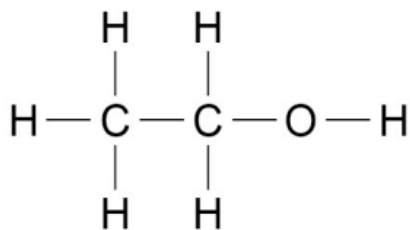
1. What an alkene?
  2. What kind of bond is there in an alkene?
  3. What is the general formula for an alkene?
  4. List the first four members of the homologous series
  5. Show the two ways which ethene can be represented
1. What type of combustion do alkenes generally do?
  2. What do alkenes also react with?
  3. What happens when an alkene reacts with hydrogen, water or the halogens?

## C7 – Organic Chemistry reactions

Alcohols contain the functional group –OH.

Methanol, ethanol, propanol and butanol are the first four members of a homologous series of alcohols.

Alcohols can be represented in the following forms:  $\text{CH}_3\text{CH}_2\text{OH}$  or as



Aqueous solutions of ethanol are produced when sugar solutions are fermented using yeast. The conditions used for fermentation is sugars dissolved in water, mixed with yeast. an air lock to allow carbon dioxide out, while stopping air getting in. warm temperature , 25-35°C.

When any of the first four alcohols react with sodium, they form a salt (sodium alkoxide) and hydrogen gas. You will see fizzing.

Alcohols are flammable. They burn in air because of the presence of a hydrocarbon chain. They burn to produce carbon dioxide and water. This property allows alcohols to be used as a fuel.

When alcohols are added to water, they mix easily to produce a solution.

When alcohols can react with an oxidising agent. The oxidation of alcohols is an important reaction in organic chemistry. Primary alcohols can be oxidized to form aldehydes and carboxylic acids; secondary alcohols can be oxidized to give ketones. Tertiary alcohols, in contrast, cannot be oxidized without breaking the molecule's C–C bonds.



## C7 – Organic Chemistry

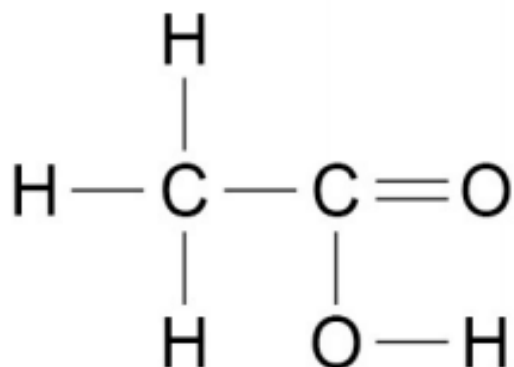
1. What is an alcohol?
2. What is the functional group in an alcohol?
3. What is the general formula for an alcohol?
4. List the first four members of the homologous series of alcohols
5. Show the two ways which ethanol can be represented

1. How is ethanol produced
2. What are the conditions for fermentation

1. What happens when alcohols react with sodium?
2. What happens when alcohols react with water?
3. What happens when alcohols react with air?
4. What happens when alcohols react with oxidising agents?

## C7 – Organic Chemistry reactions

Carboxylic acids have the functional group  $\text{-COOH}$ . The first four members of a homologous series of carboxylic acids are methanoic acid, ethanoic acid, propanoic acid and butanoic acid. The structures of carboxylic acids can be represented in the following forms:  $\text{CH}_3\text{COOH}$



When any of the first four carboxylic acids react with carbonates, to form a salt, water and carbon dioxide

When they dissolve in water to form acidic solutions with pH values less than 7

Carboxylic acids can react with alcohols to form esters in a process called Fischer esterification. An acid catalyst is required and the alcohol is also used as the reaction solvent.

Carboxylic acids are weak acids because they only partially ionise in solution. Their solutions do not contain many hydrogen ions compared to a solution of a strong acid at the same concentration. A weak acid's pH will be higher than a strong acid's pH at the same concentration. In a solution of strong acid, the molecules are fully ionised. In a weak acid, few of the molecules are ionised.

## C7 – Organic Chemistry

1. What is a carboxylic acid?
2. What is the functional group in a carboxylic acid?
3. What is the general formula for a carboxylic acid?
4. List the first four members of the homologous series of carboxylic acids
5. Show the two ways which ethanoic acid can be represented

1. What happens when carboxylic acid react with carbonates?
2. What happens when carboxylic acid dissolve in water?
3. What happens when carboxylic acids react with alcohol?

1. Why are carboxylic acids weak acids?

# B5 – Homeostasis and Response

## Adrenaline and thyroxine (HT only)

**Adrenaline** is produced by the **adrenal glands**.

It is produced in times of fear or stress.

It **increases heart rate** to ensure **more oxygen and glucose** to the cells to prepare for the 'fight or flight' response.

**Thyroxine** is produced by the **thyroid gland**.

It is involved in regulating **metabolic rate** and growth and development.

## Puberty

Females – **Oestrogen** is the main female reproductive hormone produced in the ovary. At puberty, eggs begin to mature, and one is released approximately every 28 days. This is called ovulation.

Males – **Testosterone** is the main male reproductive hormone produced by the testes and it stimulates sperm production.

Name of contraception	Description	+	-
Condoms/diaphragm	Barrier	Very effective, condom protects against STIs	Unreliable if not used properly
Oral Contraception (pill)	Hormonal (oestrogen or progesterone, stops FSH so no eggs mature)	Very effective	Must remember to take everyday, can have side effects
Injection/implant/skin patch	Slow-releasing hormone	Long lasting	Side effects such as heavy periods
Intrauterine Device (IUD or Coil)	Barrier method. Can also contain hormones	Long lasting (up to 5 years)	Side effects such as heavy periods
Surgical Sterilisation	Tying or cutting of sperm ducts/ oviducts.	Almost 100% effective	Difficult or impossible to reverse

## Menstrual Cycle

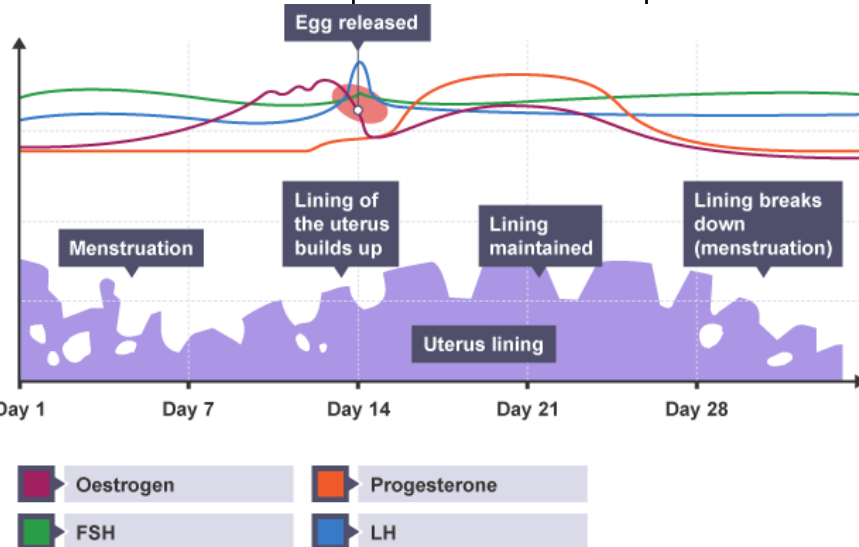
The menstrual cycle is controlled by several hormones:

FSH – from the pituitary. Causes an egg to mature in the ovary

LH – from the pituitary. Causes ovulation

Oestrogen and progesterone are involved in maintaining the lining of the womb.

HT – Oestrogen also feeds back to the pituitary to stop producing FSH.



## Infertility (HT only)

Fertility drugs LH and FSH can be given to increase the number of eggs released and increase the change of fertilisation.

### IVF

- Woman takes a dose of FSH and LH - stimulates the maturation of several eggs.
- Eggs are collected and fertilised by sperm from the male
- Fertilised eggs develop into embryos.
- One or two embryos inserted into the female's uterus.

### Negatives:

- very emotionally/ physically stressful
- success rates are not high
- can lead to multiple births (twins, etc.)
- Many embryos are not used & destroyed

## B5 – Homeostasis and Response

### Adrenaline and thyroxine (HT only)

1. Where is adrenaline released from?
2. What effects does adrenaline have?
3. What does thyroxine do?

1. What is the male hormone?
2. What is ovulation?
3. Which organ produces oestrogen?

1. Which hormones are contained in the contraceptive pill?
2. Name a 'barrier' method of contraception
3. How does the contraceptive pill prevent pregnancy?
4. Give one advantage and one disadvantage of taking the contraceptive pill.
5. Give one disadvantage of surgical sterilisation

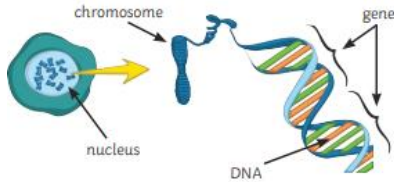
### Menstrual Cycle

1. Which organ releases FSH and LH?
2. What are the two other menstrual cycle hormones?
3. Approximately how long is one cycle?
4. Around which day of the cycle does ovulation occur?
5. What is the role of oestrogen and progesterone?

1. Which drugs are given as fertility drugs?
2. How do they increase the chances of getting pregnant?
3. How many embryos are transferred to the womb in IVF?
4. Give two negatives of IVF treatment

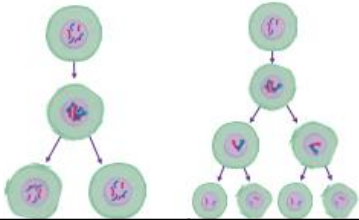
# B6 – Inheritance, Variation and Evolution

## Cells and cell division



The chromosomes are in the nucleus of cells  
Humans have 46 chromosomes.  
Chromosomes contain genes, which code for proteins.  
In body cells, chromosomes are in pairs – one from each parent.  
In sex cells (gametes) they are not in pairs and there is half the number of chromosomes (e.g. 23 in humans)

### Cell division – two types:



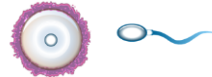
Mitosis (in all body cells)	Meiosis (in testes and ovaries)
2 daughter cells	4 daughter cells
Daughter cells = genetically identical	Daughter cells = not genetically identical
Cell divides once	Two divisions
Daughter cells <b>have same number</b> of chromosomes as original cell	Daughter cells <b>have half</b> the chromosomes as original cell
Used for growth and repair.	Produces gametes for sexual reproduction

## Reproduction

Two types of reproduction – sexual and asexual.

	Sexual	Asexual
<b>Number of parents</b>	2	1
<b>gametes used?</b>	Yes	no
<b>Variation in the offspring</b>	lots	None (unless mutations occur) Offspring are clones

### Sexual reproduction

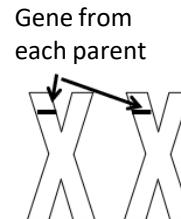


The sperm and egg have half of the genes for the offspring. (in humans 23 chromosomes)  
At fertilisation, the sperm and egg nuclei join. (23 + 23 = 46 chromosomes)

There are two genes for any one characteristic – one on the chromosome from mum and one from Dad  
Different forms of the same gene are called **alleles**  
If the alleles are the same, the person is **homozygous**  
If the alleles are different the person is **heterozygous**

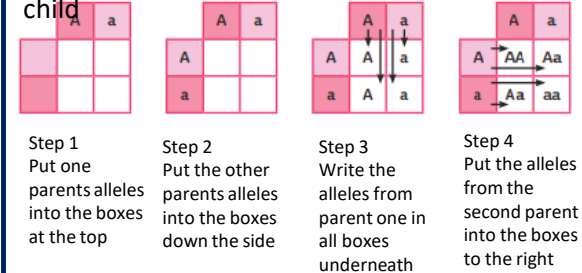
**E.g.:**  
**B = brown hair (dominant)**  
**b = red hair**

BB = homozygous, brown hair  
Bb = heterozygous, brown hair  
bb = homozygous, red hair



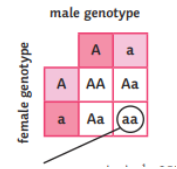
## How to complete a punnet square

If A = blue eyes, a = green eyes  
Calculate the probability of two heterozygous people having a green eyed child



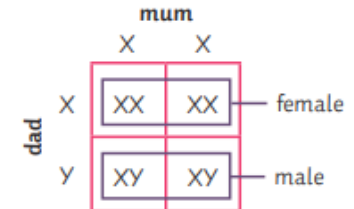
### Probability

A green eyed child would have aa genotype.



One of these four has the type aa – that's 1/4, 25% or 0.25.

### Sex Determination



**Females** carry two X chromosomes (XX)  
**Males** carry one X and one Y chromosome (XY)  
50% chance of male and female.

## B6 – Inheritance, Variation and Evolution

1. Put these in order from smallest to biggest:

Allele, Cell, Chromosome, Gene, Nucleus

2. What are the two types of cell division?
3. When does mitosis take place?
4. Where does meiosis take place?
5. How does the number of chromosomes in a gamete differ from those of a body cell?
6. What do genes do?

1. What are the two types of reproduction?
2. How many parents are needed for asexual reproduction?
3. What are the offspring of asexual reproduction known as?
4. What is the term for when a sperm and an egg join?
5. How many genes do we have for any single characteristic?
6. What term is used to describe a person that has two alleles that are the same for a particular characteristic?

1. What two sex chromosomes do females carry?
2. What two chromosomes do males carry?
3. What is the probability of having a boy?

4. Complete the punnet square:

	D	d
d		
d		

5. What is the chance of having an offspring with the allele pair dd?

# B6 – Inheritance, Variation and Evolution

## Inherited disorders

### Cystic fibrosis

Disorder of cell membranes  
Caused by a recessive allele  
Causes thick mucus to form in membranes  
Main organs affected are lungs, digestive & reproductive organs – pancreas and intestines.

Alveoli get blocked with mucus  
Increases diffusion path so less O<sub>2</sub> gets into the blood



		♂ Father	
		C	c
♀ Mother	C	CC	Cc
	c	Cc	cc

### Polydactyly

Disorder of the hands and feet  
Caused by a dominant allele  
Causes extra digits, fingers and toes.



### Embryo screening

Parents that have inherited disorders may opt for embryo screening

1. Multiple embryos are made in IVF
2. One cell is removed from each embryo
3. The cells are screened for faulty genes
4. Only embryos without the genes for disorders are transferred to the womb of the mother.

- + Babies born free of that inherited disorder
- no guarantee child will be free of other health issues
- Many embryos are destroyed, which are potential human lives

## Variation

- May be due to differences in:
- Genes that have been inherited (genetic causes)
  - Conditions which they have lived in (environmental causes)
  - Combination of genes and the environment.

**Mutation** = a change in the DNA during copying (randomly). Often has no effect on the gene, but sometimes leads to new proteins being made and a new characteristic being seen

## Evolution

Evolution = a change in inherited characteristics of a population over time through natural selection – could lead to a new species.

A **species** is a group of organisms that can successfully breed.  
Theory of evolution states that all species have evolved from a simple life forms more than 3 billion years ago.



## Natural Selection

Described by Darwin

1. **Variation** within a species – different genes. (due to **mutation**)
2. One gene may give characteristics that are better **adapted** for survival in the environment.
3. Those with **advantageous genes** will survive and reproduce – passing genes to **offspring**.
4. Over long periods of time, all members of that species have the characteristic, may even lead to a new **species**.

## Extinction

Extinction = no remaining individuals of a species still alive on Earth.

### Factors which could cause extinction:

- New disease
- Rapid change in environment (e.g. meteor/volcano eruption)
- New predators
- New competitors (often man)

## Evidence for evolution

### Fossils

Fossils are the **remains of plants or animals** from **millions of years ago**:

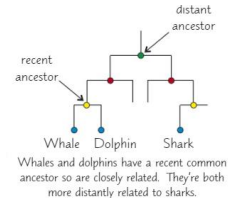
- They are formed in different ways:
- Remains of an organism that has not fully decayed as one of the decay conditions was absent (e.g. too cold, not enough O<sub>2</sub>)
  - Mineralised forms of the harder parts of an organisms (such as bones)
  - Traces of organisms such as footprints or burrows.



Many early life forms were **soft bodied** so have left few traces behind, as they decayed so we cannot be sure how life started on Earth. Many have been destroyed by Earth's rock cycle. Fossils help us understand how much or little organisms have changed as life developed on Earth.

### Evolutionary trees

Show how species have evolved from and are related to others





## B6 – Inheritance, Variation and Evolution

1. What is cystic fibrosis a disorder of?

2. Is the allele for cystic fibrosis dominant or recessive?

3. Why do cystic fibrosis sufferers struggle to get oxygen into the body?

4. What is polydactyly?

5. Is the allele for polydactyly dominant or recessive?

6. Give one advantage of embryo screening

7. Give one disadvantage of embryo screening

1. What are the two causes of variation?

2. What is a mutation?

3. Which scientist proposed the theory of evolution by natural selection?

4. What is the theory of evolution?

5. What is a species?

6. Why do mutations sometimes lead to new characteristics being seen?

1. What does 'extinct' mean?

2. What are fossils?

3. Describe one way fossils can form

4. What do fossils show us?

5. Why is the fossil record incomplete?

6. What factors can cause extinction?

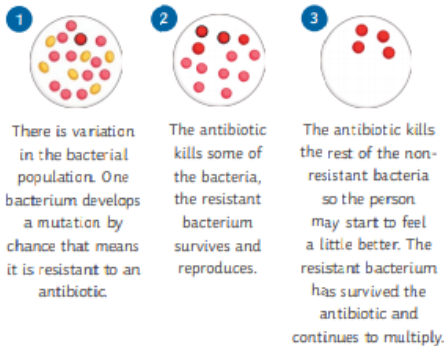
# B6 – Inheritance, Variation and Evolution

## Resistant Bacteria

- Bacteria **evolve** rapidly as they reproduce at a fast rate. (reproduce approx. every 20 mins)
- Mutations of bacteria can produce new strains.

- Some strains are **resistant** to antibiotics (so are not killed).
- They **survive** and **reproduce** – population of resistant strain rises.
- Resistant strain will spread because people are not **immune** and there is no effective treatment.

- **MRSA** is **resistant** to antibiotics.



## How to reduce antibiotic resistant strains:

- Doctors should not prescribe antibiotics for viral infections
- Patients must complete courses of antibiotics
- Agricultural use of antibiotics should be restricted.

## Genetic Engineering

- Process which involves modifying the **genome** of an organism by introduction a gene from another organism to give a **desired characteristic**.

### Uses of genetic engineering:

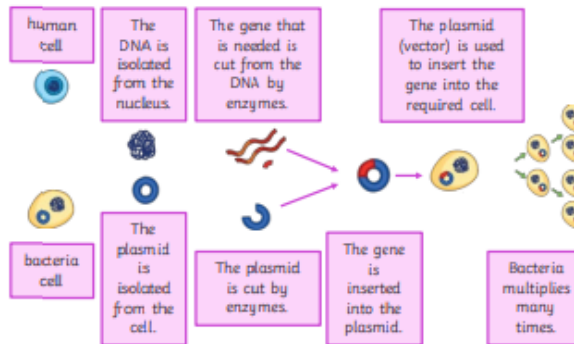
- Plant crops to be **resistant** to diseases or produce bigger, better fruits.

- Bacteria cells to produce useful substances, such as human insulin to treat diabetes.

### Genetically modified (GM) crops

Advantages	Disadvantages
Resistant to insect attack	Not sure on long term effects when eating GM crops
Produce increased yields	Could affect populations of wild flowers and insects

## Process of Genetic Engineering (HT only)



## Selective Breeding

- Process which humans breed plants and animals for particular **genetic characteristics**.

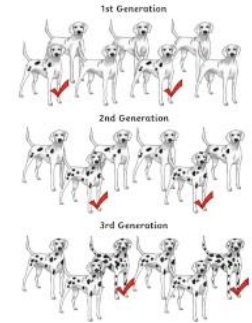
### Steps of selective breeding:

1. Choose a male and female with **desired characteristics**.

2. Breed together

3. Pick the offspring which have the desired characteristic and breed together.

4. Continue over many generations, selecting the best offspring each time, until all offspring show desired characteristics.



## Classification

Linnaeus classified things into: Kingdom, phylum, class, order, family genus and species.

Organisms are named by the **binomial system** of genus and species. (2 names)

Due to evidence from chemical analysis, there is now a 'three-domain system' by Carl Woese:

Domain	bacteria	archaea	eukaryota			
Kingdom	eubacteria	archaeobacteria	protista	fungi	plantae	animalia

## B6 – Inheritance, Variation and Evolution

1. Why do bacteria evolve rapidly?

2. What can cause new strains of bacteria?

3. Name a bacteria which is resistant to antibiotics.

4. What are the three ways to reduce antibiotic resistance strains?

1. What is genetic engineering?

2. State two uses of genetic engineering.

3. What does 'GM' stand for?

4. State two advantages of GM crops.

5. State two disadvantages of GM crops.

6. Describe the stages of genetic engineering (HT only).

1. 1. What is selective breeding?

2. Describe the four stages of selective breeding.

3. Why might a characteristic be chosen?

4. Give 3 examples of characteristics humans may choose.

1. How did Linnaeus classify organisms?

2. What are Carl Woese's three domains?

3. What does 'binomial' mean?

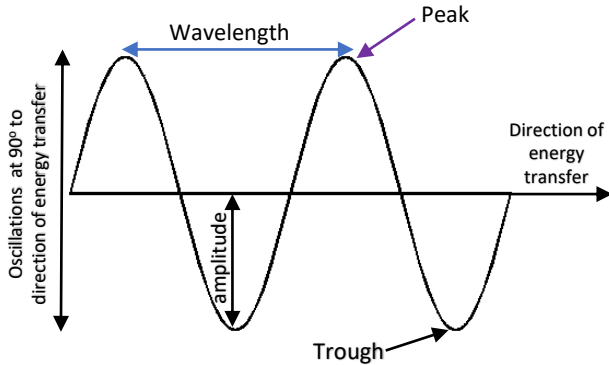
# P6 Waves

## Transverse Waves

- Oscillations (vibrations) **perpendicular** to direction of energy transfer.

### Examples:

- Electromagnetic waves
- Ripples on water.

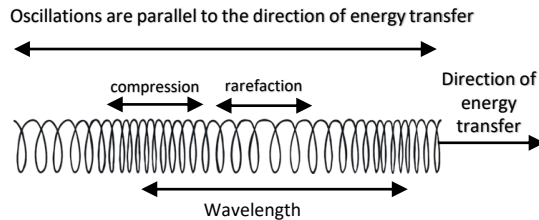


## Longitudinal Waves

- Oscillations (vibrations) are **parallel** to direction of energy transfer.

### Examples:

- Sound waves



Sound waves have areas of compression and rarefaction.

Compression = particles pushed closer together

Rarefaction = particles are further apart

## Properties of Waves

**Amplitude** – maximum displacement from undisturbed position.

**Wavelength** – distance from a point on one wave to the equivalent point on the next wave.

**Frequency** – number of waves passing a point each second.

Frequency is measured in Hertz (Hz)  
1Hz = 1 wave per second.

**Wave speed** – the speed at which energy is transferred through a medium.

$$v = f \times \lambda$$

You need to memorise

↙

wave speed  
(m/s)

↑

frequency  
(Hz)

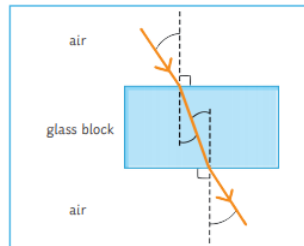
↘

wavelength  
(m)

## Refraction

Refraction occurs at the boundary between two mediums because the speed and wavelength of the wave changes at the boundary.

If wave hits medium at an angle of 90° then the ray will slow down but will not be refracted.



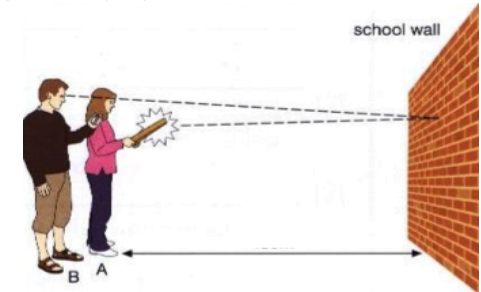
## Measuring speed of sound waves in air

- Stand 50m from a large flat wall.
- One person claps/bangs bricks
- Measure time taken to hear the echo.
- Calculate speed of sound using:

$$\text{Speed} = \text{distance} \times \text{time}$$

- Remember distance is double (in this case, 100m) as it travels to the wall and back.
- Take several measurements and calculate the mean to reduce error.

This is unlikely to produce an accurate value for sound in air (330 m/s) as the reaction time of the person operating the stopwatch is likely to be a significant proportion of the time measurement.

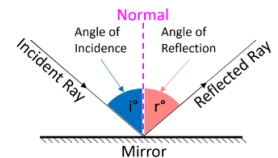


## Reflection

Definition: The change of direction of a light ray or wave at a boundary when the incident ray stays within the medium.

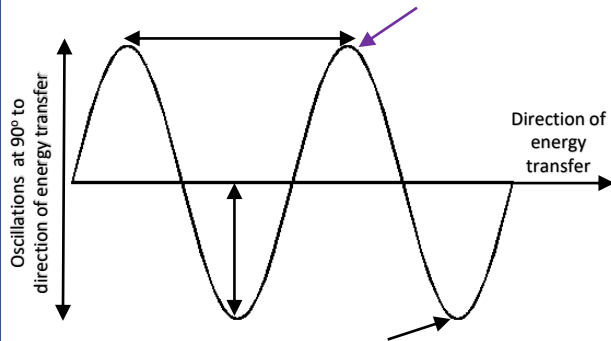
### Law of reflection

The angle of incidence = angle of reflection



## P6 Waves

1. How are transverse waves produced?
2. Label the wave features below.



1. Describe a longitudinal wave
2. Give an example of a longitudinal wave.
3. Label an area of compression and rarefaction in the diagram below



1. Define the following:

Amplitude

Wavelength

Frequency

2. What are the units for frequency?

3. What is the equation linking frequency, speed and wavelength?

1. When does refraction occur?

2. What happens to the speed, wavelength and frequency of a wave when it is refracted?

1. Describe a method to investigate the speed of sound waves in air.

2. What is the biggest source of error in this investigation?

3. What is the speed of sound in air?

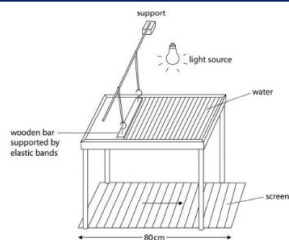
1. What is the law of reflection?

## P6 Waves Required Practical – investigating wave in a solid and a ripple tank

### Measuring waves in a liquid

#### Equipment

- Ripple tank
- Measuring ruler
- Stop watch



#### Method

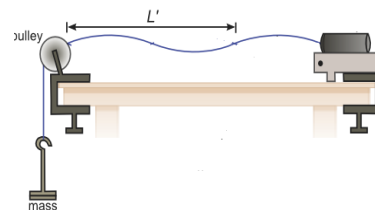
1. Set up the equipment as shown and turn on the motor to produce low frequency waves so that they are able to be counted.
2. Adjust the lamp until pattern is seen clearly on white screen underneath
3. Use a ruler to measure the length of a number of waves (e.g 10) and divide the length by the number of waves to give wavelength. This improves the accuracy of the measurement.
4. Record the waves using a camera or mobile phone. Count the number of waves passing a point in 10 seconds using a stopwatch and slowing the recording down.
5. Divide the number of waves counted by the time to give frequency.
6. Use  $v = f \times \lambda$  to calculate the wave speed. Repeat for different frequencies of the motor.

Exp	Length of 10 waves (cm)	Wavelength of 1 wave (cm)	Number of waves in 10 s	Frequency (Hz)	Speed (cm/s)
1	65	0.65	121	12.1	7.9
2	50	0.5	155	15.5	7.9
3	42	0.42	187	18.7	7.9

### Measuring waves in a solid

#### Equipment

- string, vibration generator, hanging mass set and pulley



#### Method

1. Set up the equipment as shown.
2. Turn on the vibration generator
3. Adjust the length of the string until a standing wave is achieved
4. The frequency can be read from the vibration generator
5. Measure as many complete waves as possible using a ruler
6. Divide the length by the number of waves to give wavelength
7. Calculate speed using  $v = f \times \lambda$

#### Conclusion:

In both experiments, when you increase the frequency, the wavelength decreases – the speed remains the same in the same medium

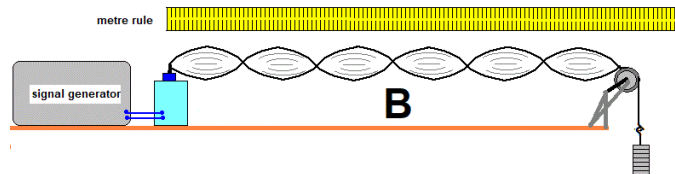
## P6 Waves – Required Practical – Ripple Tank

- Complete the table below to explain the method in calculating the speed of waves in a ripple tank.

Step	Reason
Fill the ripple tank with water, switch on a lamp and place white card underneath the tank.	
Switch on the motor and adjust it to give low frequency waves	
Place a stopwatch next to the card and record the waves, with the stopwatch in view for 10 seconds	
Play the recording in slow motion, count the number of waves passing a certain point and divide this by 10	
Measure the length of 10 waves by taking a picture of the card with a ruler on it.	
Divide the length by 10	

- If the length of 10 waves is 55cm, what is the wavelength of 1 wave?
- If there are 210 waves in 10 seconds, what is the frequency?

- When investigating waves produced by a vibration generator on a string, how do we know the frequency?



- How many complete waves are shown in the image above?
- If the length from the generator to the pulley was measured at 66 cm, what is the wavelength?
- Why is it better to measure multiple waves and divide to find wavelength rather than measure one single wave?
- What happens to wavelength when frequency increases?
- What happens to wavelength when frequency decreases?

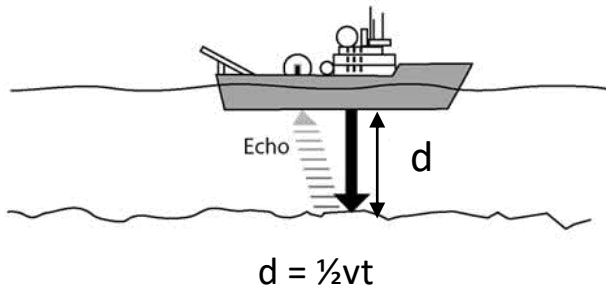
# P6 Waves

## Sound Waves

- The pitch of a note increases if the frequency of the sound wave increases.
- The loudness of a note increases if the amplitude of the sound wave increases.
- Sound waves cause the eardrum to vibrate, these vibrations send signals to the brain.
- The conversion of sound waves to vibrations of solids only works over a limited frequency range, limiting the range of frequencies a human can hear. (20-20000 Hz)

## Echo sounding

- Uses pulses of high frequency sound waves to measure the depth of objects in deep water.

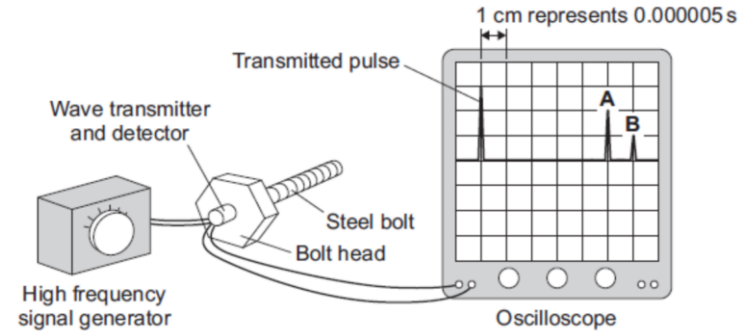


- $v$  = speed of the sound wave
- $t$  = time between transmitting the signal and receiving the echo.
- $d$  = distance to the object

## Ultrasound

- Ultrasound waves are sound waves with a frequency above 20 000 Hz.
- Ultrasound waves are partly reflected at a boundary between two different types of body tissue.
- Ultrasound waves reflected at boundaries are timed, and the timings are used to calculate distances.
- Ultrasound scans are non ionising so are safer than x-rays.

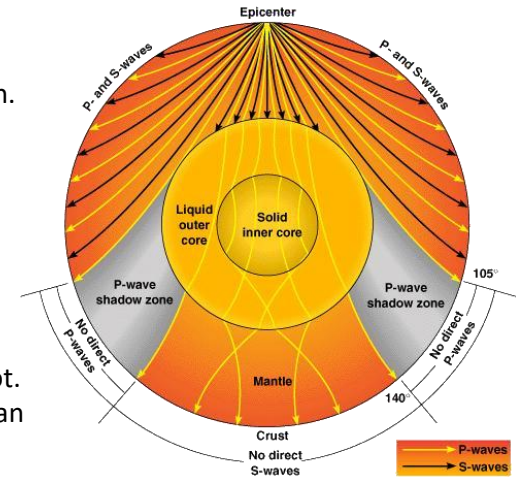
- The diagram shows how a very high frequency sound wave can be used to check for internal cracks in a large steel bolt. The oscilloscope trace shows that the bolt does have an internal crack.



- Ultrasound is not only used in medicine, it can also be used to look for flaws or cracks in objects.

## Seismic Waves

- Seismic waves are waves that travel through the Earth.
- Seismic waves are produced in an earthquake and spread out from the epicentre.
- Primary seismic waves (P-waves) are longitudinal
- Secondary waves (S-waves) are transverse waves.
- The movement of seismic waves through the Earth following an earthquake provide information on the inner structure of the Earth.
- P waves can move through solids, but S waves cannot.
- Only P waves are detected opposite the epicentre of an earthquake, suggesting that the centre of the Earth is solid.





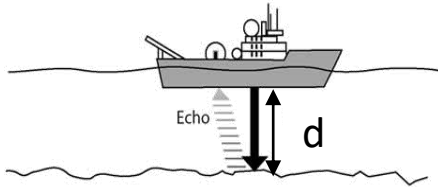
## P6 Waves

### Sound Waves

1. What part of a sound wave is related to the pitch of the note?
2. What part of a sound wave is related to the loudness of a note?
3. What is hearing range of a human?

### Echo sounding

1. What is echo sounding?



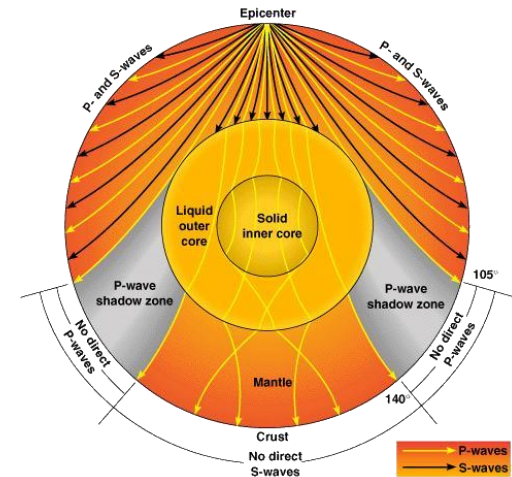
2. What is the equation used to find the depth of the ocean floor (d) under the boat?

### Ultrasound

1. What frequency are ultrasound waves? Ultrasound waves are sound waves with a frequency above 20 000 Hz.
2. What happens to ultrasound waves when they hit a boundary between two mediums?
3. Why are ultrasound scans safer than x-rays?
4. Give a non-medical use of ultrasound waves.

### Seismic Waves

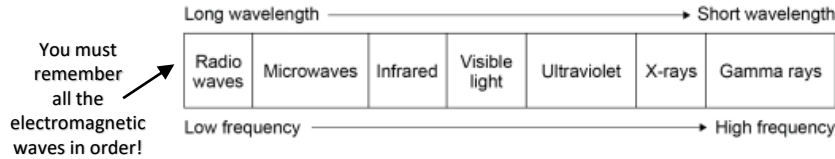
1. What are seismic waves?
2. What is the difference between a P-wave and an S-wave?
3. What do seismic waves tell us about the structure of the Earth.



# P6 Waves

## The Electromagnetic Spectrum

- All **transverse waves**
- Transfer energy from the source of waves to an absorber.
- All travel at the same **velocity** through a vacuum or air – **speed of light**.
- Speed of light = 300,000,000 m/s

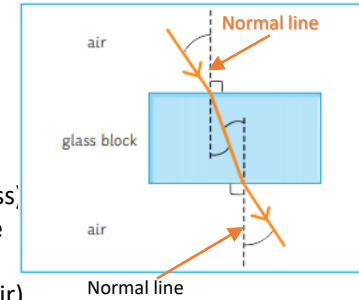


Wave	Use	Other information
Radio waves	Television and radio	Easily transmitted through the air. Harmless if absorbed by the body.
Microwaves	Satellite communications and cooking food	Can be harmful when internal body cells become heated by over exposure.
Infrared	Electrical heaters, cooking food and infrared cameras	Can cause burns to skin
Visible light	Fibre optic communications	Only EM wave detectable by human eye.
Ultraviolet	Energy efficient lamps, sun tanning	Causes skin tanning and can lead to burns or <b>skin cancer</b> .
X-rays	Medical imaging and airport security scanners.	Very little energy is absorbed by body tissues. Passes through the body.
Gamma rays	Sterilising medical equipment or food and treatment for some cancers.	They can lead to gene mutation and cancer.

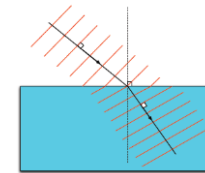
## Ray diagrams

- You need to construct **ray diagrams** to show how a wave is **refracted** at the boundary of a different medium.

- Less dense → More dense (e.g. air to glass)
- Ray **slows down** and bends **towards the normal line**.
- More dense → Less dense (e.g. glass to air)
- Ray **speeds up** and bends **away from the normal line**.



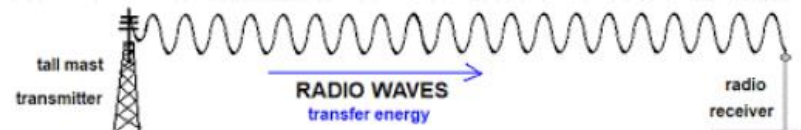
The ray bends because different parts of the wavefront cross the boundary at slightly different times –



If wave hits medium at an angle of 90° then the ray will slow down but will not be refracted.

## Radio waves (HT only)

- Radio waves can be produced by **oscillations in electrical circuits**.
- Those radio waves can travel for long distances to receivers.
  - When absorbed by the receiver, the radio wave creates an **alternating current** with same **frequency** as the wave itself.
  - This is how TV and radio are broadcast.



## P6 Waves

- |   |  |
|---|--|
| <ol style="list-style-type: none"><li>1. State two properties of electromagnetic waves.</li><li>2. Write the EM spectrum in order of <b>increasing</b> wavelength</li><li>3. Write the EM spectrum in order of <b>increasing</b> frequency</li><li>4. How fast do electromagnetic waves travel?</li><li>5. State the uses of:<ol style="list-style-type: none"><li>a) radio waves</li><li>b) microwaves</li><li>c) infrared</li><li>d) visible light</li><li>e) ultraviolet</li><li>f) x-rays</li><li>g) gamma rays</li></ol></li></ol> | <ol style="list-style-type: none"><li>1. What happens when a ray goes from a less dense → more dense medium?</li><li>2. What happens when a ray moves from a more dense → less dense medium?</li><li>3. What is the line at <math>90^\circ</math> to a surface called?</li><li>4. 4. What happens if a ray hits a medium at <math>90^\circ</math>?</li></ol> |
|   | <ol style="list-style-type: none"><li>1. What type of current do radio waves create when absorbed?</li><li>2. What is the frequency of the current produced by a radio wave of frequency 250Hz?</li></ol>  |

## P6 Waves – Required Practical – Infrared radiation

### Aim

Investigate how the amount of infrared radiation **emitted** (given out) by a surface depends on the nature of that surface.

In this investigation you are finding out which type of surface emits the most infrared radiation:

- **Dark and matt**
- **Dark and shiny**
- **Light and matt**
- **Light and shiny**

### Method

1. Place **Leslie cube** on a heat proof mat.
2. Once the kettle has boiled, fill the Leslie cube with water.
3. Hold the infrared thermometer 5cm from the first surface
4. Record the temperature
5. Repeat the experiment three times on each surface and calculate mean for each surface.

**Independent variable:** surface

**Dependent variable:** temperature of the air (infrared radiation emitted)

**Control variables:** Temperature of the water inside, the distance between the cube surface and the infrared thermometer



In this investigation you are finding out which type of surface absorbs the most infrared radiation:



### Method

1. Fill a black and a silver can with water from the tap.
2. Take the temperature of the water in each can
3. Place the infrared thermometer 5cm from the cans
4. Leave for at least 10 minutes
5. Record the temperature of the water in each can and calculate the rise in temperature

**Independent variable:** surface of the can

**Dependent variable:** Temperature increase of the water (infrared radiation absorbed)

**Control variables:** Temperature of the water inside, the distance between the cube surface and the infrared thermometer

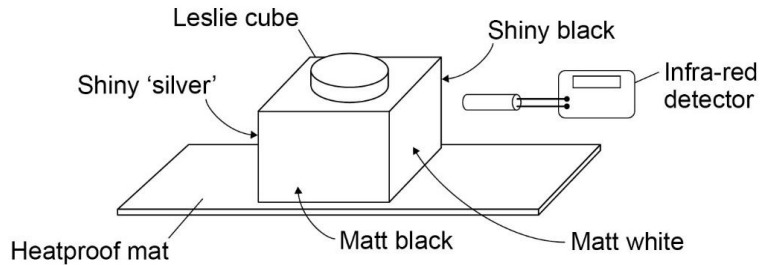
### Conclusion

Black matt surfaces absorb and emit the most infrared radiation.

White/silver and shiny surfaces are poor emitters and poor absorbers of infrared radiation

## P6 Waves – Required Practical – Infrared radiation

1. Describe how you could use the equipment below to investigate the emission of infrared by different surfaces.



1. A student was investigating the amount of infrared radiation absorbed by water in cans with different surfaces.



Name the...

Independent variable:

Dependent variable :

Control variables :

2. What kind of surfaces are the best emitters of infrared radiation?
3. Why does the water in the silver can heat up less than the black can?

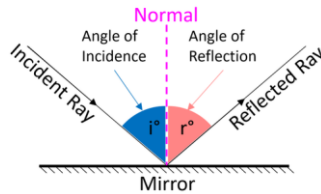
# P6 Waves

## Reflection

Definition: The change of direction of a light ray or wave at a boundary when the incident ray stays within the medium.

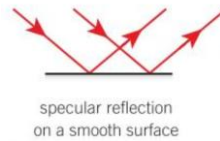
### Law of reflection

The angle of incidence = angle of reflection



### Specular reflection

Definition: Reflection from a smooth surface. Each light ray is reflected in a single ray.



### Diffuse reflection

Definition: Reflection from a rough surface. The light rays are scattered in different directions



## Ray diagrams

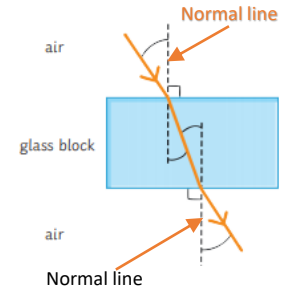
- You need to construct **ray diagrams** to show how a wave is **refracted** at the boundary of a different medium.

Less dense → More dense (e.g. air to glass)

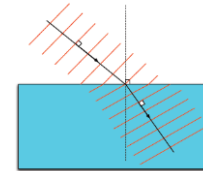
- Ray **slows down** and bends **towards the normal line**.

More dense → Less dense (e.g. glass to air)

- Ray **speeds up** and bends **away from the normal line**.



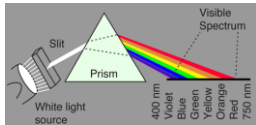
The ray bends because different parts of the wavefront cross the boundary at slightly different times –



If wave hits medium at an angle of 90° then the ray will slow down but will not be refracted.

## Colour

White light can be split into the colours of the rainbow, each with a different wavelength



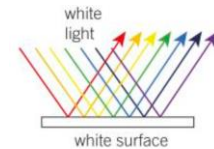
### Primary and secondary colours

Red + yellow = green

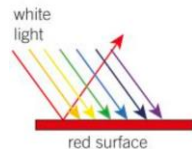
Green + blue = cyan

Blue + red = magenta

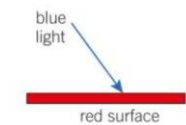
Green + blue + red = white



A white object looks white because it **reflects** all the wavelengths of visible light that reach it.



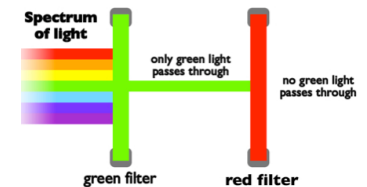
A red object looks red because it **absorbs** all the wavelengths of light except red. Only red light is **reflected**.



If only blue light is shone on a red surface it is **absorbed**, and no light is **reflected**, so the surface looks black

## Filters

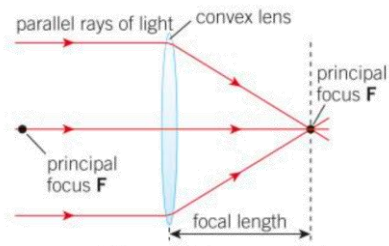
Filters change the colour objects appear as the only let certain wavelengths of light through. A green filter absorbs all colours except green, and **transmits** only green light



## P6 Waves

- |  |  |
|--|--|
| <ol style="list-style-type: none"><li>1. What is reflection?</li><li>2. Draw a labelled diagram to show reflection of a ray of light by a mirror.</li><li>3. What is specular reflection?</li><li>4. What is diffuse reflection?</li></ol> | <ol style="list-style-type: none"><li>1. What happens when a ray goes from a less dense <math>\rightarrow</math> more dense medium?</li><li>2. What happens when a ray moves from a more dense <math>\rightarrow</math> less dense medium?</li><li>3. What is the line at <math>90^\circ</math> to a surface called?</li><li>4. 4. What happens if a ray hits a medium at <math>90^\circ</math>?</li></ol> |
| <ol style="list-style-type: none"><li>1. What are the primary colours of light?</li><li>2. Why does a red object look red?</li><li>3. Why does a blue filter make everything appear blue?</li></ol>  |  |

## P6 Waves

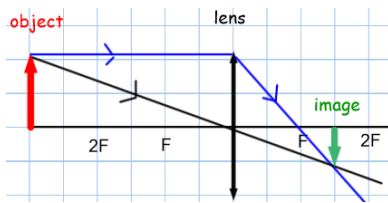


**Convex (Converging) Lenses** make parallel rays of light converge to meet at the principal focus. Focal length = distance from centre of lens to principal focus

**To draw a ray diagram:**

Draw two rays from the top of the object

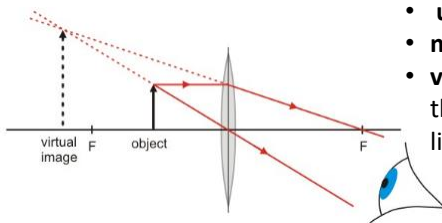
1. A ray parallel to the principal axis, which is refracted through the principal focus.
2. A ray through the centre of the lens, which does not change direction.
3. To create the image, draw an arrow from the principal axis to the point where the rays meet.



The image above is **inverted** (upside down), **diminished** (smaller than the object) and **real** (the rays of light pass through it).

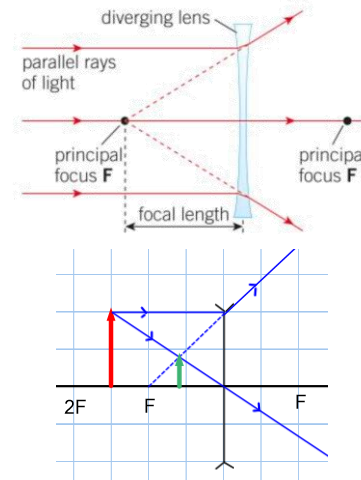
This image is

- **upright** (right way up),
- **magnified** (larger than the object)
- **virtual** (rays of light don't pass through it); represented by dotted lines



**Convex** lenses can produce **real** or **virtual** images.

**Concave (Diverging) Lenses** make parallel rays of light diverge (spread out), as if they have come from the principal focus of the lens



**To draw a ray diagram:**

Draw two rays from the top of the object

1. A ray parallel to the principal axis, which is refracted as if it came from the principal focus on the same side of the lens.
2. A ray through the centre of the lens, which does not change direction
3. To create the image, draw an arrow from the principal axis to the point where these rays appear to meet.

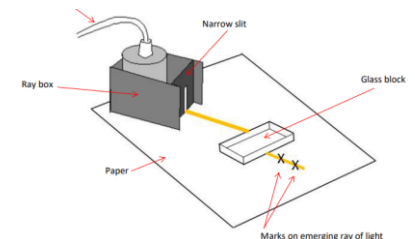
**Concave** lenses always produce **virtual** images.

**Magnification:** If the image is bigger than the object the magnification is greater than 1. If the image is smaller than the object, the magnification is less than 1.

Magnification is a ratio and so does not have units.

$$\text{Magnification} = \frac{\text{Image size}}{\text{Actual size}}$$

**Required Practical:** use different substances and surfaces to investigate refraction and reflection of light





## P6 Waves

1. What does a convex lenses do to parallel rays of light?

2. How do you draw a ray diagram for a convex lens?

3. What is a real image?

4. What is a virtual image?

5. What type of does a concave lens produce?

1. What does a concave lenses do to parallel rays of light?

2. How do you draw a ray diagram for a concave lens?

3. What type of does a concave lens produce?

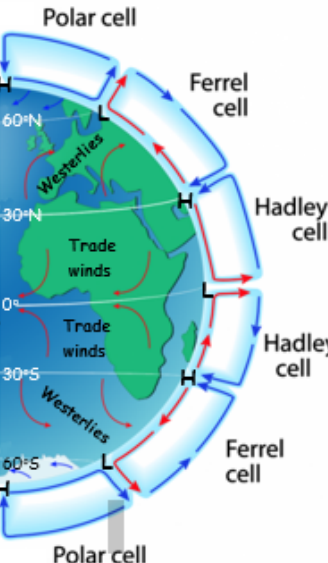
1. What is the formula to calculate magnification?

2. What does a magnification of less than 1 mean?

1. What equipment would you use to investigate the refraction of light through a glass block.



### 9. Global atmospheric circulation

Factor	Explanation
Global atmospheric circulation	Worldwide system of winds, which transport heat from the equator to the poles. Wind is large scale movement of air from HIGH to LOW pressure.
Key information	This is caused by differences in temperature at the Equator and the poles. The circulation is divided into loops called CELLS. Low pressure = Rising air = Rain. High pressure = Sinking air = Clear skies.
	At the poles, cool air sinks creating high pressure. (<250mm rainfall).
	At 60°N air rises between the <u>Ferrel</u> and Polar cell creating an area of low pressure. The UK gets lots of <u>low pressure</u> weather blown in from the Atlantic.
	At 30°N air sinks between the <u>Ferrel</u> /Hadley cell creating high pressure (deserts <250mm rain).
	On the equator air rises as the sun's heat is most concentrated. This creates a <u>low pressure</u> area with high rainfall. (Rainforests >2000mm of rain).
	Surface winds blow towards the equator (trade winds). Direct hurricanes to west.
	Here winds blow towards the poles and are called Westerlies. (From the west).
	The winds curve due to the spin of the earth (Coriolis effect).

### 10. Weather hazards in the UK

Hazard	Example
Extreme weather	A weather event that is significantly different from the average pattern and is especially severe or unseasonal.
Strong winds	Damage property / disrupt transport. 2018 Storm Ali killed 2 people.
Heavy rain	Can cause flooding, costing millions. Cockermouth 2009 314 mm in 24 hrs.
Snow	Injury, death, travel disruption. March 2018 Beast from East. 50 cm.
Drought	Crop failure, rules to conserve water. April 10-March 12 only 75% of rain.
Heatwaves	Pollution builds up- breathing problems. Death. BUT tourism benefits. 2018.

### 12. An example of a recent extreme weather event in the UK

Name	Somerset Floods, 2014
Causes	350mm rain fell in Jan and Feb High tides, rivers not dredged for 20 yrs
Impacts	<ol style="list-style-type: none"> <li>£10 million damage</li> <li>14,000 ha of farmland flooded</li> <li>600 homes flooded</li> <li>Moorland and <u>Muchelney</u> cut-off</li> <li>Floodwaters contaminated</li> <li>Soil damaged for 2 years after</li> </ol>
Management strategies	<b>Immediate responses</b> <ul style="list-style-type: none"> <li>Army helped with rescue boats</li> <li>Volunteers and community groups</li> <li>Locals used boats to go shopping/school</li> </ul> <b>Long term responses</b> <ul style="list-style-type: none"> <li>£20 million flood action plan</li> <li>Rivers dredged</li> <li>Road levels raised</li> <li>Tidal barrage by 2024</li> </ul>

### 11. Evidence that weather is becoming more extreme...

Our weather is naturally variable BUT extreme events are becoming more common and severe.

Hazard	Example
Temperature	10 warmest yrs all occurred since 1990 2018 joint hottest summer on record. Dec 2010 coldest month for 100 years.
Rainfall	More rainfall records broken between 2010 - 2014 than in any other decade. Dec 2015 wettest month on record.



9. Global atmospheric circulation	
Factor	Explanation
Global atmospheric circulation	
Key information	
<p>The diagram illustrates the three-cell model of global atmospheric circulation. It shows the Earth with latitude lines at 60°N, 30°N, 0° (Equator), 30°S, and 60°S. The Polar cell is located between the poles and 60° latitude, with air sinking at the poles and rising at 60° latitude. The Ferrel cell is between 30° and 60° latitude, with air sinking at 30° latitude and rising at 60° latitude. The Hadley cell is between the equator and 30° latitude, with air sinking at 30° latitude and rising at the equator. Wind patterns include Westerlies between 30° and 60° latitude and Trade winds between the equator and 30° latitude in both hemispheres. High (H) and Low (L) pressure systems are indicated at the boundaries of the cells.</p>	

10. Weather hazards in the UK	
Hazard	Example
Extreme weather	
Strong winds	
Heavy rain	
Snow	
Drought	
Heatwaves	

11. Evidence that weather is becoming more extreme...	
Temperature	

12. An example of a recent extreme weather event in the UK	
Name	
Causes	
Impacts	
Management strategies	



### 13. Tropical storms

Hurricanes, cyclones, typhoons. An area of low pressure with winds moving in a spiral around the calm central point called the eye of the storm. Winds are powerful and rainfall is heavy.

Factor	Explanation
Global distribution	5° – 30° north and south of equator (sea temp warm, wind shear low). More in the northern hemisphere. Move towards the west.
Relationship with ACM	Trade winds (from high to low pressure) send tropical storms to west.
Structure	Circular, can be 100s of km wide. Eye- calm in centre (air ↓, LOW). Eyewall- strong winds, torrential rain. Edges- Wind speed falls, rain reduces.



#### How will climate change affect them?

Distribution	Increase to higher latitudes (warmer sea temperatures).
Frequency	Number could increase. (Longer season)
Intensity	Stronger? More evaporation.

### 14. Formation of tropical storms

Include processes and ensure correct sequence.

Conditions	5-30° latitude. Ocean depth > 60m deep. Sea temperature > 27°C. Form summer and autumn.
	<ol style="list-style-type: none"> <li>1. Sun heats the ocean (27°C) &gt; <b>rapid evaporation</b>.</li> <li>2. <b>Condensation</b> occurs quickly leading to a large amount of cloud forming (<b>tropical depression</b>).</li> <li>3. Due to the earth's rotation, this cloud mass starts to spin. An eye is formed in the centre.</li> <li>4. Due to rising air, a <b>low pressure</b> area forms below. Air rushes into this creating high wind speeds. (&gt;74mph = <b>tropical storm</b>)</li> <li>5. The <b>low pressure</b> results in the ocean being uplifted forming a <b>storm surge</b>.</li> </ol>

### 15. How can we reduce the impacts?


Strategy	Explanation
Prediction / monitoring	Satellites and aircraft to monitor storms. Computer models calculate the predicted track. Allows warnings so people can evacuate or protect their home.
Planning	New developments avoid high risk areas. Emergency services train and prepare. Plan evacuation routes. Reduces the injuries and deaths.
Protection	Building design- reinforced concrete, stilts to reduce flood risk. Flood defences along rivers and coasts. Reduces the number of buildings destroyed so fewer injuries and deaths.

### 16. Tropical storms affect people and environments.

	Generic	Typhoon Haiyan 2013 Philippines
Primary effects	Direct results of strong winds, high rainfall, storm surges. Flooding, buildings destroyed, death.	<ul style="list-style-type: none"> <li>† 6,201 deaths. (Most drowned in storm surge.)</li> <li>† 1.1 million houses damaged.</li> <li>💰 90% of Tacloban city destroyed.</li> </ul>
Secondary effects	Homelessness > lead to poor health. Lack of sanitation > diseases (cholera) Food shortages, price increase.	<ul style="list-style-type: none"> <li>† 4.1 million homeless.</li> <li>💰 Damage cost US\$12 billion.</li> <li>💰 1.1 million tonnes of crops destroyed (rice).</li> </ul>
Immediate responses	Evacuate before the storm. Rescue those affected. Provide food, water, blankets. Aid workers arrive from abroad. Recover dead bodies (prevent disease).	<ul style="list-style-type: none"> <li>➢ Over 1200 evacuation shelters set up.</li> <li>➢ Philippines Red Cross delivered basic food aid.</li> <li>➢ UK sent shelter kits.</li> <li>➢ 800,000 evacuated (warnings given 2 days early).</li> </ul>
Long term responses	Repair homes and infrastructure. Promote economic recovery.	<ul style="list-style-type: none"> <li>➢ More cyclone shelters built.</li> <li>➢ No build zones.</li> <li>➢ 'Cash for work' programmes.</li> </ul>



### 13. Tropical storms

Factor	Explanation
Global distribution	
Relationship with ACM	
	
How will climate change affect them?	
Distribution	
Frequency	
Intensity	

### 14. Formation of tropical storms

Conditions	

### 15. How can we reduce the impacts?

Strategy	Explanation
Prediction / monitoring	
Planning	
Protection	

### 16. Tropical storms affect people and environments.

	Generic	Typhoon Haiyan 2013 Philippines
Primary effects		<ul style="list-style-type: none"> <li>↓</li> <li>⊖</li> </ul>
Secondary effects		<ul style="list-style-type: none"> <li>↓</li> <li>⊖</li> </ul>
Immediate responses		<ul style="list-style-type: none"> <li>➤</li> <li>➤</li> <li>➤</li> <li>➤</li> </ul>
Long term responses		<ul style="list-style-type: none"> <li>➤</li> <li>➤</li> <li>➤</li> </ul>



# Year 10 History : 1. Spain reaches the New World, c1490-1512

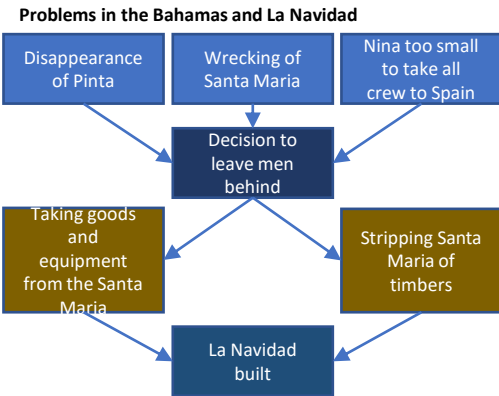


Spain c1490: exploration, religion and ambition
<ul style="list-style-type: none"> <li>Most people knew the world was round</li> <li>Most of Europe was mapped</li> <li>The Spice Trade with the East Indies was well established</li> <li>Portugal and Spain were rivals – both wanted to find a sea route to the East Indies</li> <li>The Catholic Church had 2 concerns in the 2<sup>nd</sup> half of the 15<sup>th</sup> Century:             <ul style="list-style-type: none"> <li>Defend Christendom</li> <li>Spread Christianity to new lands</li> </ul> </li> </ul>



Why did Spain agree to sponsor Columbus?	
<b>Christianity</b>	Isabella was keen to continue spreading Christianity to the East Indies.
<b>Priest</b>	Juan Perez, a priest and friend to Isabella, helped Columbus while he made his case.
<b>Status</b>	Finding the sea route to the East Indies before Portugal would give Spain international status.
<b>Wealth</b>	A successful voyage would bring riches to the Spanish treasure and wealth to Spanish merchants.

Columbus' First Voyage 1492	
<b>Finding ships and crew</b>	Martin and Vicente Pinzon helped Columbus get ships and crew. 2 caravels – the Nina and the Pinta 1 carrack – the Santa Maria (flagship)
<b>Rivalry at sea</b>	Columbus had to change routes to avoid Portuguese caravels.
<b>Sailors' fears</b>	Columbus kept 2 different logs to stop sailors getting worried: -1 was accurate and he kept secret -The other log recorded shorter distances
<b>Possible Mutiny</b>	As the sailors had not spotted land for so long, they came close to mutiny. They allowed Columbus 2 more weeks.
<b>Quarrels</b>	Columbus and Martin Pinzon disagreed on the route.
<b>Land</b>	On the 10 <sup>th</sup> October, after 6 weeks at sea, the crew spotted land.



Columbus' return to Spain 1493	
4 <sup>th</sup> March 1493 Columbus lands in Portugal and meets King John. Columbus is sent congratulations letters and is cheered by crowds in his way to Barcelona.	<b>The role of the pope</b> The Pope gives Isabella and Ferdinand his support for the new 'Spanish Indies'. He is excited by Columbus' discoveries and wanted Christianity to spread to these lands.
<b>Rivalry with Portugal</b> King John believed he had claim to the lands Columbus had discovered. This led to talks with Spain to determine who had rights over what lands as Spain were getting ready to send Columbus back to govern.	<b>Columbus' Rewards</b> Isabella and Ferdinand encouraged Columbus to carry out another voyage. Columbus was given new titles, a new coat of arms and issued a pension for life. He was also given powers to govern lands in the New World.

Effects of Spanish Settlements	
1	Gold mines set up in Haiti – most of the work done by natives.
2	Tainos and Carib societies destroyed in order to provide work for the Spanish.
3	Columbus had captured natives to sell as slaves – Isabella not pleased and sent slaves back to Haiti.
4	Encomienda system set up. Nicolas de Ovando set this up in 1502.
5	Diseases like smallpox killed many natives. 1492 around 500,000 natives. By 1507 only 60,000.

Impact of contact with the Natives		
Gold, cotton and tobacco	Tainos and Caribs	Incident at Samana
Natives wore gold but would not tell the Spaniards where it came from. Kapock was used by the natives – it could be spin into thread and woven into cloth. Spaniards sailing with Columbus quickly picked up the habit of smoking tobacco.	Tainos – considered friendly and peaceful, allowed Columbus to build La Navidad, found at San Salvador. Caribs – mainly found east of the Bahamas, raided the Tainos taking women, rumours that they were cannibals.	On way back to Spain – Samana, Haiti. Men went ashore and found dried human heads and large canoes. An exchange went wrong and erupted in violence. They learnt that the natives could be hostile.

**The Treaty of Tordesillas 1494**  
On 7<sup>th</sup> June an agreement was reached between Spain and Portugal. An imaginary line was drawn from the North to the South pole. All lands to the west were for Spain. Lands to the east were for Portugal.

Columbus as governor	
La Navidad and Isabela	Santo Domingo
La Navidad found burned to the ground on 28 <sup>th</sup> Nov 1493. A new settlement was named Isabela. It failed as Spaniards wanted adventure and gold. Columbus went exploring and found Jamaica. He returned to Haiti in September 1494.	Bartholomew left in charge when Columbus returned to Spain. He built Santo Domingo. Columbus returned in 1498 to problems – Tainos and Spaniards not cooperating. Order restored by giving Spanish rebels land and providing native labourers to work the land. Rebellions kept breaking out so Columbus carried out executions on both natives and Spaniards. September 1500 – Bobadilla sent to take over from Columbus, Columbus arrested and sent back to Spain in chains.

Imperial Policy towards the Caribbean	
<b>Importance of Santo Domingo</b> It became the centre of Spanish administration in the Caribbean. -Wide roads and squares surrounded impressive stone buildings -The building housed administration offices were rules were issued and taxes collected. -Courts were established to control the laws	<b>Establishment of a monopoly</b> In 1503, the Casa de Contractacion (House of Trade) was established in Seville, Spain. The aim was to control all trade from the Caribbean. Powers included: -Approve all voyages to the Caribbean. -Collect up to date trade routes. -Collect taxes. -Control who travels to the Indies. However, there was smuggling and people worked out ways to avoid paying the taxes.
<b>Catholic Missionaries</b> In 1503, Ferdinand and Isabella issued a series of rules about educating the Indians: -Indians were to live in towns and pay taxes. -Taught about Christianity and expected to live as Christians. -Taught how to read, write and dress. Reports reached Spain about the abuses of Indians. Dominicans were sent to stop the mistreatment. Spaniards shocked at the mistreatment of natives.	<b>Regulation of Exploration</b> Ferdinand and Isabella needed to establish Spanish control over exploration and discovery in the New World. -Every ship sailing to the Caribbean had to leave from Cadiz, Spain and had to register with the Spanish. -Anyone could live in the Indies freely. If the discovered gold, 2/3 had to go to the Spanish government, 1/3 could be kept by the discoverer. 1/10 of all other products had to be sent to Spain. -1/10 if all cargo carried by ship sailing to the New World had to be Spanish.



# Year 10 History : 1. Spain reaches the New World, c1490-1512



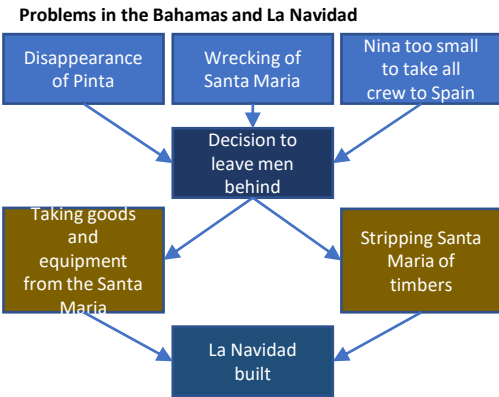
Spain c1490: exploration, religion and ambition

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  - Defend Christendom
  - Spread Christianity to new lands



Why did Spain agree to sponsor Columbus?	
Christianity	
Priest	
Status	
Wealth	

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Finding ships and crew	
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Sailors' fears	
Possible Mutiny	
Quarrels	
Land	



Columbus' return to Spain 1493	
4 <sup>th</sup> March 1493 Columbus lands in Portugal and meets King John. Columbus is sent _____.	<b>The role of the pope</b> The Pope gives Isabella and Ferdinand his support for _____.
<b>Rivalry with Portugal</b> King John believed he had _____ This led to _____.	<b>Columbus' Rewards</b> Isabella and Ferdinand encouraged _____ Columbus was given _____.

Effects of Spanish Settlements	
1	
2	
3	
4	
5	

Impact of contact with the Natives		
Gold, cotton and tobacco	Tainos and Caribs	Incident at Samana
Natives wore _____ but would not tell the _____ where it _____ was used by the natives – it could be spun into _____ Spaniards sailing with Columbus quickly picked up the habit of _____	Tainos – considered _____, allowed Columbus to build La Navidad, found at San Salvador. Caribs – mainly found east of the Bahamas, _____ the Tainos _____	On way back to Spain – Samana, Haiti. Men went ashore and found _____ heads and _____. An exchange went wrong and _____. They learnt that the natives _____.

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Imperial Policy towards the Caribbean	
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Keywords		What we are learning in this unit		B.	The 5 Pillars - Salah		
Tawalla	Showing love for God and for those who follow Him	A. The 5 Pillars and 10 Obligatory Acts B. Salah C. Sawm D. Zakah E. Hajj F. Jihad G. Id-ul-Adha H. Id-ul-Fitr		What is it?	<ul style="list-style-type: none"> <li>“Salah is a prescribed duty that has to be performed at the given time by the Qur’an”</li> <li>Muslims pray 5 times per day and this allows them to communicate with Allah.</li> <li>The prayers are done at dawn (fajr), afternoon (zuhr), late afternoon (asr), dusk (maghrib) and night (isha)</li> <li>Muslims face the holy city of Makkah when paying.</li> </ul>		
Tabarra	Disassociation with God’s enemies			A.	5 Pillars of Islam and 10 obligatory acts	Wuzu	<ul style="list-style-type: none"> <li>The washing process to purify the mind and body for prayer</li> <li>Muhammad said the key to Salah is cleanliness</li> <li>Hands, arms, nose, mouth, head, neck and ears are cleaned as well as both feet up to the ankle.</li> </ul>
Khums	The obligation to pay one-fifth of acquired wealth			What are the 5 pillars	<ul style="list-style-type: none"> <li>5 key practices or duties for Muslims</li> <li>Both Sunni and Shi’a keep these (Shi’a have them as part of the 10 obligations)</li> <li>They are seen as pillars “holding up the religion” and are all of equal importance</li> </ul>	Rak’ahs and recitations	<ul style="list-style-type: none"> <li>These are the movements that Muslims make during prayer</li> <li>Takbir – raise hands to ears and say ‘Allahu Akbar’</li> <li>Qiyam – Standing, Muslims recite Surah</li> <li>Then bow to the waist saying “Glory be to my Great Lord and praise be to Him”</li> <li>Then sink to their knees saying “Glory be to my Lord, The Most Supreme...”</li> </ul>
Lesser jihad	The physical struggle or holy war in defence of Islam			What are the 10 obligatory acts	<ul style="list-style-type: none"> <li>There are 10 obligations for a Muslim according to the Shi’a branch of Islam.</li> <li>These include prayer, fasting, almsgiving, pilgrimage, jihad, khums, directing others towards good, forbidding evil, tawalla and tabarra</li> </ul>	Salah at home	<ul style="list-style-type: none"> <li>Salah is a big part of family life</li> <li>Meals and other activities are usually scheduled to fit around prayer times</li> <li>Families pray all together and might have a room set aside for prayer</li> </ul>
Greater jihad	The daily struggle and inner spiritual striving to live as a Muslim			Shahadah	<ul style="list-style-type: none"> <li>Shahadah is the first of the 5 pillars</li> <li>It is the Muslim declaration of faith</li> <li>“there is no God but Allah, and Muhammad is His messenger”</li> <li>This is a statement that Muslims reject anything but Allah as their focus of belief</li> <li>It also recognises that Muhammad has an important role and his life is an example to follow</li> </ul>	Salah in the mosque	<ul style="list-style-type: none"> <li>All mosques have a qiblah wall which is to show where to face Makkah</li> <li>Men and women pray in separate rooms at the Mosque</li> </ul>
Sunni	Muslims who believe in the successorship of Abu Bakr, Umar, Uthman and Ali as leaders after the Prophet Muhammad			Jumma	<ul style="list-style-type: none"> <li>Jumma is congregational prayer held on a Friday at the mosque where the imam leads the prayer</li> <li>Praying together as a community develops the feeling of unity amongst Muslims</li> <li>Men are obliged to attend unless they are sick or too old</li> <li>Women do not have to go – they may pray at home instead</li> </ul>		
Shi’a	Muslims who believe in the Imamah, leadership of Ali and his descendants			Differences between Sunni and Shi’a	<ul style="list-style-type: none"> <li>Shi’a Muslims combine some prayers so they may only pray 3x a day</li> <li>Shi’a use natural elements e.g. clay where their head rests</li> </ul>		
Niyah	Intention during prayer - having the right intention to worship God						
Du’a	A personal prayer that is done in addition to Salah e.g. asking Allah for help						
		<i>Jihad</i>					
Lesser Jihad		<ul style="list-style-type: none"> <li>Originated when Prophet Muhammad and early Muslims were being attacked and oppressed by the Meccans and had no choice but to engage</li> <li>“Fight in the way of God those who fight against you but do not transgress”</li> <li>Conditions for declaration                             <ul style="list-style-type: none"> <li>self-defense</li> <li>proportionate</li> <li>legitimate authority</li> <li>no harm to civilians</li> </ul> </li> </ul>					
Greater Jihad		<ul style="list-style-type: none"> <li>A struggle within oneself to follow the teachings of Islam and be a better person</li> <li>e.g. perform the Five Pillars, follow Sunnah and avoid temptation</li> <li>“encourage what is right and forbid what is wrong”</li> </ul>					





Keywords		What we are learning in this unit		B.	The 5 Pillars - Salah		
Tawalla		A. The 5 Pillars and 10 Obligatory Acts B. Salah C. Sawm D. Zakah E. Hajj F. Jihad G. Id-ul-Adha H. Id-ul-Fitr		What is it?			
Tabarra				A.	5 Pillars of Islam and 10 obligatory acts	Wuzu	
Khums				What are the 5 pillars		Rak'ahs and recitations	
Lesser jihad				What are the 10 obligatory acts		Salah at home	
Greater jihad				Shahadah		Salah in the mosque	
Sunni				<i>Jihad</i>		Jummah	
Shi'a						Lesser Jihad	
Niyah						Greater Jihad	
Du'a		Differences between Sunni and Shi'a					



The 5 Pillars - Zakah	
The role of giving alms	<ul style="list-style-type: none"> <li>• <b>Muslims believe it is their duty to ensure Allah's wealth has been distributed equally as everyone is the same</b></li> <li>• The Qur'an commands to give to those in need</li> </ul>
The significance of giving alms	<ul style="list-style-type: none"> <li>• Giving 2.5% of savings/wealth to charity</li> <li>• Wealth can cause greed which is evil, so Zakah purifies wealth – wealth is given by God and must be shared</li> <li>• The Prophet Muhammad practiced Zakah as a practice in Medina</li> <li>• Given to the poor, needy and travellers</li> <li>• <b>Sadaqah</b> is giving from the heart out of generosity and compassion</li> </ul>
Khums	<ul style="list-style-type: none"> <li>• Shi'a Islam – one of the 10 obligatory acts</li> <li>• 20% of any profit earned by Shi'a Muslims paid as a tax</li> <li>• Split between charities that support Islamic education and anyone who is in need</li> <li>• <b>"know that whatever of a thing you acquire, a fifth of it is for Allah, for the Messenger, for the near relative, and the orphans, the needy, and the wayfarer"</b></li> </ul>

The 5 Pillars - Sawm	
The role of fasting	<ul style="list-style-type: none"> <li>• Fasting during Ramadan (9<sup>th</sup> month in Muslim calendar)</li> <li>• Muslims give up food, drink, smoking and sexual activity in daylight hours</li> <li>• Pregnant people, children under 12, travellers and elderly people are exempt from fasting.</li> </ul>
The significance of fasting	<ul style="list-style-type: none"> <li>• Ramadan is believed to be the month that Prophet Muhammad began to receive revelations of the Qur'an</li> <li>• Helps Muslims to become spiritually stronger</li> </ul>
Reasons for fasting	<ul style="list-style-type: none"> <li>• Obeying God and exercising self-discipline</li> <li>• Develops empathy for the poor</li> <li>• Appreciation of God's gifts</li> <li>• Giving thanks for the Qur'an</li> <li>• Sharing fellowship and community with other Muslims</li> </ul>
Night of power	<ul style="list-style-type: none"> <li>• The night when the Angel Jibril first appeared to Muhammad and began revealing the Qur'an.</li> <li>• The most important event in history – <b>"better than a thousand months"</b> <b>[Surah 97:3]</b></li> <li>• Laylat Al-Qadr is the holiest night of the year. Muslims try to stay awake for the whole night to pray and study for the Qur'an</li> </ul>

The 5 Pillars - Hajj	
The role of pilgrimage	<ul style="list-style-type: none"> <li>• A pilgrimage to Makkah which is compulsory for Muslims to take at least once as long as they can afford it and are healthy</li> </ul>
The significance of pilgrimage	<ul style="list-style-type: none"> <li>• God told Ibrahim to take his wife and son on a journey and leave them without food or water</li> <li>• Hajira ran up and down two hills in search of water, could not find any and prayed to God. Then water sprung from the ground. This is the Zamzam well</li> <li>• When Ibrahim returned he was commanded to build the Ka'ba as a shrine dedicated to Allah</li> <li>• Hajj is performed in the month of Dhu'l-Hijja</li> </ul>
Actions	<ul style="list-style-type: none"> <li>• Ihram – dressing in two pieces of white cloth</li> <li>• Circling the Ka'aba 7 times (tawaf)</li> <li>• Drinking water from the Zamzam well like Hajar</li> <li>• walking between Al-Safa and Al-Marwa hills seven times</li> <li>• Throwing stones at 3 pillars (jamarat) to represent casting out the devil and remembering Ibrahim throwing stones at the devil to drive him away</li> <li>• Asking Allah for forgiveness at Mt Arafat</li> <li>• Collecting pebbles at Muzdalifah</li> </ul>

Id-ul-Adha, Id-ul-Fitr, Ashura	
Id-ul-Adha  Not an official holiday in UK	<ul style="list-style-type: none"> <li>• <b>Festival of sacrifice</b></li> <li>• Marks the end of Hajj and is a chance for whole Ummah to celebrate</li> <li>• <b>Origins</b> – Ibrahim's commitment to God in being willing to sacrifice his son, Ishmael. God was testing Ibrahim</li> <li>• <b>Key events</b> – new clothes, sacrificing an animal, visiting the Mosque.</li> <li>• People ask a butcher to slaughter a sheep for them and share the meat with the community</li> </ul>
Id-ul-Fitr  Public holiday in Muslim majority countries, not UK	<ul style="list-style-type: none"> <li>• <b>Festival of fast-breaking</b></li> <li>• Marks the end of Ramadan</li> <li>• <b>Key events</b> – Decorate homes with colourful light and banners, dress in new clothes, gather in Mosques, give gifts and money, give to the poor</li> <li>• <b>Zakah ul-Fitr</b> – donation to the poor so that everyone can eat a generous meal at the end of Ramadan.</li> </ul>
Ashura	<ul style="list-style-type: none"> <li>• Sunni celebration – many fast on this day which was established by Prophet Muhammad</li> <li>• Shi'a mourning – Husayn was murdered and beheaded. Muslims remember his death and betrayal</li> <li>• <b>Key events</b> – public displays of grief, day of sorrow, wear black, re-enactments of martyrdom, not a public holiday in Britain but Muslims may have day off school</li> </ul>



*The 5 Pillars - Zakah*

The role of giving alms	
The significance of giving alms	
Khums	

*The 5 Pillars - Sawm*

The role of fasting	
The significance of fasting	
Reasons for fasting	
Night of power	

*The 5 Pillars - Hajj*

The role of pilgrimage	
The significance of pilgrimage	
Actions	

*Id-ul-Adha, Id-ul-Fitr, Ashura*

Id-ul-Adha Not an official holiday in UK	
Id-ul-Fitr Public holiday in Muslim majority countries, not UK	
Ashura	



**GCSE Unit 11 SPANISH Knowledge organiser.**  
**Topic Education Post - 16**



What we are learning this term:	
A. Talking about options at 16 B. Discussing choices at 18: work or university? C. Talking about different jobs D. Looking for and applying for jobs E. Using a variety of tenses F. Using 'quisiera'	
6 Key Words for this term	
1. porcentaje	4. la empresa
2. por ciento	5. el/la jefe/a
3. la ama de casa	6. cuidar a

**11.1G ¿Qué voy a hacer?**

a tiempo completo	full time
a tiempo parcial	part time
el/la alumno/a	pupil
aprender	to learn
el aprendizaje	apprenticeship
aprobar	to pass
la asignatura	subject
avanzado/a	advanced
el beneficio	benefit
buscar	to look for
la carrera (universitaria),(university) course, career	carrera profesional
conseguir	to get, to manage, to achieve
el consejo	advice
continuar	to continue
dejar	to leave
el dinero	money
encontrar	to find
esperar	to wait for, to hope, expect
los estudios	studies
el examen	exam
la experiencia	experience
la experiencia laboral	work experience
feo/a	ugly
la informática	information technology, IT
mejor	better, best
mientras	while
la nota	grade, mark, result
la opción	option
la oportunidad	opportunity
quedar	to stay
el resultado	result
sacar buenas / malasto	get good / to get bad
grades	
notas	
seguir + gerund	to carry on ...ing

**11.1F ¿Trabajar o estudiar?**

considerar	to consider
demonstrar	to show, demonstrate
la desventaja	disadvantage
estar harto/a de	to be fed up with
estar obsesionado/a con	to be obsessed with
furioso/a	furious
ganar	to earn, to win, to gain
la habilidad	skill, ability
horroroso/a	dreadful
imaginar	to imagine
inútil	useless
mundo	world
necesitar	to need
pedir	to ask for
peor	worse, worst
por otra parte	on the other hand
la promoción	promotion
relacionarse con	to relate to, to get on with
repasar	to revise
el repaso	revision
seguro/a	sure
la sociedad	society
todavía	still
vale la pena	it's worth it, it's worthwhile

Key Verbs				
Aprender To learn	Ir To go	Querer To want	Preparar To prepare	Dar To give
Aprendo I learn	Voy I go	Quiero I want	Preparo I prepare	Doy I give
Aprendes You learn	Vas You go	Quieres You want	Preparas You prepare	Das You give
Aprende He/she/it learns	Va s/he goes	Quiere He/she/ it wants	Prepara He/she/it prepares	Da He/she/it gives
Aprendemos We learn	Vamos They go	Queremos We want	Preparamos We prepare	Damos We give
Aprenden They learn	Van They go	Quieren They want	Preparan They prepare	Dan They give

**11.1H ¿Vale la pena ir a la universidad?**

a solas	on one's own
acabar de + infinitive	to have just
adecuado/a	adequate, decent
aislado/a	isolated
al final de	at the end of
apelar	to appeal
aprender	to learn
así que	so
avanzado/a	advanced
el beneficio	benefit
bien pagado/a	well paid
la calidad	quality
la carrera (universitaria)	university course, career
claro	of course
conseguir	to get, to manage, to achieve
consejo	advice
deber	to owe
devolver	to give back, to pay back
disfrutar	to enjoy
la edad	age
escoger	to choose
esperar	to wait for, to hope, to expect
estar a punto de	to be about to
la experiencia laboral	work experience
feo/a	ugly
el folleto	leaflet
el/la graduado/a	graduate
hacerse miembro	to become a member
inquietar	to worry, to concern
lejos de	far from
mejor	better, best

**11.1H ¿Vale la pena ir a la universidad?**

el mundo laboral	world of work
ofrecer	to offer
olvidarse	to forget
pedir prestado	to borrow
poco a poco	bit by bit
preocupar	to worry, to be concerned
recoger	to pick up, to collect
la residencia de estudiantes	student residence
el resultado	result
seguir	to follow
seguir + gerund	to carry on ...ing
tan pronto como	as soon as
el título (university)	degree
tomar un año libre	to take a year out
la ventaja	advantage

**GCSE Unit 11 SPANISH Knowledge organiser.**  
**Topic Education Post - 16**



**What we are learning this term:**

- A. Talking about options at 16
- B. Discussing choices at 18: work or university?
- C. Talking about different jobs
- D. Looking for and applying for jobs
- E. Using a variety of tenses
- F. Using 'quisiera'

**6 Key Words for this term**

- |                   |                 |
|-------------------|-----------------|
| 1. porcentaje     | 4. la empresa   |
| 2. por ciento     | 5. el/la jefe/a |
| 3. la ama de casa | 6. cuidar a     |

**11.1G ¿Qué voy a hacer?**

a tiempo completo \_\_\_\_\_  
 a tiempo parcial \_\_\_\_\_  
 el/la alumno/a \_\_\_\_\_  
 \_\_\_\_\_ to learn  
 el \_\_\_\_\_ apprenticeship  
 aprobar to \_\_\_\_\_  
 la asignatura \_\_\_\_\_  
 \_\_\_\_\_ advanced  
 el beneficio \_\_\_\_\_  
 \_\_\_\_\_ to look for  
 la carrera (universitaria),(university) course, career  
 carrera profesional \_\_\_\_\_  
 \_\_\_\_\_ to get, to manage, to achieve  
 el consejo \_\_\_\_\_  
 \_\_\_\_\_ to continue  
 dejar to \_\_\_\_\_  
 el \_\_\_\_\_ money  
 encontrar to \_\_\_\_\_  
 \_\_\_\_\_ to wait for, to hope, expect  
 los estudios \_\_\_\_\_  
 el examen \_\_\_\_\_  
 la experiencia \_\_\_\_\_  
 la experiencia laboral work \_\_\_\_\_  
 \_\_\_\_\_ ugly  
 la \_\_\_\_\_ information technology, IT  
 \_\_\_\_\_ better, best  
 mientras \_\_\_\_\_  
 la \_\_\_\_\_ grade, mark, result  
 la opción \_\_\_\_\_  
 la \_\_\_\_\_ opportunity  
 quedar to \_\_\_\_\_  
 el \_\_\_\_\_ result  
 Sacar \_\_\_\_\_ to get good / to get bad grades  
 notas \_\_\_\_\_  
 seguir + gerund \_\_\_\_\_

**11.1F ¿Trabajar o estudiar?**

\_\_\_\_\_ to consider  
 \_\_\_\_\_ to show, demonstrate  
 la desventaja \_\_\_\_\_  
 \_\_\_\_\_ to be fed up with  
 estar obsesionado/a con to be obsessed  
 with \_\_\_\_\_  
 furioso/a \_\_\_\_\_  
 \_\_\_\_\_ to earn, to win, to gain  
 la habilidad \_\_\_\_\_  
 horroroso/a \_\_\_\_\_  
 \_\_\_\_\_ to imagine  
 inútil \_\_\_\_\_  
 mundo \_\_\_\_\_  
 \_\_\_\_\_ to need  
 pedir \_\_\_\_\_  
 \_\_\_\_\_ worse, worst  
 por otra parte \_\_\_\_\_  
 la promoción \_\_\_\_\_  
 \_\_\_\_\_ to relate to, to get on  
 with \_\_\_\_\_  
 repasar to \_\_\_\_\_  
 el repaso \_\_\_\_\_  
 \_\_\_\_\_ sure  
 la sociedad \_\_\_\_\_  
 todavía \_\_\_\_\_  
 vale la pena \_\_\_\_\_

Key Verbs				
Aprender To _____	_____ To go	Querer To want	Preparar _____	Dar To give
_____ I learn	_____ I go	Quiero _____	_____ I prepare	_____ I give
_____ You learn	_____ You go	Quieres _____	Preparas You prepare	_____ You give
Aprende He/she/it learns	Va _____	Quiere He/she/ it wants	_____ He/she/it prepares	_____ He/she/it gives
Aprendemos _____	_____ They go	_____ We want	Preparamos We prepare	_____ We give
Aprenden They learn	Van They go	Quieren They want	_____ They prepare	Dan They give

**11.1H ¿Vale la pena ir a la universidad?**

a solas \_\_\_\_\_  
 \_\_\_\_\_ to have just  
 adecuado/a \_\_\_\_\_  
 \_\_\_\_\_ isolated  
 al final de \_\_\_\_\_  
 \_\_\_\_\_ to appeal  
 aprender to \_\_\_\_\_  
 así que \_\_\_\_\_  
 avanzado/a \_\_\_\_\_  
 \_\_\_\_\_ benefit  
 bien pagado/a \_\_\_\_\_  
 la calidad \_\_\_\_\_  
 la \_\_\_\_\_ university course, career  
 claro \_\_\_\_\_  
 \_\_\_\_\_ to get, to manage, to  
 achieve \_\_\_\_\_  
 el consejo \_\_\_\_\_  
 deber \_\_\_\_\_  
 \_\_\_\_\_ to give back, to pay  
 back \_\_\_\_\_  
 disfrutar to \_\_\_\_\_  
 la edad \_\_\_\_\_  
 \_\_\_\_\_ to choose  
 \_\_\_\_\_ to wait for, to hope, to  
 expect \_\_\_\_\_  
 estar a punto de to \_\_\_\_\_  
 la experiencia laboral \_\_\_\_\_  
 \_\_\_\_\_ ugly  
 el \_\_\_\_\_ leaflet  
 el/la graduado/a \_\_\_\_\_  
 \_\_\_\_\_ to become a member  
 \_\_\_\_\_ to worry, to concern  
 lejos de \_\_\_\_\_  
 mejor \_\_\_\_\_

**11.1H ¿Vale la pena ir a la universidad?**

el mundo laboral \_\_\_\_\_  
 ofrecer to \_\_\_\_\_  
 \_\_\_\_\_ to forget  
 pedir prestado to \_\_\_\_\_  
 \_\_\_\_\_ bit by bit  
 \_\_\_\_\_ to worry, to be  
 concerned \_\_\_\_\_  
 \_\_\_\_\_ to pick up, to collect  
 la residencia de \_\_\_\_\_  
 estudiantes \_\_\_\_\_  
 el resultado \_\_\_\_\_  
 \_\_\_\_\_ to follow  
 seguir + gerund to \_\_\_\_\_  
 tan pronto como \_\_\_\_\_  
 el título (university) \_\_\_\_\_  
 \_\_\_\_\_ to take a year out  
 advantage \_\_\_\_\_

Translation Practice. G – blue F – orange H - Green	
Quiero _____ estudiando	I want <b>to carry on</b> studying
Quiero _____ más dinero	I want <b>to earn</b> more money
_____ que seguir estudiando	<b>I will have to</b> carry on studying
Si _____ buenas notas, iré a la universidad	If <b>I get</b> good grades I will go to the university
Voy a _____ el instituto	I am going <b>to quit</b> school
No _____ que hacer	I don't <b>know</b> what to do
He _____ que no quiero trabajar	I have <b>decided</b> that I don't want to work
Creo que _____ mejor estudiar	I believe that <b>it will be</b> better to study
Quiero buscar un _____	I want to find an <b>apprenticeship</b>
La _____ de mi plan es que...	The <b>advantage</b> to my plan is that...
Hemos _____ otro plan	We have <b>considered</b> another plan
_____ un titulo universitario	<b>I need</b> a degree
Mi madre es _____	My mum is <b>a dentist</b>
_____ contento cuando termine mis estudios	<b>I will be</b> content when I finish my studies
_____ la decision tan pronto como tenga mis resultados	<b>I will make</b> the decision as soon as I have my results
Espero _____ una casa	I hope to <b>buy myself</b> a house
Se puede _____ de todo lo que hay	You can <b>enjoy</b> everything there is
_____ dejado de estudiar	<b>She had</b> quit studying

Key Questions: Answer the following in your own words. Use these model answers	
¿Qué vas a hacer/estudiar/trabajar cuando termines en el colegio/ si sacas buenas notas?	Si saco buenas notas/en el futuro .. ...voy a estudiar/me gustaría estudiar .... en la universidad porque será muy útil para mi carrera, porque quiero trabajar en el aire libre/porque siempre me encanta trabajar con niños ... En el futuro, voy a trabajar como (job) porque ...
¿Qué son tus planes para el futuro? - ¿Cuál es la ventaja de este plan?	Las desventajas de mi trabajo preferido son que... Las ventajas de mi trabajo preferido son que...
¿Qué son las ventajas y desventajas de ir a la universidad?	Las ventajas/desventajas son que .. es cara pagar los gastos para la universidad, el precio es muy caro, tienes que prestar dinero del gobierno, tienes que trabajar y estudiar mucho, tienes que esforzarse mucho, es inquietante no vivir con los padres, y vivir con otra gente, va a ser fenomenal encontrar nuevos amigos ...
¿Qué trabajo quieres hacer? Por qué te interesa este trabajo? Qué son las ventajas y desventajas de hacer este trabajo?	En el futuro, quiero ser (job). Quiero hacer este trabajo porque... me interesa mucho / puedo ganar mucho dinero / tengo la oportunidad de trabajar en equipos / prefiero trabajar en una oficina/ prefiero trabajar en el aire libre/ quiero un trabajo donde puedo utilizar misidiomas / quiero un trabajo donde puedo mejorar mi confianza con el público.
¿Cuáles son los aspectos positivos de encontrar un trabajo a los dieciocho años?	...Las (des)ventajas de empezar a trabajar a los 18 años son que... ...No tienes la oportunidad de ir a la universidad ...No tienes tantas oportunidades de ganar tanto dinero ...Puedes empezar a ganar dinero más joven que es importante para el futuro ...Puedes aprender una carrera mientras estás haciendo el trabajo – no tienes que estudiar más

Key Grammar	
Forming the preterite (past tense). Always remove the –AR, –ER, –IR endings first	Remember the preterite (past) tense endings for –AR, –ER, –IR verbs. They are:  -AR: -é, -aste,-ó, -amos, -astéis, -aron -ER: -í, -íste, -ió, -imos, -istéis, -ieron -IR : -í, -iste, -ió, -imos, -istéis, -ieron
Forming the conditional ('would like to' tense). Always remove the –AR, –ER, –IR endings first	Remember the conditional ('would') tense endings for –AR, –ER, –IR verbs. They are:  -AR, –ER, –IR: -ía, -ías, -ía, -íamos, -íais, -ían
Using the immediate future tense IR + A + INFINITIVE	Voy a casarme = I'm going to get married Va a discutir con su padre = He / She is going to argue with his/her father

# GCSE Business. Paper 1. Making the Business Effective

<b>27. A private limited company (Limited Liability)</b>
When a business fails, a company that has limited liability restricts the losses suffered by the business owners (shareholders) to the sum of money that they invested in the business.
<b>Benefits of limited companies.</b>
A company can have share capital, which makes it easier to divide up the ownership between different investors.
If the business needs to raise more capital, it is quite easy to issue more shares for sale to other investors
The business continues to exist even if the founder dies. The company develops a life of its own
Due to limited liability, the owners/shareholders can be bold about investing in the future of the business. If a bold move goes wrong, the business may suffer but individual shareholders are not liable for debts
<b>28. Sole Trader (Unlimited Liability)</b>
Treating the business and the individual owner as the same entity, therefore making the business owner responsible for all the debts in a business.
<b>Why ignore Limited Liability?</b>
The only logical reason for ignoring limited liability is if there is no realistic possibility of debts building up. For example, if the business is a market stall, where goods are bought for cash. In this scenario debts would be hard to build up and firms will be reluctant to pay the related costs and fill out the required paperwork.
<b>33. Business Locations</b>
Location is key to the success of any business
<b>Factors influencing business location:</b>
<b>Proximity to Market:</b> For many businesses this is the most important factor. For a physical service such as a shop, restaurant or hotel, customer convenience will be critical revenue. Shops must be located in areas of high footfall.
<b>Proximity to Materials:</b> For manufacturing businesses, nearness to materials may be more important than nearness to customers. Being close to materials can cut costs for firms in manufacturing.
<b>Proximity to Labour:</b> Labour is key to any business; therefore businesses must be located in areas where the labour force is equipped with the necessary skills to allow the business to thrive.
<b>Proximity to Competitors:</b> Many businesses want at location far away from competitors – effectively being the only supplier to customers in a local area. However, some businesses will want to be closer to their competitors as location is key to their business. For example; location is key for restaurants and more important than proximity to competitors.
<b>34. How has the internet impacted business location:</b>
Due to the impact of e-commerce, business location matters less. Firms can locate their head office anywhere they choose provided the local labour force are equipped with the skills to run the administration effectively. Internet based firms will have a more extensive stock range in all sizes and can cater more extensively for consumers needs than retail outlets.
<b>35. Business Location: Key terms:</b>
<b>Fixed Premises:</b>
Real life buildings such as shops, offices and warehouses.
<b>Proximity:</b>
Nearness: Whether or not a business wants to be closer to a factor such as its customers.

<b>29. Key Words: Making your business effective</b>	
<b>Term</b>	<b>Definition</b>
Bankrupt	When an individual is unable to pay their debts, even after all personal assets have been sold for cash
Private Limited Company	A small family business in which shareholders enjoyed limited liability
Sole Trader	A business run by one person; that person has unlimited liability for any business debts.
<b>30. Franchising</b>	
Paying a franchise owner for the right to use an established business name, branding and business methods	
<b>Why do Businesses expand by selling franchises?</b>	
A firm can expand its sales quickly; this helps fill gaps that other businesses will fill if they don't	
Franchise owners not only sell a franchise but will receive a share of all future sales. Subway receives 8% of the sales revenue of all 45,000 stores.	
The Franchise owner can concentrate on developing new products and services, and on high quality advertising.	
<b>31. What are the benefits of Franchising for a entrepreneur?</b>	
When you franchise you buy the companies images, products and methods. Starting a business requires a wide range of skills, by franchising you are giving your business a stronger starting point.	
An individual outlet/business could never afford image building TV advertising, franchising enables business to benefit from major marketing campaigns.	
<b>32. What are Royalties?</b>	
The percentage of sales revenue to be paid to the overall franchise owners	
<b>36. Marketing Mix</b>	
The four factors that make up the marketing mix, usually referred to as the marketing mix. Usually referred to as the four ps.	
Product	Targeting customers with a product that has the right blend of functional aesthetic benefits without being too expensive to produce
Price	Setting the price that retailers must pay which in turn affects the consumers price
Promotion	Includes all the methods that a business uses to persuade customers to buy, for example branding, packaging, advertising to boost long term image of the product and short-term offers
Place	How and where the supplier is going to get the product or service to the consumer; it includes selling products to retailers and getting the products displayed in prominent positions.
<b>37. What is a business plan?</b>	
A detailed document setting out the marketing and financial thinking behind a proposed new business.	
<b>38. What should a good business plan contain?</b>	
1.	The business idea; Why, who & how?
2.	Business Aims & Objectives; What is business setting out to do?
3.	Target Market; Who will you be your target consumer?
4.	Marketing Plan; How will you market your product to consumers?
5.	Forecast revenue, costs and profits; Working out the break-even point
6.	Cash Flow Forecast; Cash is key to any business
7.	Sources of Finance; How will the business fund itself?
8.	Location; Where should the business be based?
9.	Marketing Mix: How will the company market their product?

# GCSE Business. Paper 1. Making the Business Effective

<b>27. A private limited company (Limited Liability)</b>
Benefits of Limited companies.

<b>28. Sole Trader (Unlimited Liability)</b>
Why ignore Limited Liability?

<b>33. Business Locations</b>

<b>34. How has the internet impacted business location:</b>

<b>29. Key Words: Making your business effective</b>	
Term	Definition
Bankrupt	
Private Limited Company	
Sole Trader	

<b>30. Franchising</b>

<b>31. What are the benefits of Franchising for a entrepreneur?</b>

<b>36. Marketing Mix</b>	
The four factors that make up the marketing mix, usually referred to as the marketing mix. Usually referred to as the four ps.	
Product	
Price	
Promotion	
Place	




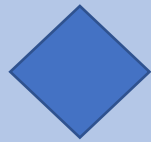
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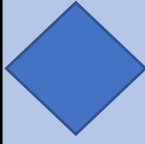
# Year 10 Computer Science – Term 4

A.	Terms
<b>Abstraction</b>	The process of removing all unnecessary details from a problem.
<b>Algorithm</b>	The sequence of steps required to carry out a specific task.
<b>Assignment</b>	Setting the value of a variable in a computer program.
<b>Data</b>	Units of information which are acted upon by instructions.
<b>Decomposition</b>	Breaking down a problem into smaller steps that are easier to work with and solve.
<b>Flowchart</b>	A diagram which shows the step-by-step flow of an algorithm.
<b>Input</b>	Data which is inserted into a system to be processed or stored.
<b>Output</b>	Data which is sent out of a system.
<b>Process</b>	An action taken by the program without input from the user.
<b>Pseudocode</b>	A method of writing an algorithm using plain English.
<b>Variable</b>	A memory location within a computer where values are stored.

What we are learning this term:		
A. Terms B. Common Algorithms C. Flowcharts D. Data Types		
B.	Common Algorithms	Worked Example
<b>Binary Search</b>	Compares the search object to the middle point of a sorted list. If they are not equal, the half in which the target cannot lie is eliminated and the search continues on the remaining half, again taking the middle point to compare to the search object, and repeating this until the target value is found or the end is reached.	2,5,6 searching for 6 Midpoint 5 5 < 6, remove left side of list 2,5,6 Midpoint 6 6 == 6 Item found
<b>Bubble Sort</b>	Sorts a list by continuously stepping through a list, swapping items until they appear in the correct order.	5,1,3 1,3,5 1st pass complete 1,3,5 1,2,5 2nd pass complete - sorted
<b>Linear Search</b>	Compares the search object with each item in the list in order from the beginning until it is found or the end is reached.	2,6,5 searching for 6 2 != 6 2,6,5 6==6 Item found
<b>Merge Sort</b>	Sorts a list by repeatedly dividing a list into two until all the elements are separated individually. Pairs of elements are then compared, placed into order and combined. The process is then repeated until the list is recompiled in the correct order as a whole.	5,1,3 5,1 3 Break list into sublists 5 1 3 Until sublists contain 1 # 1,5 3 Merge pairs 1,3,5 Until all sublists merged

C.	Flowchart Symbol		
	Symbol	Usage	Symbol Name
		The start or end of the algorithm.	Terminator
		An action which occurs during the algorithm.	Process
		Data is either inputted to or outputted from the algorithm.	Input/ Output
		A Yes/No, True/False decision.	Decision
D.	Data Types		Example
	<b>Boolean</b>	TRUE/FALSE or 1/0	<b>TRUE or 1</b>
	<b>Character</b>	A single, alphanumeric character.	<b>1 or A or !</b>
	<b>Integer</b>	Whole numbers	<b>15</b>
	<b>String</b>	One or more alphanumeric characters.	<b>1A!</b>
	<b>Real/Float</b>	Decimal numbers	<b>15.5</b>

# Year 10 Computer Science – Term 4

A.	Terms	What we are learning this term:		C.	Flowchart Symbol			
	<b>Abstraction</b>		<b>A. Terms</b> B. Common Algorithms C. Flowcharts D. Data Types		<b>Symbol</b>	Usage	Symbol Name	
	<b>Algorithm</b>							
	<b>Assignment</b>							
	<b>Data</b>							
	<b>Decomposition</b>							
	<b>Flowchart</b>							
	<b>Input</b>							
	<b>Output</b>							
	<b>Process</b>							
	<b>Pseudocode</b>							
	<b>Variable</b>							
B.		Common Algorithms	Worked Example	D. Data Types			Example	
	<b>Binary Search</b>		2,5,6 searching for 6	<b>Boolean</b>				
	<b>Bubble Sort</b>		5,1,3	<b>Character</b>				
	<b>Linear Search</b>		2,6,5 searching for 6	<b>Integer</b>				
	<b>Merge Sort</b>		5,1,3	<b>String</b>				
				<b>Real/Float</b>				

**Food spoilage**

As soon as food is harvested, slaughtered or processed it starts to change. This happens for two main reasons:  
•autolysis – self destruction, caused by enzymes present in the food;  
•microbial spoilage – caused by the growth of micro-organisms, i.e. bacteria, yeasts and moulds.

**Food spoilage: Autolysis – enzymes**

Enzymes are chemicals which can cause food to deteriorate in three main ways:  
•ripening – this will continue until the food becomes inedible, e.g. banana ripening;  
•browning – enzymes can react with air causing certain foods, e.g. apples, to discolour;  
•oxidation – loss of nutrients, such as vitamin C from food, e.g. over boiling of green vegetables.

**Food spoilage: Microbial spoilage**

Spoilage can be caused by the growth of:  
•bacteria – single celled micro-organisms which are present naturally in the environment;  
•yeasts – single celled fungi;  
•moulds – fungi which grow as filaments in food.

**Food contamination**

Food contamination can lead to food poisoning. There are three ways which food can be contaminated: **bacterial**, **chemical** and **physical**.

**Chemical contamination**

Chemical contamination can occur in a variety of ways at different stages of food processing and production. For example, chemicals from the farm; cleaning products used in the processing plant and fly spray used in the kitchen.

**Physical contamination**

This can occur in a variety of ways at different stages of food processing and production. Some examples are:  
•soil from the ground when harvesting;  
•a loose bolt from a processing plant when packaging;  
•a hair from a chef in the kitchen.

**Bacterial contamination**

Most bacteria are harmless but a small number can cause illness. These are known as pathogenic bacteria. Food which is contaminated with pathogenic bacteria can look, taste and smell normal. Bacteria can be transferred onto food through cross-contamination, via equipment, people or pests, or can be naturally present in the food. Some bacteria can produce toxins which can cause food poisoning.

**Micro-organisms**

Micro-organisms need conditions to survive and reproduce these can include:  
•temperature;  
•moisture;  
•food;  
•time;  
•oxygen and pH level.

**Temperature**

Bacteria need warm conditions to grow and multiply.  
•The ideal temperature for bacterial growth is 30°C – 37°C.  
•Some bacteria can still grow at 10°C and 60°C.  
•Most bacteria are destroyed at temperatures above 63 °C.  
•Bacterial growth danger zone is 5°C - 63°C.  
At very cold temperatures, bacteria become dormant – they do not die, but they cannot grow or multiply.

**Moisture**

Where there is no moisture bacteria cannot grow. However, bacteria and moulds can both produce spores which can survive until water is added to the food.

**Food**

Bacteria need a source of food to grow and multiply, these food are usually high in moisture, fat and protein, and may be ready to eat. Food where bacteria rapidly multiply in is called a **high risk food**. For example:  
•meat, meat products and poultry;  
•milk and dairy products;  
•eggs – uncooked and lightly cooked;  
•shellfish and seafood;  
•prepared salads and vegetables;  
•cooked rice and pasta.

**Time**

Given the right conditions, one bacterium can divide into two every 10-20 minutes through a process called binary fission.

**People at high risk of food poisoning**

Elderly people, babies and anyone who is ill or pregnant needs to be extra careful about the food they eat.

**Symptoms of food poisoning**

Food poisoning can be mild or severe. The most common symptoms are:  
•feeling sick;  
•being sick;  
•diarrhoea;  
•abdominal pain.

**Campylobacter**

**Sources**  
Raw and undercooked poultry, unpasteurized milk, contaminated water.

**Signs and symptoms**

Onset 2 – 5 days (can be longer).  
Fever, headache and dizziness for a few hours, followed by abdominal pain.

**E Coli 0157**

**Sources**  
Raw and undercooked meat and poultry. Unwashed vegetables. Contaminated water.  
**Signs and symptoms**  
Onset usually 3-4 days.  
Diarrhoea, which may contain blood, can lead to kidney failure or death.

**Listeria**

**Sources**  
Unpasteurised milk and dairy products, cook-chill foods, pate, meat, poultry and salad vegetables.  
**Signs and symptoms**  
Onset 1-70 days. Ranges from mild, flu-like illness to meningitis, septicemia, pneumonia.  
During pregnancy may lead to miscarriage or birth of an infected baby.

**Salmonella**

**Sources**  
Raw meat, poultry and eggs. Flies, people, sewage and contaminated water.  
**Signs and symptoms**  
Onset 6-48 hours. Headache, general aching of limbs, abdominal pain and diarrhoea, vomiting and fever. This usually lasts 1 – 7 days, and rarely is fatal.

**Staphylococcus aureus**

**Sources**  
Humans: nose, mouth and skin. Untreated milk.  
**Signs and symptoms**  
Onset 1 – 6 hours. Severe vomiting, abdominal pain, weakness and lower than normal temperature.  
This usually lasts 6 – 24 hours.

**Key terms**  
**Bacteria:** Small living organisms that can reproduce to form colonies. Some bacteria can be harmful (pathogenic) and others are necessary for food production, e.g. to make cheese and yogurt.  
**Binary fission:** The process that bacteria uses to divide and multiply.

**Cross-contamination:** The transfer of bacteria from one source to another. Usually raw food to ready to eat food but can also be the transfer of bacteria from unclean hands, equipment, cloths or pests. Can also relate to allergens.

**Food spoilage:** The action of enzymes or microorganisms which make the food unacceptable to consume.

**Food poisoning:** Illness resulting from eating food which contains food poisoning micro-organisms or toxins produced by micro-organisms.

**Toxin:** A poison produced by some bacteria which can cause food poisoning.

**Allergens**  
Allergenic ingredients can cause adverse reactions in some people. Care must be taken at each stage of food processing to prevent contamination.

**Desirable food changes**  
Desirable changes that can be caused by micro-organisms include:  
•bacteria in yogurt and cheese production;  
•mould in some cheeses, e.g. Stilton; blue cheese  
•yeast in bread production.

## Food Spoilage, Contamination and Food Poisoning

# KS4 FOOD AND NUTRITION KNOWLEDGE ORGANISER T4 Quiz

### Food spoilage

As soon as food is harvested, slaughtered or processed it starts to change. This happens for two main reasons:

- autolysis –
- microbial spoilage –

### Food spoilage: Autolysis – enzymes

Enzymes are chemicals which can cause food to deteriorate in three main ways:

- ripening
- browning
- oxidation

### Food spoilage: Microbial spoilage

Spoilage can be caused by the growth of:

- bacteria
- yeasts
- moulds

### Food contamination

Food contamination can lead to\_\_\_\_\_.There are three ways which food can be contaminated:

### Chemical contamination

Chemical contamination can occur in a variety of ways at different stages of food processing and production. For example:

### Physical contamination

This can occur in a variety of ways at different stages of food processing and production. Some examples are:

- 
- 

### Bacterial contamination

Most bacteria are harmless but a small number can cause illness. These are known as pathogenic bacteria. Food which is contaminated with pathogenic bacteria can look, taste and smell normal. Bacteria can be transferred onto food through cross-contamination, via equipment, people or pests, or can be naturally present in the food. Some bacteria can produce toxins which can cause food poisoning.

### Micro-organisms

Micro-organisms need conditions to survive and reproduce these can include:

- 
- 
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### Temperature

Bacteria need warm conditions to grow and multiply.  
•The ideal temperature for bacterial growth is \_\_\_\_\_.Some bacteria can still grow at 10°C and 60°C.  
•Most bacteria are destroyed at temperatures above \_\_\_\_\_  
•Bacterial growth danger zone is\_\_\_\_\_

•At very cold temperatures, bacteria become\_\_\_\_\_– they do not die, but they cannot grow or multiply.

### Moisture

Where there is no moisture bacteria cannot grow. However, bacteria and moulds can both produce spores which can survive until water is added to the food.

### Food

Bacteria need a source of food to grow and multiply, these food are usually high in moisture, fat and protein, and may be ready to eat. Food where bacteria rapidly multiply in is called a **high risk food**. For example:

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### Time

Given the right conditions, one bacterium can divide into two every 10-20 minutes through a process called\_\_\_\_\_.

### People at high risk of food poisoning

### Symptoms of food poisoning

Food poisoning can be mild or severe. The most common symptoms are:

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### Campylobacter Sources

### Signs and symptoms

### E Coli 0157 Sources

### Signs and symptoms

### Listeria Sources

### Signs and symptoms

### Salmonella Sources

### Signs and symptoms

### Staphylococcus aureus Sources

### Signs and symptoms

### Key terms

**Bacteria:**

**Binary fission:**

**Cross-contamination:**

**Food spoilage:**

**Food poisoning:**

**Toxin:**

### Allergens

Allergenic ingredients can cause adverse reactions in some people. Care must be taken at each stage of food processing to prevent contamination.

### Desirable food changes

Desirable changes that can be caused by micro-organisms include:

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# Year 10 PRODUCT DESIGN Term 4



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<ul style="list-style-type: none"> <li>Constantly available</li> <li>Low running cost</li> </ul>	<ul style="list-style-type: none"> <li>High start up</li> <li>Low wind = no energy</li> <li>Eyesore</li> </ul>																																																																																																																																																																																																			
<b>Solar</b>																																																																																																																																																																																																				
<b>Advantages</b>	<b>Disadvantages</b>																																																																																																																																																																																																			
<ul style="list-style-type: none"> <li>Reduces energy bills</li> <li>Clean resource</li> </ul>	<ul style="list-style-type: none"> <li>High start up</li> <li>No sun = no energy</li> <li>Eyesore</li> </ul>																																																																																																																																																																																																			
<b>Tidal</b>																																																																																																																																																																																																				
<b>Advantages</b>	<b>Disadvantages</b>																																																																																																																																																																																																			
<ul style="list-style-type: none"> <li>Long lasting</li> <li>Clean resource</li> </ul>	<ul style="list-style-type: none"> <li>High start up</li> <li>Unknown impact</li> </ul>																																																																																																																																																																																																			
<b>Hydro Electricity</b>																																																																																																																																																																																																				
<b>Advantages</b>	<b>Disadvantages</b>																																																																																																																																																																																																			
<ul style="list-style-type: none"> <li>No pollution</li> <li>Values can be opened quickly</li> </ul>	<ul style="list-style-type: none"> <li>Affects wildlife through flooding</li> <li>Eyesore</li> </ul>																																																																																																																																																																																																			
<b>Biomass</b>																																																																																																																																																																																																				
<b>Advantages</b>	<b>Disadvantages</b>																																																																																																																																																																																																			
<ul style="list-style-type: none"> <li>CO2 released used by plants</li> <li>Replacements can be grown</li> </ul>	<ul style="list-style-type: none"> <li>Creates pollution when burned</li> <li>Takes up land needed</li> </ul>																																																																																																																																																																																																			
<b>D.</b>	<b>Electronic Systems</b>																																																																																																																																																																																																			
<b>Input / Sensor</b>																																																																																																																																																																																																				
Light-dependent resistor (LDR) <i>changes with light</i>																																																																																																																																																																																																				
Thermistor <i>changes with temperature</i>																																																																																																																																																																																																				
Piezoelectric Sensor <i>changes with sound / electric energy</i>																																																																																																																																																																																																				
<b>Process / Control Device</b>																																																																																																																																																																																																				
Switch <i>turn on and off power</i>																																																																																																																																																																																																				
Resistor <i>to limit flow of current</i>																																																																																																																																																																																																				
Microcontroller <i>programmable decisions</i>																																																																																																																																																																																																				
<b>Output</b>																																																																																																																																																																																																				
Speaker <i>releases sound</i>																																																																																																																																																																																																				
Motor <i>releases movement</i>																																																																																																																																																																																																				
Light-emitting diode (LED) <i>releases light</i>																																																																																																																																																																																																				
<b>E.</b>	<b>Metals &amp; Alloys</b>																																																																																																																																																																																																			
Metals are extracted from natural ore.																																																																																																																																																																																																				
<b>Ferrous</b>		<b>Non-ferrous</b>																																																																																																																																																																																																		
Low-carbon steel (mild steel)		Aluminium																																																																																																																																																																																																		
Cast Iron		Copper																																																																																																																																																																																																		
High-carbon steel (tool steel)		Tin	Zinc																																																																																																																																																																																																	
Contain iron and are magnetic, prone to rust.		Do not contain iron, not magnetic. Do not rust.																																																																																																																																																																																																		
<b>Alloys</b>																																																																																																																																																																																																				
Alloys are mixtures of two or more metals to improve its properties or aesthetic.																																																																																																																																																																																																				
Brass	Stainless steel	High-speed steel																																																																																																																																																																																																		
<b>F.</b>	<b>Surface Treatments of Timber</b>																																																																																																																																																																																																			
Used to improve their appearance and to enhance certain properties such as durability																																																																																																																																																																																																				
Paint		Oil or Wax																																																																																																																																																																																																		
Wood Stain		Varnish																																																																																																																																																																																																		
<b>Tanalising / Pressure-treated</b>																																																																																																																																																																																																				
Preservatives can be added to extend the lifespan of the timber, protecting it from rot, decay and insects.																																																																																																																																																																																																				
Pressure-treated timber will have no need to paint, stain or coat it.																																																																																																																																																																																																				



# Year 10 PRODUCT DESIGN Term 4



<b>A. Finite Resources</b>	
Finite resources will _____	
<b>Coal</b>	
<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____
<b>Natural Gas</b>	
<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____
<b>Oil</b>	
<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____
<b>Nuclear</b>	
<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____

<b>B. CAD</b>	
CAD stands for _____	
<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____

**What we are learning this term:**  
 A. Finite Resources    B. CAD  
 C. Renewable    D. Electronic Systems    E.  
 Metals & Alloys    F. Surface Treatments

**C. Renewable Resources**

Renewable resources are \_\_\_\_\_

**Wind**

<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____

**Solar**

<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____

**Tidal**

<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____

**Hydro Electricity**

<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____

**Biomass**

<b>Advantages</b>	<b>Disadvantages</b>
• _____ • _____ • _____	• _____ • _____ • _____

**D. Electronic Systems**

**Input / Sensor**

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_

**Process / Control Device**

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_

**Output**

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_

\_\_\_\_\_

= \_\_\_\_\_



**E. Metals & Alloys**

Metals are extracted from \_\_\_\_\_

<b>Ferrous</b>	<b>Non-ferrous</b>
_____	_____
_____	_____
_____	_____
_____	_____

Contain iron and are magnetic, prone to rust.

Do not contain iron, not magnetic. Do not rust.

**Alloys**

Alloys are \_\_\_\_\_ to improve its \_\_\_\_\_ or \_\_\_\_\_.

\_\_\_\_\_

**F. Surface Treatments of Timber**

Used to \_\_\_\_\_ and to \_\_\_\_\_ such as \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Tanalisng / Pressure-treated**

Preservatives can be added to \_\_\_\_\_ of the timber, protecting it from \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_



What we are learning this term:	
A.	Understanding professional works
B.	What is a professional work
C.	What is a practitioner
D.	How do we analyse a performance
E.	What are physical skills
F.	What are interpretive skills
G.	Three different performance styles / genres

6 Key Words for this term	
1 Practitioners	4 Performance material
2 Physical skills	5 Analyse
3 Interpretive skill	6 Intentions

A.	Key question – What is the artistic purpose of a performance work?
<p>When watching a professional performance, the key questions you need to think about are the following...</p> <p>How do we Explore artistic purpose?</p> <p>Explore artistic purpose (across all three disciplines/styles) including:</p> <ul style="list-style-type: none"> <li>to educate</li> <li>to inform</li> <li>to entertain</li> <li>to provoke</li> <li>to challenge viewpoints</li> <li>to raise awareness</li> <li>to celebrate.</li> </ul>	

A.	Component 1 – Key focus
<p>In this component of the qualification students will develop their understanding of drama by examining the work of existing practitioners and the processes used to create performance. Students should experience a range of work across the discipline of drama by viewing recorded and/or live work.</p> <p>While this is primarily a theoretical study of the performing arts practical investigations, students will be working at developing practical skills through workshops and links with Component 2 Developing Skills and Techniques in the Performing Arts, to engage in primary exploration of specific repertoire.</p>	

C.	Key question from Assessment objectives
<ol style="list-style-type: none"> <li>1. What are physical skills</li> <li>2. What are interpretive skills</li> <li>3. How do we use these skills practically?</li> <li>4. How do we IMPROVE on these skills?</li> </ol>	<ol style="list-style-type: none"> <li>1. What is a professional work</li> <li>2. What is a practitioner</li> <li>3. How do we analyse a performance</li> <li>4. What are a practitioners creative intentions</li> </ol>

G.	Key learning aims from Component 1
<p><i>Learning aim A: Examine professional practitioners' performance work</i></p>	<p><b>A1: Professional practitioners' performance material, influences, creative outcomes and purpose</b></p> <p>Examine live and recorded performances in order to develop understanding of practitioners' work with reference to influences, outcomes and purpose.</p> <p>Focus on thematic interpretation of particular issues and how artists communicate their ideas to an audience.</p> <p>Roles and responsibilities in theatre.</p>
	<p><i>Learning aim B: Explore the interrelationships between constituent features of existing performance material</i></p> <p>Processes used in performance</p> <ul style="list-style-type: none"> <li>● Responding to stimuli to generate ideas for performance material.</li> <li>● Exploring and developing ideas to develop material.</li> <li>● Discussion with performers.</li> <li>● Setting tasks for performers.</li> <li>● Sharing ideas and intentions.</li> <li>● Providing notes and/or feedback on improvements.</li> </ul>

E.	Keywords
Practitioners	A professional theatre maker who creates in a specific style led by a specific theatre ideology.
Performance material	The practical work that a practitioner creates for performance.
Creative Intentions	The ideas behind the choreography, why the choreographer choose to create the work.
Review	Look over your current work and the work of others and be able to review and comment on your own and others practice
Analyse/ Evaluate	Watch and then analyse your own performance and the work of others and giving comments and judgements on what you see
Influences	How the practitioner has been influenced by others, their experiences, their training and how this has affected the work they create.
Physical skills	The physical attributes that an actor uses, stamina, strength, flexibility, control, to dance with technical accuracy.



What we are learning this term:	
A.	Understanding professional works
B.	What is a professional work
C.	What is a practitioner
D.	How do we analyse a performance
E.	What are physical skills
F.	What are interpretive skills
G.	Three different performance styles / genres

6 Key Words for this term	
1 Practitioners	4 Performance material
2 Physical skills	5 Analyse
3 Interpretive skill	6 Intentions

A.	Key question – What is the artistic purpose of a performance work?
<p>When watching a professional performance, the key questions you need to think about are the following...          How do _____?          (across all three disciplines/styles) including:          to _____          to _____          to _____          to _____          to _____          to _____</p>	

A.	Component 1 – Key focus
<p>In this component of the qualification students will develop their understanding of drama by examining the work of _____s and the _____ used to _____.</p> <p>Students should experience a range of work across the discipline of drama by viewing recorded and/or live work.</p> <p>While this is primarily a theoretical study of the performing arts practical investigations, students will be working at developing practical skills through _____s and links with Component 2 _____ and Te_____s in the Performing Arts, to engage in primary exploration of specific repertoire.</p>	

C.	Key question from Assessment objectives
<ol style="list-style-type: none"> <li>1. What are physical skills</li> <li>2. What are interpretive skills</li> <li>3. How do we use these skills practically?</li> <li>4. How do we IMPROVE on these skills?</li> </ol>	<ol style="list-style-type: none"> <li>1. What is a professional work</li> <li>2. What is a practitioner</li> <li>3. How do we analyse a performance</li> <li>4. What are a practitioners creative intentions</li> </ol>

G.	Key learning aims from Component 1
<i>Learning aim A: Examine professional practitioners' performance work</i>	<p><b>A1: Professional practitioners' performance material, influences, creative outcomes and purpose</b></p> <p>Examine _____ and _____ performances in order to develop _____ of practitioners' work with reference to _____s, o_____s and p_____se.          Focus on _____ i_____ of particular i_____ and how artists c_____te their ideas to an _____e.          Roles and responsibilities in theatre.</p>
	<p><i>Learning aim B: Explore the interrelationships between constituent features of existing performance material</i></p> <p>Processes used in performance</p> <ul style="list-style-type: none"> <li>• Responding to _____ to generate id_____s for performance material.</li> <li>• Exploring and developing ideas to develop material.</li> <li>• D_____on with performers.</li> <li>• Setting _____ for performers.</li> <li>• S_____ng ideas and intentions.</li> <li>• Providing _____ and/or fe_____ck on imp_____nts.</li> </ul>

E.	Keywords
Practitioners	
Performance material	
Creative Intentions	
Review	
Analyse/ Evaluate	
Influences	
Physical skills	



# Musical forms and devices

## Area of study 1 - Eduqas GCSE Music

### Baroque era (1600-1750)

- Harpsichord
- Ornaments
- Terraced dynamics
- Basso continuo
- Small orchestra (mostly strings, plus some wind)
- Suite, sonata, oratorio, chorales, trio sonata
- **Bach, Handel, Vivaldi**

### Classical era (1750-1810)

- Slightly larger orchestra
- Piano introduced
- Alberti bass
- String quartets
- Symphony, solo sonata, solo concerto
- Balanced, regular phrases
- **Haydn, Mozart, Beethoven**

### Romantic era (1810-1910)

- Lyrical, expressive melodies
- Large orchestra
- Wider range of dynamics
- Richer harmonies and use of chromatic chords
- Programme music
- Opera symphony
- **Tchaikovsky, Grieg, Schumann, Dvorak, Brahms, Verdi, Wagner**

### Form and structure

#### BINARY

A B

Two sections: A usually ends in a related key (e.g. dominant or relative minor), but B returns to the tonic. B will contain with some change/contrast.

#### TERNARY

A B A

Three sections: section B provides a contrast (e.g. new tune key change). A may return exactly or with some slight changes.

#### RONDO

A B A C A

A longer form: A returns throughout the piece, with contrasting sections called 'episodes', containing new ideas and using different keys.

#### MINUET AND TRIO

II: AB: II II: CD: II AB

The minuet was a type of graceful dance from the 17-18<sup>th</sup> century, and was often used as the 3<sup>rd</sup> movement in symphonies in the Classical era. The minuet had two repeated sections, the trio had two new repeated sections, with a return to the minuet at the end (no repeat).

#### VARIATIONS

A a A A A

The main theme (tune) is repeated and developed a number of times in a variety of different ways.

#### STROPHIC

A A A

A simple form where the song uses the same melody over and over.

### Devices

<b>Repetition</b>	A musical idea is repeated exactly.
<b>Imitation</b>	An idea is copied in another part.
<b>Sequence</b>	Repetition of an idea in the same part at a higher/lower pitch.
<b>Ostinato</b>	A short, repeated pattern or phrase.
<b>Drone</b>	A long held or constantly repeated note(s).
<b>Arpeggio/ broken chord</b>	The notes of a chord played individually.
<b>Alberti bass</b>	A broken chord accompaniment (I, V, iii, V) common in the Classical era.
<b>Anacrusis</b>	An 'up-beat' or pick-up before the first strong beat.
<b>Dotted rhythms</b>	A rhythm using dotted notes (gives a 'jagged' or 'bouncy' type of effect).
<b>Syncopation</b>	Off beat accents.
<b>Conjunct</b>	Notes that move in steps.
<b>Disjunct</b>	Notes that move in leaps/ intervals.
<b>Regular phrasing</b>	Balanced parts of a melody (like the phrases in a sentence) e.g. four bar phrases.

### Scales and chords

A **CHORD** is a group of two or more notes played at the same time. A **TRIAD** has three notes. A **CHORD SEQUENCE/PATTERN** is a series of chords. **DIATONIC HARMONY** is based on the chords of major/minor scales.

Primary chords I, IV, V  
Secondary chords ii, iii, vi, vii

**C Major Scale**

1 TONIC 2 SUPERTONIC 3 MEDIANT 4 SUBDOMINANT 5 DOMINANT 6 SUBMEDIANT 7 LEADING NOTE 8 TONIC

**C Major Triads**

I C ii Dm iii Em IV F V G vi Am vii B° I C

C Major Scales      Blues Scale in C

A Minor (Harmonic) Scale      Major pentatonic      Minor pentatonic

Chromatic Scale on C

### Cadences

The two chords at the end of a phrase

<b>Perfect</b>	V-I	Strong ending – sounds 'finished'; a musical full stop.
<b>Plagal</b>	IV-I	Sounds finished but 'softer'; Amen.
<b>Imperfect</b>	I-V, ii-V, vi-V	Sounds unfinished.
<b>Interrupted</b>	V-vi	Moves to an unexpected chord; 'surprise'.

# Musical forms and devices

## Area of study 1 - Eduqas GCSE Music



### Baroque era (1600-1750)

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### Classical era (1750-1810)

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### Romantic era (1810-1910)

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### Form and structure

**BINARY** A B

**TERNARY** A B A

**RONDO** A B A C A

**MINUET AND TRIO** II: AB: II II:CD :II AB

**VARIATIONS** A a A A A

**STROPHIC** A A A

### Devices

Repetition	
Imitation	
Sequence	
Ostinato	
Drone	
Arpeggio/ broken chord	
Alberti bass	
Anacrusis	
Dotted rhythms	
Syncopation	
Conjunct	
Disjunct	
Regular phrasing	

### Scales and chords

- 
- 
- 
- 
- 
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- 
- 

**C Major Scale**

1 TONIC 2 SUPERTONIC 3 MEDIANT 4 SUBDOMINANT 5 DOMINANT 6 SUBMEDIANT 7 LEADING NOTE 8 TONIC

**C Major Triads**

I C ii Dm iii Em IV F V G vi Am vii Bb I C

C Major Scales

Blues Scale in C

A Minor (Harmonic) Scale





Major pentatonic Minor pentatonic

Chromatic Scale on C

### Cadences






What we are learning this term:	
A.	Key words
B.	What are the main life stages
C.	What are the 4 areas of growth and development (PIES)?
D.	How do Humans develop physically (P)?

A. Key words for this Unit	
Characteristics	Something that is typical of people at a particular life stage.
Life stages	Distinct phases of life that each person passes through.
Growth	Increased body size such as height, weight.
Development	Involves gaining new skills and abilities such as riding a bike.
Gross motor development (G)	Refers to the development of large muscles in the body e.g. Legs
Fine motor development (F)	Refers to the development of small muscles in the body e.g. Fingers
Language development	Think through and express ideas
Contentment	An emotional state when people feel happy in their environment, are cared for and well loved
Self-image	How individuals see themselves or how they think others see them
Self-esteem	How good or bad an individual feels about themselves and how much they value their abilities.
Informal relationships	Relationships formed between family members
Friendships	Relationships formed with people we meet in the home or in situations such as schools, work or clubs
Formal relationships	relationships formed with non-family/friends – such as teachers and doctors.
Intimate relationships	romantic relationships.






B	What are the main life stages?		C	What are the 4 areas of growth and development (PIES)?
Age Group	Life Stage	Developmental Characteristics and Progress	 Physical Development (P)  Intellectual Development (I)  Emotional Development (E)  Social Development (S)	P = growth patterns and changes in the mobility of the large and small muscles in the body that happen throughout life.  I = how people develop their thinking skills, memory and language.  E = how people develop their identity and cope with feelings.  S = describes how people develop friendships and relationships.
0-2 years	Infancy	Sill dependent on parents but growing quickly and developing physical skills.		
3-8 years	Early Childhood	Becoming increasingly independent, improving thought processes and learning how to develop friendships.		
9-18 years	Adolescence	Experiencing puberty, which bring physical and emotional changes.		
19-45 years	Early Adulthood	Leaving home, making own choices about a career and may start a family.		
46-65 years	Middle Adulthood	Having more time to travel and take up hobbies as children may be leaving home; beginning of the aging process.		
65+ years	Later Adulthood	The aging process continues, which may affect memory and mobility.		






D.	How do humans develop physically (P)?
<b>0-2</b>	<ul style="list-style-type: none"> <li>Gross Motor Development (G) = life head, roll over, sit unaided, walk holding onto something, walk unaided, climb stairs, kick and throw, walk upstairs, jump.</li> <li>Fine Motor Development (F) = hold a rattle for short time, reach for an item, pass item from one hand to other, hold between finger and thumb, scribble, build a tower, use a spoon, draw lines and circles, turn page of a book.</li> </ul>
<b>3-8</b>	<ul style="list-style-type: none"> <li>G = ride a tricycle, catch a ball with two hands, walk backwards and step to the side, bounce a ball, run on tiptoes, ride a bike, catch a ball with one hand, balance along a thin line.</li> <li>F = hold a crayon to make circles and lines, thread small beads, copy letters and shapes with a pencil, make detailed models with construction bricks, joined up writing, use a needle to sew.</li> </ul>
<b>9-18</b>	<ul style="list-style-type: none"> <li>Girls = puberty starts at 10-13 years, breasts grow, hips widen, menstruation begins, uterus and vagina grow.</li> <li>Boys = voice deepens, muscles and strength increase, erections, facial hair, produce sperm.</li> <li>Both = pubic and underarm hair, growth spurts.</li> </ul>
<b>19-45</b>	<ul style="list-style-type: none"> <li>Physically mature, sexual characteristics are fully formed, peak of physical fitness, full height, women at most fertile.</li> <li>Later in the life stage people may put on weight, hair turn grey and men may lose hair, women's menstrual cycle was slow down</li> </ul>
<b>46-65</b>	<ul style="list-style-type: none"> <li>People may put on weight, hair turn grey and men may lose hair, women's menstrual cycle was slow down.</li> <li>Women go through the menopause – when menstruation ends and they can no longer become pregnant.</li> <li>Men may continue to be fertile throughout life but decrease in sperm production in this life stage.</li> </ul>
<b>65+</b>	<ul style="list-style-type: none"> <li>Women's hair becomes thinner, men may lose most of their hair, skin loses elasticity and wrinkles appear, nails hard and brittle, bones weaken, higher risk of contracting infections disease and illness.</li> <li>Stamina, reaction time, muscle and senses (hearing, sight, taste) all reduce.</li> </ul>

What we are learning this term:	
A. Key words	
B. What are the main life stages	
C. What are the 4 areas of growth and development (PIES)?	
D. How do Humans develop physically (P)?	
A.	Key words for this Unit
Characteristics	
Life stages	
Growth	
Development	
Gross motor development ( <b>G</b> )	
Fine motor development ( <b>F</b> )	
Language development	
Contentment	
Self-image	
Self-esteem	
Informal relationships	
Friendships	
Formal relationships	
Intimate relationships	

B	What are the main life stages?		C	What are the 4 areas of growth and development (PIES)? Explain them.
Age Group	Life Stage	Developmental Characteristics and Progress		
0-2 years			Physical Development (P) 	
3-8 years				
9-18 years			Intellectual Development (I) 	
19-45 years			Emotional Development (E) 	
46-65 years				
65+ years			Social Development (S) 	

D.	<u>How do humans develop physically (P)?</u>
<b>0-2</b>	
<b>3-8</b>	
<b>9-18</b>	
<b>19-45</b>	
<b>46-65</b>	
<b>65+</b>	





What we are learning this term:		F. How do humans develop emotionally (E)?	
E. How do humans develop intellectually (I)? F. How do humans develop emotionally (E)? G. How do humans develop socially (S)?			
<b>E. How do humans develop intellectually (I)?</b>			
Infancy 	At birth brains are already well developed. Infants use all of their senses to learn about the world around them. Infancy is a time of rapid intellectual development. At 3 months infants can remember routines. At 9-12 months infants are developing their memory. At 12 months to 2 years infants understand processes and how things work. Language begins to develop during this stage.	<b><u>Bonding and Attachment</u></b> Bonding and attachment describe the emotional ties an individual forms with others. It starts in the first year of life between infants and their main carer because that person fulfils the infants needs which makes them feel safe and secure.	<b><u>Adolescence and adulthood</u></b> <b><u>Self-image and Self-esteem</u></b> Self-image is heightened during adolescence because of the physical changes we experience. Our self-esteem can change from day to day based on a variety of factors including employment and health status.
		<b><u>Security</u></b> For infants and young children, security is mainly the feeling of being cared for, being safe and loved – it is closely linked with attachment.	<b><u>Security</u></b> Adolescence may feel insecure because of puberty. Adults may feel insecure about relationships, job security of income. Later in life adults may feel insecure about staying in their own home or going into a care home. Feeling secure helps us cope better with everyday situations.
		<b><u>Contentment</u></b> Infants and young children are content if they have had enough food, love, are clean and dry and all other needs are met.	<b><u>Contentment</u></b> When people feel discontented with aspects of their life – for example, relationships or work – their emotions can be negatively affected.
Early childhood 	At 3-4 years of age children become more inquisitive and enjoy exploring objects and materials. They ask lots of questions and enjoy solving simple problems. At 5-6 years old children's memory is becoming well developed. This helps them to talk about the past and anticipate the future.	<b><u>Independence</u></b> Independence is to care for yourself and make your own decisions. Infants are completely dependent on their carer. As children enter early childhood they develop more independence – feed self and get dressed. However, children still need a lot of help from their carer.	<b><u>Independence</u></b> Adolescence are dependent on their parents but are beginning to enjoy more independence and freedom to make their own choices. Adults enjoy living independently and controlling their own lifestyle and environment. Later in adulthood people become more dependent on others again.
		<b>G. How do humans develop socially (S)?</b>	
		<b>Life Stage</b> Types of relationships and social development	
Adolescence 		Infancy	<ul style="list-style-type: none"> <li>• Solitary Play - From birth to 2 years, infants tend to play alone although they like to be close to their parent or carer; they may be aware of other children but not play with them.</li> </ul>
		Early childhood	<ul style="list-style-type: none"> <li>• Parallel Play - From 2 to 3 years, children enjoy playing next to other children but are absorbed in their own game; they are not socialising or playing with other children.</li> <li>• Cooperative or social play – from 3 years upwards, children start to play with other children; they have developed social skills that help them to share and talk together; they often make up games together, such as being a shopkeeper and customer.</li> </ul>
		Adolescence	<ul style="list-style-type: none"> <li>• People become more independent and build more informal and formal relationships.</li> <li>• Social development closely linked to emotions.</li> <li>• Often strongly influenced by peers – 'peer group pressure'.</li> </ul>
Early and Middle Adulthood 	By these life stages most adults have a good range of general knowledge. They use this knowledge and experience to solve problems that they come across in their personal and work lives.	Early adulthood	<ul style="list-style-type: none"> <li>• Increased independence means greater control of decisions about informal relationships.</li> <li>• People may be developing emotional and social ties with partners and their own children.</li> <li>• Social life often centred on the family but social skills are required to build and maintain formal relationships.</li> </ul>
		Middle adulthood	<ul style="list-style-type: none"> <li>• Children have often left home, but there are likely to still be strong family relationships.</li> <li>• Social circles may expand through travel, spending more time on hobbies or joining new groups.</li> </ul>
Later adulthood 	During this life stage people continue to learn and develop intellectually, however, their speed of thinking and memory may decline. This may affect their ability to think through problems and make logical decisions.	Later adulthood	<ul style="list-style-type: none"> <li>• Retired by this stage and so may enjoy more social time with family and friends or join new groups.</li> <li>• However, later in the life stage people may begin to feel isolated if they struggle to get out or if partners and friends pass away.</li> </ul>

What we are learning this term:		F. How do humans develop emotionally (E)? Explain each.	
E. How do humans develop intellectually (I)? F. How do humans develop emotionally (E)? G. How do humans develop socially (S)?			
E. <i>How do humans develop intellectually (I)?</i>			
Infancy 		<u>Infancy and Early Childhood</u>	
		<u>Adolescence and adulthood</u>	
		<u>Bonding and Attachment</u>	
		<u>Self-image and Self-esteem</u>	
		<u>Security</u>	
		<u>Security</u>	
		<u>Contentment</u>	
		<u>Contentment</u>	
Early childhood 		<u>Independence</u>	
		<u>Independence</u>	
		<b>G. How do humans develop socially (S)?</b>	
		<b>Life Stage</b> Types of relationships and social development	
		Infancy	
		Early childhood	
		Adolescence	
		Early adulthood	
		Middle adulthood	
		Later adulthood	
Adolescence 			
Early and Middle Adulthood 			
Later adulthood 			

What we are learning this term:	
H.	Key words
I.	How do physical factors affect development?
J.	How does lifestyle affect development?
K.	How do social and cultural factors affect development?
L.	How do relationships and isolation affect development?
M.	How do economic factors affect development?

H	Key words:
Genetic inheritance	Genes the person inherits from their parents
Genetic disorders	Health conditions that are passed on from parent to child through their genes. e.g. cystic fibrosis
Lifestyle Choices	Include the food you eat and how much exercise you do. They also include whether you smoke, drink alcohol or take illegal drugs.
Appearance	The way that someone or something looks
Factor	A circumstance, fact, or influence that contributes to a result
Gender role	The role and responsibilities determined by a person's gender.
Culture	ideas, customs, and social behaviour.
Role models	Someone a person admires and strives to be like.
Social Isolation	Lack of contact with other people
Material possessions	Things that are owned by an individual
Economic	To do with person's wealth and income.





I.	How do physical factors affect development?	
	Genetic Disorders	Disease and Illness
Physical Development	A person's physical build can affect physical abilities. Inherited diseases may affect strength and stamina needed to take part in exercise.	May affect the rate of growth in infancy and childhood. Could affect the process of puberty. Could cause tiredness and/or mobility problems. Could limit of prevent participation in physical activity.
Intellectual Development	Some genetically inherited diseases may result in missed schooling, or have a direct impact on learning – conditions such as Edward's syndrome impact learning.	School, college, university, work or training could be missed. Memory and concentration could be affected.
Emotional Development	Physical appearance affects how individuals see themselves (self-image), and how others respond to them impacts on their confidence and wellbeing.	May cause worry and/or stress. Individuals may develop negative self-esteem. Could lead to feelings of isolation.
Social Development	Physical characteristics or disease may affect opportunities or confidence in building friendships and becoming independent.	May cause difficulty in having opportunities to socialize with other and build wider relationships.

J.	How does lifestyle affect development?	
<b>Lifestyle choices</b> include; diet, exercise, alcohol, smoking, sexual relationships and illegal drugs, appearance.		
<b>Positive lifestyle choices lead to:</b> <ul style="list-style-type: none"> <li>• Healthy hair, skin, nails and teeth</li> <li>• Positive self-image</li> <li>• Energy and stamina</li> <li>• Good health</li> <li>• Emotional security</li> </ul> 		<b>Negative lifestyle choices lead to:</b> <ul style="list-style-type: none"> <li>• Being overweight or underweight</li> <li>• Lack of energy</li> <li>• Ill health</li> <li>• Negative self-image</li> <li>• Sexually transmitted diseases (STDs)</li> <li>• Unplanned pregnancy</li> </ul> 
Our <b>appearance</b> includes: body shape, facial features, hair and nails, personal hygiene and our clothing. Our appearance can affect the way we view ourselves- self-image		
<b>Positive self-image:</b> <ul style="list-style-type: none"> <li>• Feel good about yourself.</li> <li>• Healthy hair, skin, nails and teeth</li> <li>• Big social circle.</li> <li>• High self-esteem.</li> <li>• High self-confidence.</li> </ul> 		<b>Negative self-image</b> <ul style="list-style-type: none"> <li>• Low self-esteem</li> <li>• Low self-confidence</li> <li>• Can lead to eating disorders e.g. anorexia</li> <li>• Can lead to anxiety or depression</li> <li>• Can lead to self-harm</li> <li>• Negative impact on building relationships- social circle decreases.</li> </ul> 

What we are learning this term:	
H.	Key words
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H	Key words:
Genetic inheritance	
Genetic disorders	
Lifestyle Choices	
Appearance	
Factor	
Gender role	
Culture	
Role models	
Social Isolation	
Material possessions	
Economic	

I.	How do physical factors affect development?	
	<u>Genetic Disorders</u>	<u>Disease and Illness</u>
Physical Development		
Intellectual Development		
Emotional Development		
Social Development		

J.	How does lifestyle affect development?		
<p><b>Lifestyle choices</b> include; diet, exercise, alcohol, smoking, sexual relationships and illegal drugs, appearance.</p>			
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<p>Our <b>appearance</b> includes: body shape, facial features, hair and nails, personal hygiene and our clothing. Our appearance can affect the way we view ourselves- self-image</p>			
<p><b>Positive self-image:</b></p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>		<p><b>Negative self-image</b></p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>	





<b>K</b>	<b>How do social and cultural factors affect development</b>	
Development can be influenced by the persons <b>culture or religion</b> because it affected their: <ul style="list-style-type: none"> <li>• <b>Values:</b> how they behave</li> <li>• <b>Lifestyle choices:</b> diet, appearance</li> </ul>		
<u>Positive affects of a persons culture/religion:</u>	<u>Negative affects of a persons culture/religion:</u>	
<ul style="list-style-type: none"> <li>• A sense of security and belonging from sharing the same values and beliefs with others.</li> <li>• Good self-esteem through being accepted and valued by others</li> </ul>	<ul style="list-style-type: none"> <li>• Feeling discriminated against by people who do not share their religion/culture which leads to low self-image</li> <li>• Feeling excluded and isolated because their needs like diet, are not catered for.</li> </ul>	
<b>Community</b> refers to: local area where people live, school, religious group or hobby clubs. They have common values and goals.		
<u>Belonging to a community:</u>	<u>Not belonging to a community:</u>	
<ul style="list-style-type: none"> <li>• Brings sense of belonging essential for emotional development.</li> <li>• Building and maintaining relationships- social development</li> <li>• Feeling of security.</li> <li>• Increases self-image and self-confidence</li> </ul>	<ul style="list-style-type: none"> <li>• Minimal contact with others- isolation</li> <li>• Anxiety leading to depression</li> <li>• Making negative lifestyle choices</li> <li>• Feeling less secure</li> <li>• Difficulty in building relationships</li> <li>• Slow self-image and self-confidence</li> </ul>	
Traditionally, men and women had distinctive responsibilities and expectations which for their gender called <b>gender roles</b> . However, nowadays UK equality legislation stops people being discriminated against because of their gender.		
What happens when people face discrimination because of gender: <ul style="list-style-type: none"> <li>• They might be excluded from a group</li> <li>• They may be refused promotion at work</li> <li>• They may be expected to carry out a particular role</li> <li>• They may be paid less.</li> </ul>		

<b>What we are learning this term:</b>
K. How do social and cultural factors affect development?
L. How do relationships and isolation affect development?
M. How do economic factors affect development?

<b>L</b>	<b>How do relationships and isolation affect development?</b>
1	In adolescence, young people often argue with parents because they want more independence- negative affect on family relationships- can lead to isolation from them.
2	In later life, older people might need to rely on their children for support. This then has a positive affect on their development because all their need are catered for.
3	Relationships are important because they provide emotional security, contentment and positive self- esteem.
4	The breakdown of personal relationships can have a negative effect on persons PIES development: Low self-esteem, loss of confidence, stress.
5	Isolation can happen when individuals do not have the opportunity of regular contact with others. They have no one to share their feelings, thoughts and worries with resulting in feeling insecure and anxious.
6	Isolation can happen because they live alone, are unemployed or retired, are discriminated against or have an illness or a disability.
7	People have role models- infants learn by copying others, and adolescence base their identity on their role models. Role models can influence how people see themselves compared to others and their lifestyle choices can be positive or negative.

<b>M</b>	<b>How do economic factors affect development</b>	
Having enough money gives individuals and their families feeling of content and security	Not having enough money causes stress and anxiety.	
Having enough money means that the whole family is eating healthy.	Not having enough money can mean that the family is not about to eat well balanced diet, and this has a negative effect on their physical development	
Elderly people rely on state pension to live which is not enough and have to cut down on travel, shopping, bills, therefore it speeds their aging process and lead to health decline.		
<u>Living in good housing with open spaces:</u>	<u>Living in a poor housing with cramped and damp conditions:</u>	
<ul style="list-style-type: none"> <li>• Feeling good about themselves</li> <li>• Be more likely to stay healthy,</li> <li>• Space to take exercise</li> <li>• Feel safe ad secure</li> <li>• Warmth</li> </ul>	<ul style="list-style-type: none"> <li>• Have low self-esteem and self-image</li> <li>• Be more likely to experience ill health</li> <li>• Be lessson likely to exercise</li> <li>• Anxious and stressed.</li> </ul>	
Material possession like a new phone or coat has a positive effect on the persons development because they might have more friends as they look nicer, high self-image.	Not having a phone or the newest trainers can have a negative affect in the persons self-image and self-esteem. They might feel isolated from others.	



**K How do social and cultural factors affect development**

Development can be influenced by the persons **culture or religion** because it affected their:

- **Values:** how they behave
- **Lifestyle choices:** diet, appearance

Positive affects of a persons culture/religion:

- 
- 

Negative affects of a persons culture/religion:

- 
- 

**Community** refers to:

Belonging to a community:

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- 
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- 
- 

Not belonging to a community:

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Traditionally, men and women had distinctive responsibilities and expectations which for their gender called **gender roles**. However, nowadays UK equality legislation stops people being discriminated against because of their gender.

What happens when people face discrimination because of gender:

- 
- 
- 
- 

**What we are learning this term:**

- K. How do social and cultural factors affect development?
- L. How do relationships and isolation affect development?
- M. How do economic factors affect development?

**L How do relationships and isolation affect development?**

1	
2	
3	
4	
5	
6	
7	

**M How do economic factors affect development**

Having enough money.... • •	Not having enough money ..... • •
→	→
Having enough money means that.... • •	Not having enough money can mean that... • •
→	→
Elderly people rely on state pension to live which is not enough and have to cut down on travel, shopping, bills, therefore it speeds their aging process and lead to health decline.	
<u>Living in good housing with open spaces:</u> • • • •	<u>Living in a poor housing with cramped and damp conditions:</u> • • • •
Material possession like a new phone or coat has a positive effect on the persons development because.....	Not having a phone or the newest trainers can have a negative affect on.... Because.... • • • •
→	→

What we are learning this term:	
<p>N. What are life events?                      O. How do people deal with life events?                      P. How is dealing with life events supported?</p>	
N.	What are life events?
Life Events	Life events are expected or unexpected events that can affect development. Examples include starting nursery, getting married or becoming ill.
Expected Life Events	Expected life events are life events that are likely to happen. Examples include starting primary school aged four and secondary school aged 11.
Unexpected Life Events	Unexpected life events are events which are not predictable or likely to happen. Examples could include divorce and bereavement (the death of a loved one).
Physical Events	Physical events are events that make changes to your body, physical health and mobility. Examples include illnesses such as diabetes and injuries and accidents such as car accidents.
Relationship Changes	Relationship changes could be new relationships such as the birth of a sibling, a new friendship or romantic relationship. Relationship changes can also be changes to existing relationships such as divorce.
Life Circumstances	Life circumstances are different situations that arise in our life that we must deal with. Examples include redundancy (losing a job), moving house or retirement (finishing work in later adulthood).

O.	How do people deal with life events?
Individual	<ul style="list-style-type: none"> <li>The effects of life events vary from person to person based on how they deal with their new situation.</li> <li>Some people react to able to react to life events positively, others find it more difficult due to a range of factors.</li> </ul>
Factors	<ul style="list-style-type: none"> <li>Factors that may affect how people cope with life events: age, other life events happening at the same time, the support they have, their disposition (their mood, attitude and general nature), their self-esteem, their resilience (how quickly they recover).</li> </ul>
Adapting	<ul style="list-style-type: none"> <li>Adapt – to adjust to new conditions or circumstances.</li> <li>Expected on unexpected life events can often force people to make changes to their lives. Individuals must find their own way to adapt to the changes that life throws at them.</li> </ul>
Resilience	<ul style="list-style-type: none"> <li>Resilience – a person's ability to come to terms with, and adapt to, events that happen in life.</li> <li>Resilience is stronger in people who have a positive outlook on life, accept that change happens, has supportive family and friends and plans for expected life events.</li> </ul>
Time	<ul style="list-style-type: none"> <li>Sometimes people need a long time to adapt to unexpected life events.</li> <li>It can take time for people to move on from and accept difficult changes in their life.</li> </ul>

P.	How is dealing with life events supported?
Types of Support	How this helps individuals deal with life events
Emotional Support	Emotional support is needed to help individuals deal with all life events – expected and unexpected. Having someone to talk to helps people feel secure and adapt to change. Sometimes individuals can find this support in family and friends or professionals to process difficult life events – such as bereavement.
Information and Advice	Life events, particularly unexpected ones, can cause people to feel like they do not know what to do. Information and advice can help people to have a better understanding of their situation, which allows them to deal with it more successfully. Information and advice help them know where to go for help, the choices than are available to them and how to make healthy choices.
Practical Help	<ul style="list-style-type: none"> <li>Financial help – an individual may need money to help them adapt to a life change i.e. money to pay for a stair lift if their mobility has been effected.</li> <li>Childcare – an individual may need support looking after their children i.e. a lone parent after a divorce that needs to go to work.</li> <li>Transport – an individual may need support with transport if they have mobility problems i.e. a car could be adapted to support a person who has had an accident and can no longer walk.</li> </ul>
Informal Support	Informal support is the support an individual receives from partners, family and friends. It is usually the first form of support an individual experiences after and expected or unexpected life event. Informal support can provide reassurance, encouragement, advice, a sense of security, someone to talk through options with and practical help.
Professional Support	Formal support may be provided by statutory care services (the state), private care services and charitable organizations. Professional support may include counsellors, teachers, careers advisers, occupational therapists, social workers and health specialists. Professional support may be needed to help people with a health condition, regain mobility, deal with life changes and emotions, get advice and information or change their lifestyle.
Voluntary Support	Organizations offering voluntary support are charities, community groups and religious groups. At voluntary support services, many staff are volunteers ( they work for free), but they also employ qualified people who are paid by donations. Community groups work at a local level to meet the needs of people living in a specific neighbourhood i.e. foodbanks. Religious groups are formed by people who share the same religious or spiritual beliefs but they help all people in need regardless of their beliefs and background i.e. a church run soup kitchen for the homeless.

<b>What we are learning this term:</b>	
N. What are life events? O. How do people deal with life events? P. How is dealing with life events supported?	
<b>N.</b>	<b>What are life events?</b>
Life Events	
Expected Life Events	
Unexpected Life Events	
Physical Events	
Relationship Changes	
Life Circumstances	

<b>O.</b>	<b>How do people deal with life events?</b>
Individual	
Factors	
Adapting	
Resilience	
Time	
<b>P.</b>	<b>How is dealing with life events supported?</b>
<b>Types of Support</b>	<b>How this helps individuals deal with life events</b>
Emotional Support	
Information and Advice	
Practical Help	
Informal Support	
Professional Support	
Voluntary Support	

# SWINDON ACADEMY READING CANON

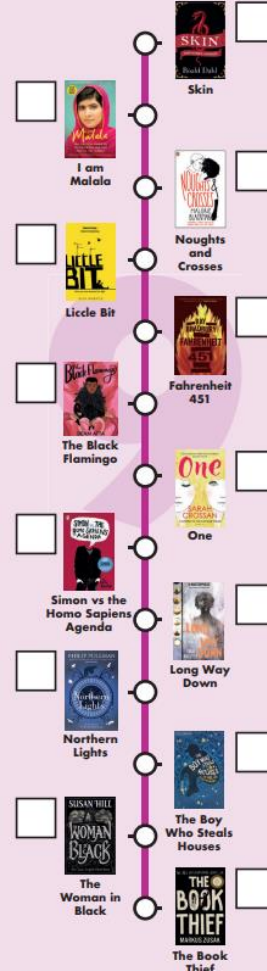
## Year 7



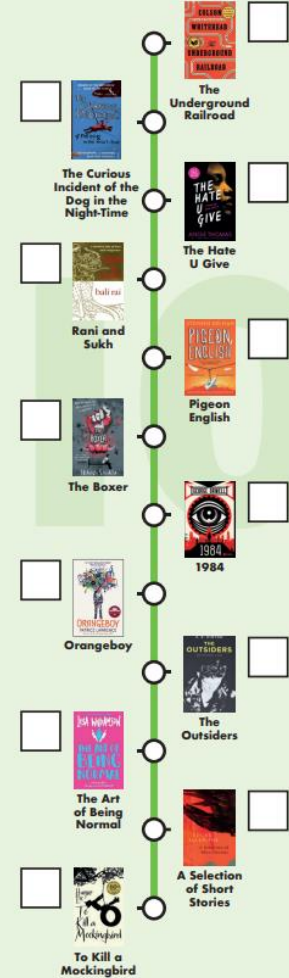
## Year 8



## Year 9



## Year 10



#ReadingisPower