

100% book - Year 11 GS

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

Term 1



Swindon Academy 2024-25

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 the Epraise website interface. On the left is a weekly planner for May 2020. On the right is a knowledge organiser for 'What is particle theory?'. It includes sections for 'What is particle theory?', 'What is the law of conservation of mass?', 'What are the different changes of state?', and 'What are the different states of matter?'. Each section has a brief definition and a diagram illustrating the concept.

Step 2

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

This image shows a printed knowledge organiser with handwritten notes. The date '29th May 2020' is written at the top. The title 'Particle theory' is underlined. The sections are filled with text from the original knowledge organiser, including definitions and diagrams for particle theory, conservation of mass, and changes of state.

Step 3

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

Handwritten notes on lined paper summarizing key facts from the knowledge organiser. The notes include the date '29th May 2020', the title 'Properties of the states of matter', and definitions for solid, liquid, and gas states of matter. The definitions are written in full sentences.

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 showing the definition of solid written three times. The definition is 'Solid = regular pattern particles vibrate in fixed position'. The notes are written on lined paper.

Step 5

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

This image shows a printed quizzable knowledge organiser with handwritten answers. The questions are 'What is particle theory?', 'What is the law of conservation of mass?', and 'What are the different states of matter?'. The answers are 'Self quizzing', 'Arrangement/movement of matter', and 'Solid = regular pattern particles vibrate in fixed position', 'Liquid = particles are arranged randomly but are still touching each other and they 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 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 showing the definition of solid checked off. The definition is 'Solid = regular pattern particles vibrate in fixed position'. The notes are written on lined paper.

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

KS4 MACBETH Grammar

1. Context

Playwright: Shakespeare (April 23rd 1564-April 23rd1616)
Dates: written around 1606
Published: in 'the First Folio, 1623
Era: Jacobean
Genre: Tragedy = *A play ending with the suffering and death of the main character.*
Set: Scotland,
Structure: Five Act Play

Macbeth. The plot is partly based on fact. Macbeth was a real 11th Century king who reigned Scotland from 1040-1057. Shakespeare's version of the story originates from the Chronicles of Holinshed (a well known historian). The play was most likely written in 1606 – the year after the Gunpowder Plot of 1605 – and reflects the insecurities of Jacobean politics.

The Divine Right of Kings says that a monarch is not subject to earthly authority and that they have the right to rule directly from the will of God. It implies that only God can judge an unjust king and that any attempt to depose, dethrone or restrict his powers runs contrary to the will of God and may constitute a sacrilegious act. The action of killing a king is called regicide and is considered a terrible crime.

King James I of England (and VI of Scotland) came to the throne in 1603 following the death of Queen Elizabeth I. The play pays homage to the king's Scottish lineage. The witches' prophecy that Banquo will found a line of kings is a clear nod to James' family's claim to have descended from the historical Banquo. James was convinced about the reality of witchcraft and its great danger to him leading to witch trials. The play is probably not written simply to please James, but certainly looks at relevant ideas.

Shakespearean Tragedy. Macbeth is one of Shakespeare's tragedies and follows specific conventions. The climax must end in a tremendous catastrophe involving the death of the main character; the character's death is caused by their own flaw(s) (hamartia) yet the character has something the audience can identify with.

The Great Chain of Being was a belief in a strict religious hierarchy (see key vocabulary) of all things which was believed to have been decreed by God. This idea was important in Elizabethan and Jacobean beliefs. The chain starts from God and progresses downward to angels, demons (fallen/renegade angels), stars, moon, kings, princes, nobles, commoners, wild animals, domesticated animals, trees, other plants, precious stones, precious metals, and other minerals.

Conventions of a Shakespearean Tragedy

A **tragic hero** who falls from greatness through a flaw of their own character.

Hamartia – the flaw in the tragic hero that destroys them.

A **hero of status** – the central characters are people of importance, with power and status to lose.

External conflict – his tragedies feature conflict between characters, and always lead to death.

Internal conflict – there are frequent moments of self-doubt or internal torment.

Supernatural elements – Many of Shakespeare's tragedies feature supernatural influences.

2. Key Characters

Macbeth: The eponymous protagonist is the tragic hero of this play. He is both ambitious and ruthless. He falls from loyal and respected warrior to a paranoid, tyrannical king, before dying in battle in Act V.

Lady Macbeth: A strong, ambitious and manipulative woman who exerts pressure on Macbeth to pursue his ambition of becoming king by murdering Duncan. Unable to deal with the guilt of these actions and is driven to madness and suicide.

The Witches / Weird Sisters: Supernatural and manipulative beings who seem to be able to predict the future. They are unearthly and omniscient.

Banquo: Macbeth's close friend and ally is astute and loyal. Macbeth sees him as a threat. He is virtuous, admired by audiences, and mistrustful of the supernatural witches.

Duncan: King of Scotland at the beginning of the play. He is a virtuous, strong and respected leader, held up as the model of good kingship by others in the play. He is murdered by Macbeth in Act 2.

Macduff: A soldier who is loyal to Duncan and is suspicious of Macbeth. His family is murdered by Macbeth's soldiers and he eventually exacts revenge by killing Macbeth. He was born by caesarian section and therefore was "not of woman born".

Malcolm: Duncan's son and next in line to the throne. He is described as a good man in the play.

3. Central Themes

Ambition
The play is about the corrupting power of ambition. Both Lady Macbeth and Macbeth are urged to action by the prophecies of the witches, but they still commit their crimes themselves because they want greater power. Their ambition leads them to violence and death.

Kingship and Tyranny
The play contrasts the kind and wise rule of Duncan, who is described as a virtuous (good) king, with the brutal rule of Macbeth, who quickly becomes called a tyrant. The play shows how Macbeth has no divine right to rule and upsets the natural order by killing Duncan.

Order and Disorder
The play subverts the natural order of the world. Macbeth's actions are based on a supernatural belief in a prophecy. It depicts an anarchic world: Macbeth inverts the order of royal succession; his wife inverts the patriarchal hierarchy; the unnatural world disrupts the natural. The disruption underpins the conflict that is not only external and violent but internal as Macbeth and his wife come to terms with what they've done.

Appearance and Reality
Characters in the play are often not what they seem. Lady Macbeth and Macbeth are duplicitous towards Duncan, the witches equivocate (not say what they really mean) and cannot be trusted, Lady Macbeth seeks to manipulate Macbeth.

4. Key Vocabulary

tyrant	cruel leader
duplicitous	deliberately dishonest
equivocation	a half truth
regicide	the act of killing a king
sceptical	someone who is unconvinced or doubtful
conflict	a serious disagreement or argument
valiant	great courage in the face of danger
ephemeral	lasting a very short time
transient	something that lasts for a short amount of time
androgyny	of indistinct gender
melancholy	deep sadness
emasculate	to deprive a man of his stereotypical role
catalyst	speeds up a reaction
sacrilege	destruction of something holy
motif	repeated image

5. Key Terminology, Symbols and Devices

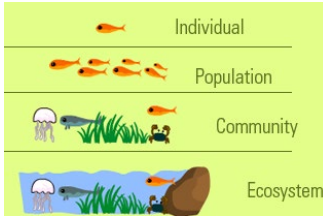
Motif	A recurring image or idea that has symbolic importance. The best example in Macbeth would be blood.
Soliloquy	When a character is alone on stage and speaks their thoughts aloud to themselves.
Iambic Pentameter	A line of a play or poem that has ten syllables organised into five pairs of syllables, where the second in each pair is emphasised. e.g. "When you durst do it then you were a man"
Foreshadowing	When a hint or warning is given about a later event.
Dramatic Irony	When a character is unaware of something that the audience is aware of, so they don't know the full significance of their words.
Symbolism	When something symbolises a set of ideas e.g. "The raven himself is hoarse" – raven symbolic of death, supernatural.
Aside	When a character pauses in a conversation to speak only to the audience or another character, unheard by the rest.

The Big Ideas	Notes	The Methods	Notes
<p>1. Shakespeare uses the play to demonstrate the terrible consequences of disrupting the natural order. His rule is unnatural and brings only disorder and sickness. His death restores balance.</p>		<p>1. Shakespeare uses blood as a metaphor for guilt through the play. As the guilt increases, the volume of blood increases.</p>	
<p>2. Shakespeare uses the play to demonstrate the consequences of engaging with the supernatural.</p>		<p>2. Shakespeare uses apparitions to present the consequences of ungodly behaviour and is ambiguous about whether they are real or imagined.</p>	
<p>3. Shakespeare uses Macbeth's role as a tragic hero to highlight how vulnerable people are to the destructive temptation of power.</p>		<p>3. Shakespeare's characterisation of Macbeth and Lady Macbeth establishes the idea that ungodly deeds do not go unpunished.</p>	

Year 11 Grammar Term 1 Science/B7 – Ecology

Ecosystems

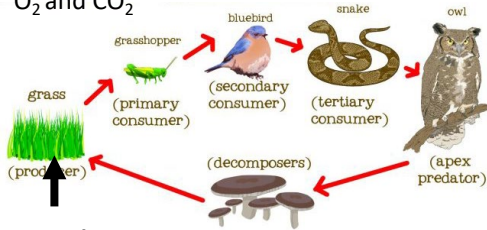
An ecosystem is all the living organisms within an area (community) plus the physical habitat



Interdependence

Organisms rely on each other for...

- Food
- Shelter / nesting sites
- Seed dispersal
- O₂ and CO₂

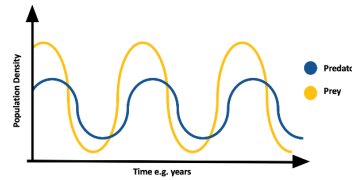


photosynthesis Biotic and Abiotic Factors

Factors that affect the number of organisms

Biotic – living	Abiotic – non-living
<ul style="list-style-type: none"> • availability of food • new predators arriving • new pathogens • one species outcompeting another so the numbers are no longer sufficient to breed. 	<ul style="list-style-type: none"> • light intensity • temperature • moisture levels • soil pH and mineral content • wind intensity and direction • carbon dioxide levels for plants • oxygen levels for aquatic animals.

Predator-Prey Relationships



Population increases and decreases follow similar pattern in a cycle because they affect each other – more prey = more food for predator.

However predator and prey not 'in phase', e.g. predator population changes are delayed as it takes time for the predator population to grow.

Competition

Plants	Animals
Light Space Minerals ions Water	Food Mates Territory

Plant adaptations



Plants in desert areas have :

- deep roots to maximise water uptake
- thin/no leaves to minimise water loss
- Spines to stop them being eaten

Animal Adaptations



Can be:

- Structural – a feature of the organism's body (e.g. thick fur, bright colours, camouflage)
- Behavioural – responses from the organism (e.g. hibernation, migration, huddling together)
- Functional – a body process (e.g. camel breaking down hump of fat into water, producing little urine)

Small surface area to volume ratio = ↓ heat loss

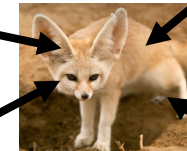


Thick layer of fat

Fur colour camouflaged with snow

Thick fur

Large surface area to volume ratio = ↑ heat loss



Very little fat

Thin fur

Fur colour camouflaged with sand

Extremophiles

Extremophiles are organisms that live in extreme environments. Extreme environments = high temperatures, high pressure or high salt concentration.

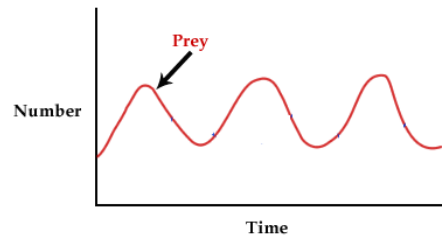
E.g. bacteria living in deep sea vents = extremophiles.

Year 11 Grammar Term 1 Science/B7 – Ecology

Ecosystems

1. What is a community?
2. What is an ecosystem?
3. Give two things that animals rely on plants for
4. Give two things that plants rely on animals for
5. What is the term given to the predator at the very top of a food chain?
6. Why are green plants known as producers?
7. Name two biotic factors that can affect organisms within a habitat
8. What does the term 'abiotic' mean?
9. Name two abiotic factors

1. Name two things plants compete for
2. Name two things animals compete for
3. Sketch the line to show how the predator population would change on the graph below



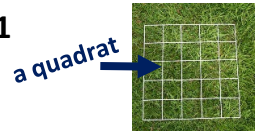
4. Why do some plants have spines instead of leaves?
5. Name two ways plants are adapted for living in desert climates.

1. Name the three types of adaptations
2. Name one behavioural adaptation
3. How are animals adapted to live in cold climates?
4. What are extremophiles?
5. What is the surface area : volume ratio like on desert animals?
6. Give an example of an extremophile

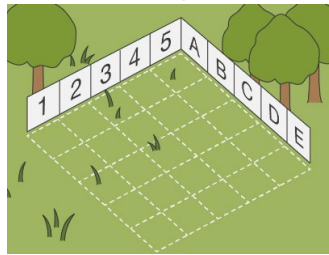
Year 11 Grammar Term 1 Science/B7 – Ecology

RP7 – Estimating Populations Part 1

1. Calculate area of site.
2. Divide site up into a numbered grid
3. Use a random number generator to pick coordinates.
4. Randomly throw the 0.25m² quadrat at those coordinates.
5. Count the number of particular organism in the quadrat.
6. Repeat steps 3-5 **ten times (minimum)**.
7. Calculate mean number of organism.
8. Calculate estimated number organism in site using the following equation

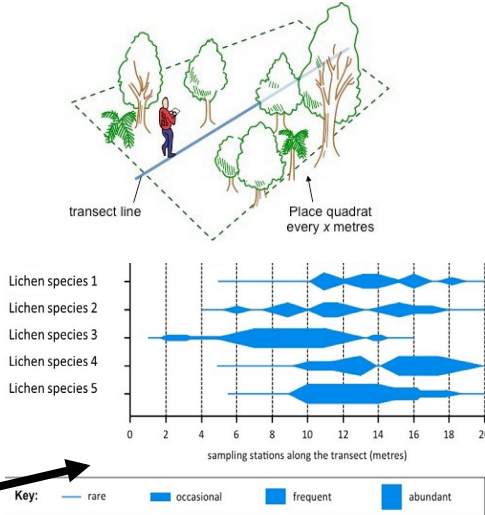


$$\frac{\text{area of site}}{\text{area of quadrat}} \times \text{mean}$$

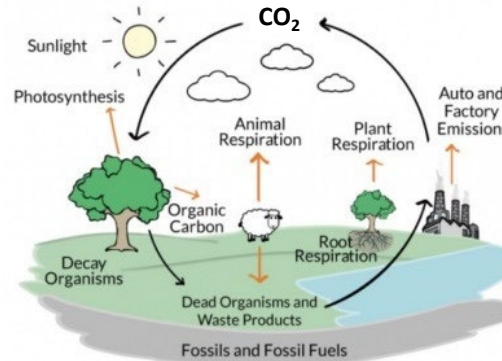


RP7 – how populations may change over a distance

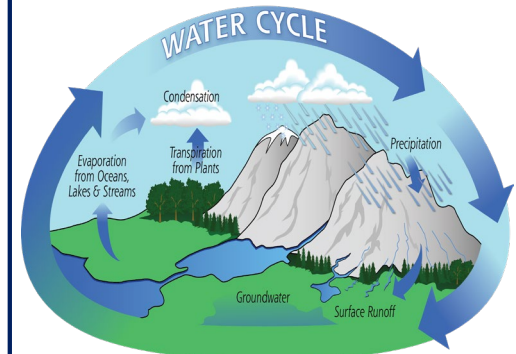
1. Place tape measure (a transect line) through ecosystem being investigated.
2. Place quadrat at regular, random intervals along the transect line and count the number of particular organisms.
3. Draw a distribution graph of your results. (They might look like this.)



The Carbon Cycle



The Water Cycle



Human Impact on Biodiversity

Waste management	Rapid growth in the human population = more resources are used and more waste is produced – this contributes to pollution. Can occur in water, in air and on land.
Land Use	Humans reduce the amount of land available for other animals and plants by building, quarrying, farming, dumping waste and the destruction of peat bogs.
Deforestation	In tropical areas it has occurred to provide land for cattle and rice fields or grow crops for biofuels.
Global Warming	Levels of carbon dioxide, methane and water vapour in the atmosphere are increasing, and contribute to 'global warming'.

Decay

Microbes such as fungi and bacteria break down dead or dying material. This returns carbon to the atmosphere as carbon dioxide and mineral ions to the soil.



Maintaining Biodiversity

- breeding programmes for endangered species
- protection of rare habitats
- reintroduction of hedgerows
- reduction of deforestation and CO₂ emissions
- increased recycling to avoid landfill

Year 11 Grammar Term 1 Science/B7 – Ecology

1. What is the minimum number of times the organism should be counted when estimating population size?
2. What is a quadrat?
3. What is the equation used to estimate population size?
4. How can you ensure the quadrat is randomly placed throughout the site?

1. Which process takes carbon into plants?
2. What do plants make with the carbon (and water)?
3. Name 2 processes that release carbon into the atmosphere as carbon dioxide.
4. What happens to carbon that gets trapped deep underground for millions of years?
5. By which process do plants return water from the ground to the air?

1. What is a transect line?
2. What is a transect line used to investigate?
3. How is the quadrat placed?

1. Why has large scale deforestation occurred in tropical areas?
2. Name two ways humans use land that reduces biodiversity.
3. Which three gases contribute to global warming?
4. Name 3 types of pollution.

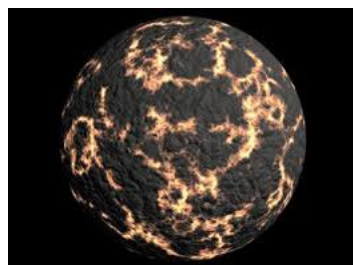
1. Which types of microbes cause decay?
2. What can decay release into the environment?

1. What has been done to prevent some species from becoming extinct?

Year 11 Grammar Term 1 Science/Chemistry C9 – Earth & Atmosphere

Early Atmosphere vs modern atmosphere:

Gas	Levels in earth's early atmosphere	Percentage in air today
Nitrogen	None	78
Oxygen	None	21
Others – CO ₂ and argon	Very High	1
Water vapour	Very high	Varies – but usually only around 1%
Ammonia	High	None



4.6 billion years



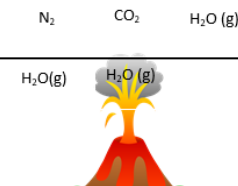
We think that the atmosphere on Earth was once like that of Mars or Venus is today

When Earth was formed it was so hot it was molten on the surface, and the atmosphere was full of toxic gases like methane and ammonia.

We cannot be sure about exactly what the Earth's early atmosphere as we have no evidence from so long ago

How did the atmosphere change?

1. Volcanoes released nitrogen, carbon dioxide and water vapour



2. The earth cooled and solidified



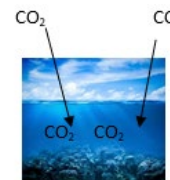
3. Water vapour in the atmosphere condensed and fell as rain



4. Oceans, lakes and rivers formed



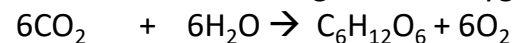
5. Carbon dioxide from the air dissolved in the oceans



6. Some of this reacted to form sedimentary rocks like limestone

7. Algae and then plants evolved, removing carbon dioxide from the air and produced oxygen by photosynthesis

Carbon dioxide + water → glucose + oxygen



8. Many early plants and marine organisms were buried and decayed underground, locking up carbon in fossil fuels like coal (plants) and oil (animals)



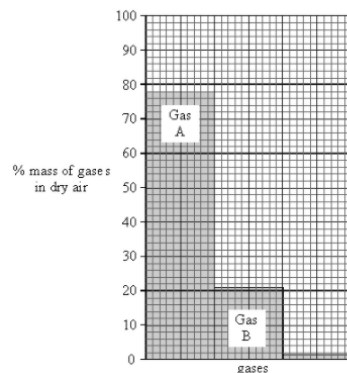
Year 11 Grammar Term 1 Science/Chemistry C9 – Earth & Atmosphere

1. Name two gases that were present in large quantities in Earth's early atmosphere
2. What is the most abundant gas in today's atmosphere?
3. Which two planets do we think Earth's early atmosphere was similar to?
4. Why can we not be sure about the Earth's early atmosphere?
5. Give two differences between the early atmosphere and today's atmosphere.
6. The data for today's atmosphere is shown on the chart below:

Use the table on page 1 to name:

Gas A

Gas B



1. How did nitrogen form in the atmosphere?
2. How did water vapour levels decrease?
3. Name 2 ways carbon dioxide was removed from the early atmosphere before plants evolved.
4. Which organisms were the first to photosynthesise?
5. Why did oxygen levels rise?
6. Write the equation for photosynthesis
7. What is 'locked up carbon'?
8. Describe how carbon dioxide in the air ended up in rocks like limestone
9. How was coal formed?

Year 11 Grammar Term 1 Science/Chemistry C9 – Earth & Atmosphere

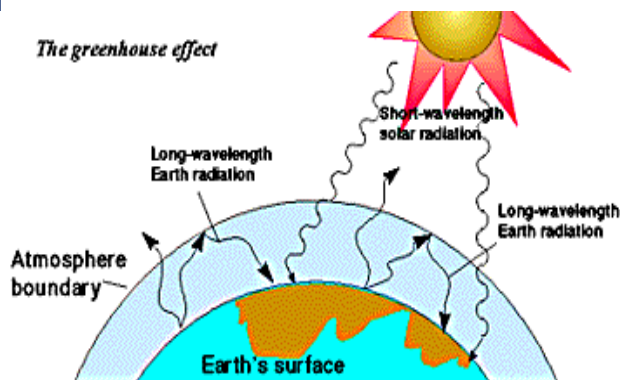


The greenhouse effect

The greenhouse layer is a layer of gases in the atmosphere made of:

- carbon dioxide
- methane
- water vapour

The greenhouse effect



1. Short wavelength infrared radiation from the sun reaches Earth
2. Some energy is absorbed by the Earth
3. Longer wavelength IR is reflected by the Earth
4. Longer wavelength IR cannot get through the greenhouse layer as easily so some is trapped, warming the Earth

The thicker the layer of gases, the more heat is trapped

Global warming

The greenhouse layer is getting thicker, because:

- CO₂ released from fossil fuels to generate electricity
- CO₂ released from fossil fuels in vehicles
- Methane released from cattle
- Methane released from rotting landfill sites

Many scientists believe that human activities are causing the warming of the Earth.

Potential consequences:

- Melting ice caps
- Loss of habitats for animals and plants
- Damage to coral reefs caused by warmer oceans
- Changes to animal migration patterns
- Extreme weather patterns – more hurricanes, heat waves, droughts, snow and ice
- Difficulty growing crops so reduced food supply

Carbon footprint

The total amount of CO₂, CH₄ and water vapour released by of a product or service. E.g for a concert:

- electricity in performance
- Fossil fuels used by people travelling there
- Plastics used and disposed of in refreshments etc

Carbon footprints can be reduced by recycling, reducing energy use or eating vegetarian diets but this is hard to get people to do.

Pollutants :

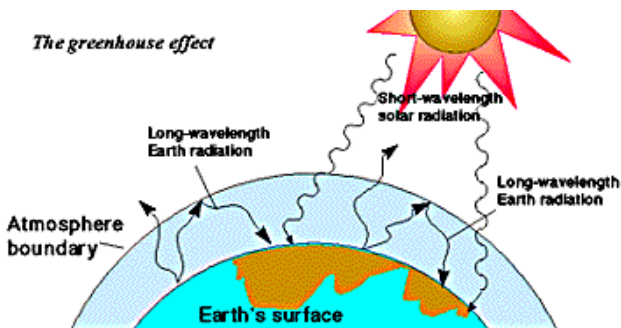
Pollutant	Source	Effects
Carbon dioxide	Combustion	Global warming
Carbon monoxide	Incomplete combustion of fuels	Toxic gas, can be fatal
Sulfur dioxide	Traces of sulfur in coal react with oxygen when burned	Acid rain
Nitrogen oxides	Hot engines provide the energy for N ₂ to react with O ₂	Acid rain
particulates	Incomplete combustion	Global dimming, breathing problems

Year 11 Grammar Term 1 Science/Chemistry C9 – Earth & Atmosphere



The greenhouse effect

1. What is the 'greenhouse' layer?
2. Name the 3 greenhouse gases



1. What sort of radiation is emitted from the sun?
2. How is the wavelength of the radiation reflected from Earth different than that from the sun?
3. Why is some heat trapped?
4. What is the relationship between the thickness of the layer and the amount of heat trapped?

Global warming

1. Name two human activities that release CO₂
2. Name two sources of methane

1. Name two impacts of global warming on animals
2. Why might coral reefs be damaged by global warming?
3. Why might our food supply be under threat?

Carbon footprint

1. What is the 'carbon footprint'?
2. Name two ways a person can reduce their carbon footprint.
3. Why is it difficult to get people to reduce their carbon footprint?

Pollutants :

Pollutant	Source	Effects
Carbon dioxide		Global warming
	Incomplete combustion of fuels	Toxic gas, can be fatal
Sulfur dioxide		
Nitrogen oxides		Acid rain
particulates		

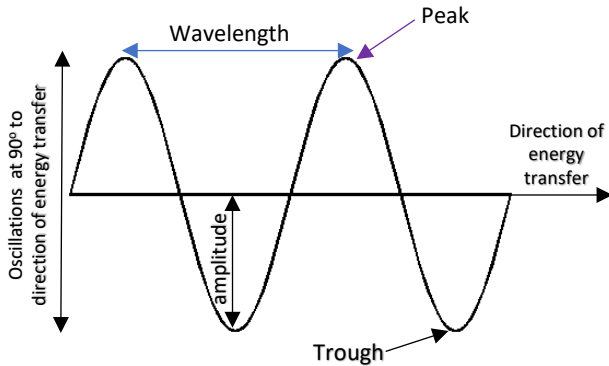
Year 11 Grammar Term 1 Science/Physics P6 Waves

Transverse Waves

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

Examples:

- Electromagnetic waves
- Ripples on water.

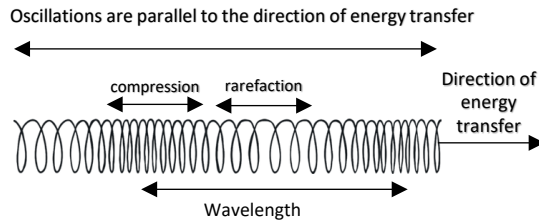


Longitudinal Waves

- 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)

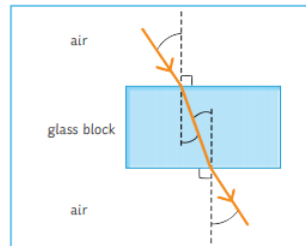
↘

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.

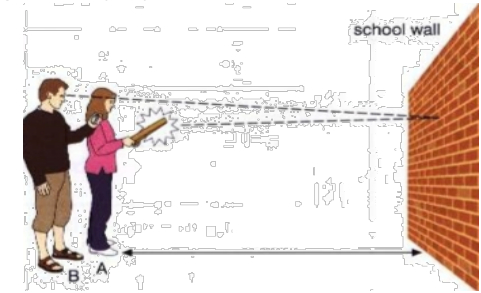


Measuring speed of sound waves in air

- 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.

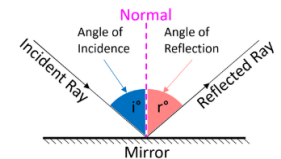


Reflection

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

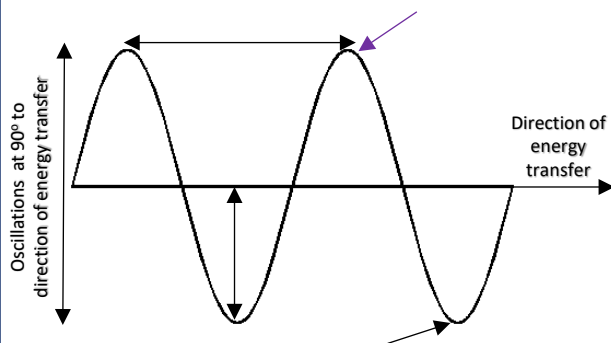
The angle of incidence = angle of reflection



Year 11 Grammar Term 1 Science/Physics 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?

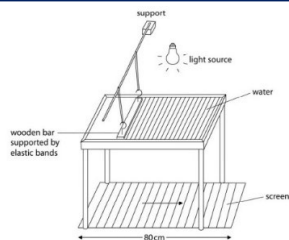
1. What is the law of reflection?

Year 11 Grammar Term 1 Science/Physics 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

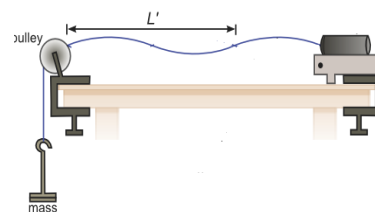
1. Set up the equipment as shown and turn on the motor to produce low frequency waves so that they are able to be counted.
2. Adjust the lamp until pattern is seen clearly on white screen underneath
3. Use a ruler to measure the length of a number of waves (e.g 10) and divide the length by the number 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

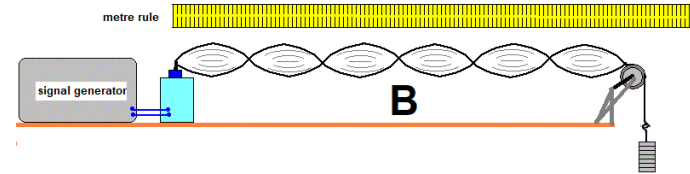
Year 11 Grammar Term 1 Science/Physics P6 Waves – Required Practical – Ripple Tank

- 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?

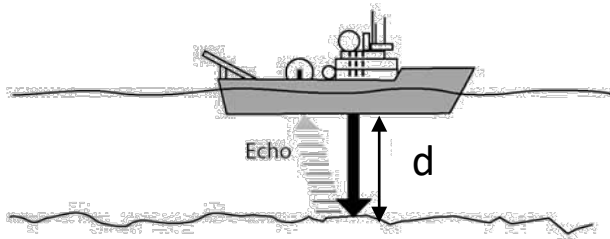
Year 11 Grammar Term 1 Science/Physics P6 Waves

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.



$$d = \frac{1}{2}vt$$

v = speed of the sound wave

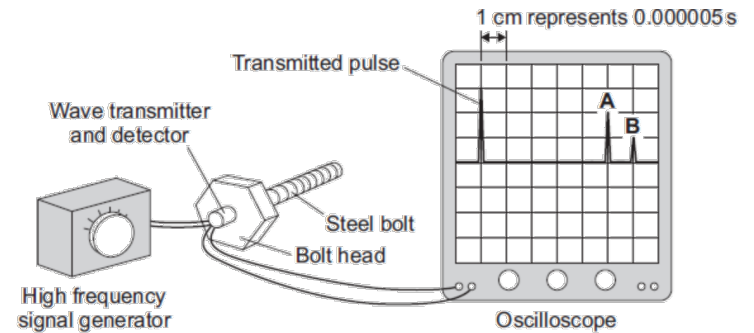
t = time between transmitting the signal and receiving the echo.

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.

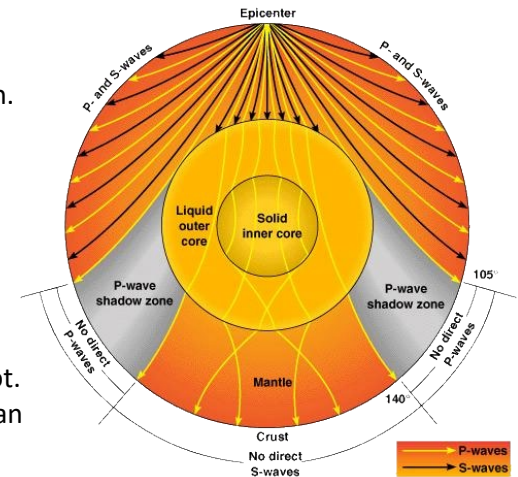
- The diagram shows how a very high frequency sound wave can be used to check for internal cracks in a large steel bolt. The oscilloscope trace shows that the bolt does have an internal crack.



- 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.



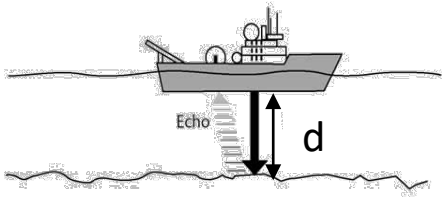
Year 11 Grammar Term 1 Science/Physics P6 Waves

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?



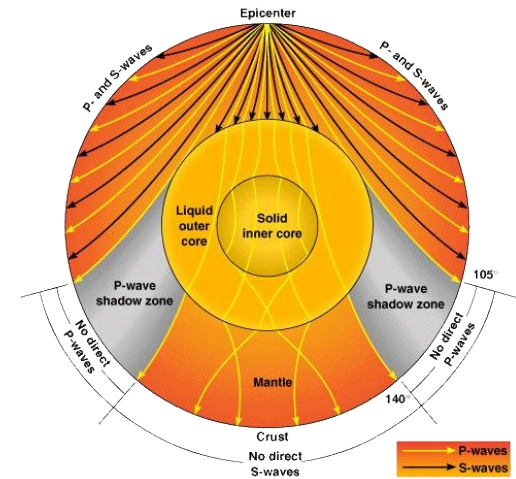
2. What is the equation used to find the depth of the ocean floor (d) under the boat?

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

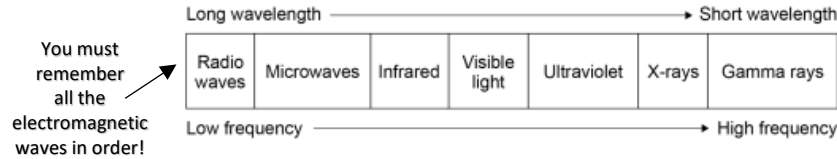
1. What are seismic waves?
2. What is the difference between a P-wave and an S-wave?
3. What do seismic waves tell us about the structure of the Earth.



Year 11 Grammar Term 1 Science/Physics 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



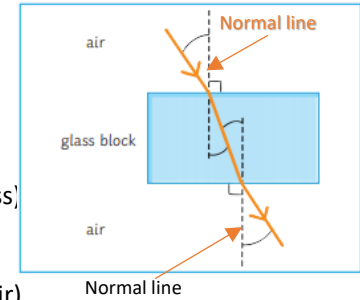
Wave	Use	Other information
Radio waves	Television and radio	Easily transmitted through the air. Harmless if absorbed by the body.
Microwaves	Satellite communications and cooking food	Can be harmful when internal body cells become heated by over exposure.
Infrared	Electrical heaters, cooking food and 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 skin cancer .
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

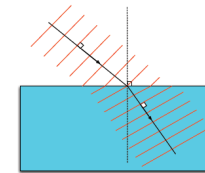
- You need to construct **ray diagrams** to show how a wave is **refracted** at the boundary of a different medium.

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**.



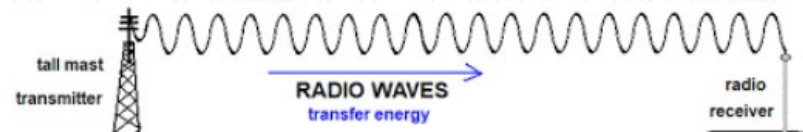
The ray bends because different parts of the wavefront cross the boundary at slightly different times –



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.



Year 11 Grammar Term 1 Science/Physics P6 Waves

1. State two properties of electromagnetic waves.
2. Write the EM spectrum in order of **increasing** wavelength
3. Write the EM spectrum in order of **increasing** frequency
4. How fast do electromagnetic waves travel?
5. State the uses of:
 - a) radio waves
 - b) microwaves
 - c) infrared
 - d) visible light
 - e) ultraviolet
 - f) x-rays
 - g) gamma rays

1. What happens when a ray goes from a less dense → more dense medium?
2. What happens when a ray moves from a more dense → less dense medium?
3. What is the line at 90° to a surface called?
4. 4. What happens if a ray hits a medium at 90° ?

1. What type of current do radio waves create when absorbed?
2. What is the frequency of the current produced by a radio wave of frequency 250Hz?

Year 11 Grammar Term 1 Science/Physics 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

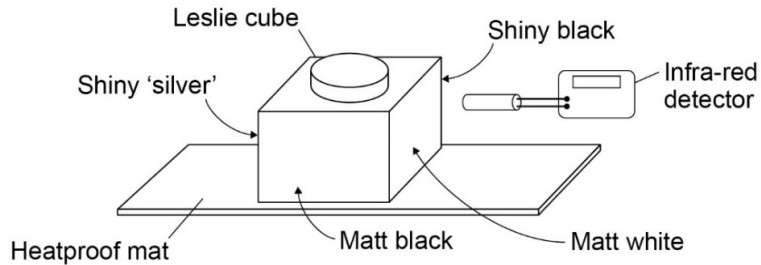
Conclusion

Black matt surfaces absorb and emit the most infrared radiation.

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

Year 11 Grammar Term 1 Science/Physics 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?

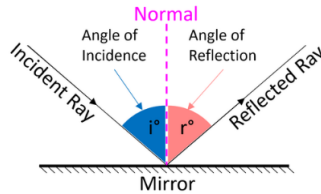
Year 11 Grammar Term 1 Science/Physics P6 Waves

Reflection

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

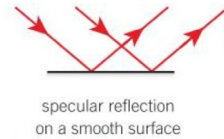
Law of reflection

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

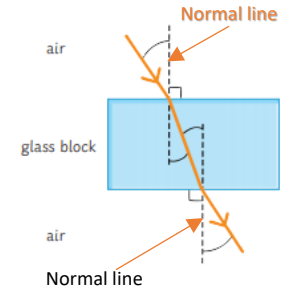
- You need to construct **ray diagrams** to show how a wave is **refracted** at the boundary of a different medium.

Less dense \rightarrow More dense (e.g. air to glass)

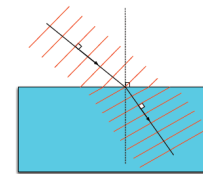
- Ray **slows down** and bends **towards the normal line**.

More dense \rightarrow Less dense (e.g. glass to air)

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



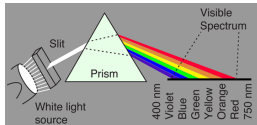
The ray bends because different parts of the wavefront cross the boundary at slightly different times –



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



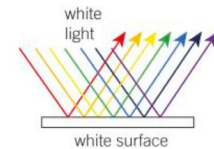
Primary and secondary colours

Red + yellow = green

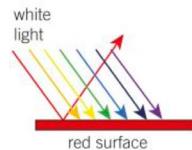
Green + blue = cyan

Blue + red = magenta

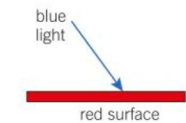
Green + blue + red = white



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



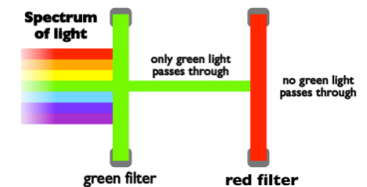
A red object looks red because it **absorbs** all the wavelengths of light except red. Only red light is **reflected**.



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

Filters

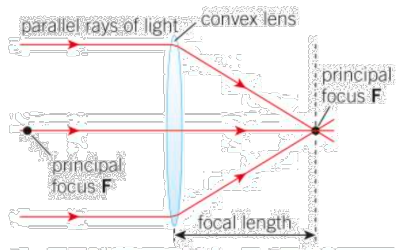
Filters change the colour objects appear as the only let certain wavelengths of light through. A green filter absorbs all colours except green, and **transmits** only green light



Year 11 Grammar Term 1 Science/Physics P6 Waves

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

Year 11 Grammar Term 1 Science/Physics P6 Waves

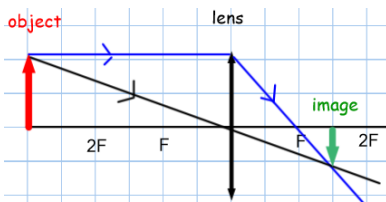


Convex (Converging) Lenses make parallel rays of light converge to meet at the principal focus. Focal length = distance from centre of lens to principal focus

To draw a ray diagram:

Draw two rays from the top of the object

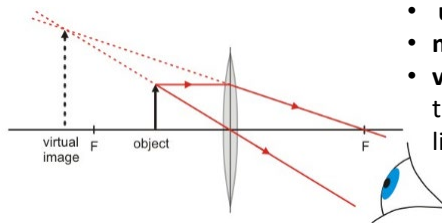
1. A ray parallel to the principal axis, which is refracted through the principal focus.
2. A ray through the centre of the lens, which does not change direction.
3. To create the image, draw an arrow from the principal axis to the point where the rays meet.



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

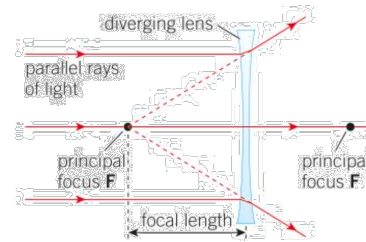
This image is

- **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.

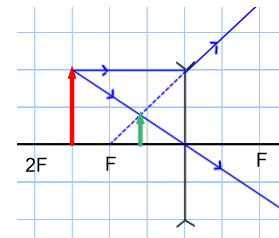
Concave (Diverging) Lenses make parallel rays of light diverge (spread out), as if they have come from the principal focus of the lens



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.



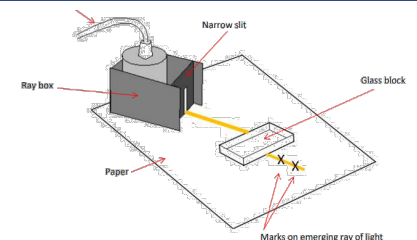
Concave lenses always produce **virtual** images.

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



Year 11 Grammar Term 1 Science/Physics 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?

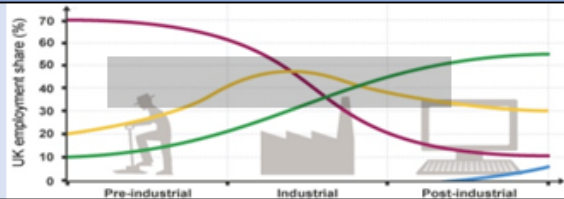
1. What is the formula to calculate magnification?

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.



1. Economic change in the UK



Primary	↘ due to mechanisation.
Secondary	↗ due to industrial revolution then ↘ due to de-industrialisation.
Tertiary	↗ due to wealth (↗ disposable income)
Quaternary	High-tech jobs including research and IT. ↗ due to government policies and the increase in technology.

Why has our economy changed?

De-industrialisation	The decline of a country's traditional manufacturing industry due to exhaustion of raw materials, loss of markets and competition from NEEs.
Government policies	A plan decided by a government to manage issues in a country.
Globalisation	The process which has created a more connected world; with increases in the movement of goods/people worldwide

2. Post industrial economy

Tertiary and quaternary sector employed 81% in 2011.	
IT	Employs over 60,000 people.
Services	Retail is the largest sector. Employs 4.4mill
Finance	London is the world's leading centre. HSBC
Research	Government invested £30bill in 2013.
Science parks	Groups of <u>high tech</u> industries and those doing scientific research. Located near universities (for graduates, share facilities).
Business parks	Purpose built areas of offices and warehouses (on edge of cities as less congestion, cheaper, good transport links).

3. Environmental impact of industry

Air and water pollution. Soil degradation.	
Releases CO ₂ increasing the rate of global warming.	
Transport of materials is by road ↗ air pollution.	
Example of modern industry being environmentally sustainable	
Google	London Landscaper started 2018.
686 bikes spaces	Encourages cycling to work.
4 car spaces	< congestion/CO ₂ emissions.
Solar panels. 19,800 kWh	Reduces fossil fuel consumption and reduces carbon footprint.
Rooftop gardens	Urban greening. < CO ₂ . Collects rainwater. Encourages wildlife.

4. Changes in the rural landscape

Population decline	Outer Hebrides (away from cities, limited opportunities).
Social changes	<ul style="list-style-type: none"> ↓ Declined by >50% since 1901. ↑ aging population = care issues. ↓ Less children > schools shut.
Economic changes	<ul style="list-style-type: none"> ⊖ Services close ie post offices. ⊖ ↑ tourists but infrastructure not there. ⊖ Government subsidies cost of ferries.
Population growth	South Cambridgeshire (near large cities, people can commute).
Social changes	<ul style="list-style-type: none"> ↓ Migrants from Cambridge, some now from Eastern Europe too. ↓ Proportion of elderly increasing (>65). ↓ 80% car ownership = > congestion. ↓ Young people are costed out.
Economic changes	<ul style="list-style-type: none"> ⊖ ↑ house prices. Less affordable housing ⊖ Petrol prices ↑.

5. Improvements in infrastructure

Road	Upgrading 'Smart motorways' M4. Variable speeds, reducing accidents, extra lanes. 2014 Road investment strategy £15 bill. New construction jobs, boost economy.
Rail	Crossrail in London. Puts extra 1.5 million within 45 mins commute of capital city. HS2 to reduce journey times. London to Manchester in 1 hr 8 minutes.
Port	Liverpool 2. Doubles capacity to over 1.5 million containers a year. 96% of UK imports/exports through ports.
Airports	Heathrow expansion. 3 rd runway £18.6bill

6.. North-South divide

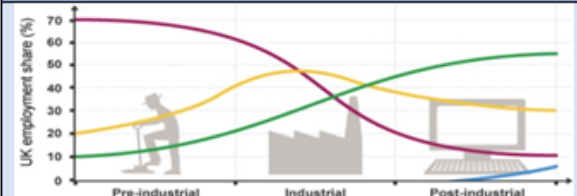
Causes	Decline of heavy industry in North (coal) Investment in finance and service industry in the South Investment in infrastructure in South
Impacts in north	Higher unemployment / lower wages (40%) Poor health, lower life expectancy (10 yrs) Poor education. There are SOME exceptions

Strategies attempting to resolve regional differences

Devolving more powers	Give more power to local councils and Welsh and Scottish governments. Plan best how to use their money.
Northern Powerhouse	A plan to attract investment to north. Improve transport links to northern cities. e.g. HS2, Liverpool2. BUT just a CONCEPT not a plan.
Enterprise Zones	55 EZs to encourage businesses to set up in areas of high unemployment. Reduce taxes, simple planning rules, superfast broadband to the area. Created more than 15,000 jobs.



1. Economic change in the UK



Primary	
Secondary	
Tertiary	
Quaternary	

Why has our economy changed?

De-industrialisation	
Government policies	
Globalisation	

2. Post industrial economy

Tertiary and quaternary sector employed 81% in 2011.	
IT	
Services	
Finance	
Research	
Science parks	
Business parks	

3. Environmental impact of industry

Example of modern industry being environmentally sustainable

Google	
686 bikes spaces	
4 car spaces	
Solar panels.	
19,800 kWh	
Rooftop gardens	

4. Changes in the rural landscape

Population decline	
Social changes	
Economic changes	
Population growth	
Social changes	
Economic changes	

5. Improvements in infrastructure

Road	
Rail	
Port	
Airports	

6.. North-South divide

Causes	
Impacts in north	

Strategies attempting to resolve regional differences

Devolving more powers	
Northern Powerhouse	
Enterprise Zones	



3. The Spanish Empire 1528-1555

Pizarro – First Expedition

Pizarro was with Balboa when they reached the Pacific. Pizarro was impressed by Cortes and his success in Mexico. Tales of vast wealth in Peru encouraged Pizarro to find his own success.

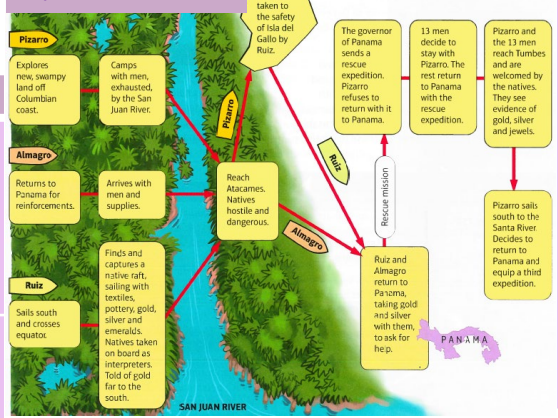
November 1524 – First expedition

Not a success. Only reached Columbia before bad weather, lack of food and attacks by hostile natives forced Pizarro to turn back. The mangrove swamps put off any idea of establishing a settlement too.

Impact of Gold and Silver on Spain

- Used to make 8 sided coins – ‘pieces of eight’. Widely accepted in Europe due to high silver content.
- The Crown took 25% of bullion coming into Spain .
- 75% of wealth went to Spanish merchants and conquistadors.
- European traders put up prices for the wealthy Spanish merchants.
- High prices led to inflation – workers demanded higher wages in Spain.
- Charles I invested money in the military – not industry and business.
- Spanish were getting wealthy by finding bullion instead of making products and selling.

Pizarro's Second Expedition



Pizarro's appeal to the Spanish King Charles I

In 1528 Pizarro returned to Spain with evidence of Inca wealth, including Llamas, silver and gold. Having been refused permission to launch a third expedition by the governor of Panama, he appealed to Charles I. Pizarro received a licence, the *Capitulacion de Toledo*, in July 1529, authorising him to conquer Peru.

Governing the Empire

The Spanish needed to find a way to govern the discovered territories to restore peace and stability. They needed to make sure basic essentials were available, laws were in place, conquistadors didn't fight among themselves and ensure daily life was managed effectively.

Bartolome de las Casas – was a priest that tried to encourage the fair treatment of natives in the New World. 1527 he wrote a book 'A Short Account of the Destruction of the Indies'.

The New Laws:

- It was made illegal to enslave natives.
- The amount of tribute that could be collected was limited.
- Encomiendas had to be passed back to the Spanish government on the death of the encomendero.

The role of the Viceroy:

The Council of the Indies appointed two viceroys to govern Spanish territories: one in Mexico city and one in Lima (Peru). They acted on behalf of the government. Justice was managed through the audiencias (courts), with judges who were independent of the viceroys.

The role of the **encomienda system**:

This was imposed officially across the Spanish Empire. An encomienda was land granted to a Spaniard, who was then called an encomendero. He could demand tribute from natives. In return he was responsible for their protection and their conversion to Christianity.

Significance of the New Laws 1542:

Laws introduced to improve the rights of native people, but encomenderos opposed them and the viceroy of Peru refused to implement them. Revolts in Peru: the most serious in 1544 had to be put down by the Spanish government and led to a temporary halt in the Spanish conquest of the New World in 1550. Although forced to suspend the laws, Charles I insisted encomiendas be passed back to the crown on the death of an encomendero. Natives continued to be exploited in the New World.

Date	Event
Dec 1518	Smallpox epidemic in Haiti.
Sept 1520	First cases of smallpox in Mexico
1525-1527	Smallpox spreads along the Caribbean coast.
1527	Smallpox reaches Peru. Huayna Capac dies from smallpox after returning to help his people.
1529	Civil War breaks out between Huascar and Atahualpa (Huayna Capac's son).
April 1532	Huascar is captured and killed. Atahualpa takes over Cuzco.
Nov 1532	The Battle of Cajamarca – Pizarro's men hid in the town square of Cajamarca. When Atahualpa's men entered the town they met with a priest who showed them a bible. Atahualpa threw the bible on the floor which was the signal needed for Pizarro's men to attack and they took Atahualpa prisoner.
July 1533	Atahualpa promised to fill his prison with treasure in order to secure his release. Although he did this, the Spanish still sentenced him to death. On 26 th July he was garrotted.
1533	Manco made puppet ruler of the Inca Empire.

Pizarro and the Conquest of the Inca Empire

Revolt of the Incas 1536

The Spanish saw Manco as a puppet king who would rule on their behalf. When Manco escaped from the Spanish he assembled an army and attacked the base at Cuzco.

The Siege of Cuzco 1536-1537

- 10,000 Inca warriors faced 150 Spanish and 1000 native allies.
- The Inca warriors broke into town, burning buildings to try to drive out the Spanish, but the Spanish were able to put the fires out.
- The Spanish used their cavalry to attack the Inca warriors.
- The Spanish captured the fortress of Sacsahuaman from the Incas, which the Inca army then besieged.
- The siege ended when Spanish forces exploring Chile returned.
- Manco withdrew and established a separate kingdom which lasted until 1572.

Founding of La Paz, 1548

La Paz was founded to symbolise the end of the revolt and to demonstrate that Spain had the overall authority in the New World, not the conquistadors. It became the administrative centre of the Spanish Empire. The Viceroy and the audiencias (courts) were based here. It was founded close to trade routes to ensure it maintained control over the silver mines based in Potosi and Oruro.

Discovery of silver in Bolivia and Mexico

By 1550 silver had been discovered in Potosi (Bolivia) and in Guanajuato and Zacatecas (Mexico). Some was sent back to Spain but most was kept by the conquistadors. Large mining towns developed to house workers for the mines. Colonisation of the New World increased as adventurers, merchants, speculators and their employees came in search of wealth. 25% of silver shipped to Spain went straight into the treasury.

Conquistador Revolt in Peru 1544

A serious revolt took place as the encomenderos were unhappy with the New Laws. This revolt was led by Gonzalo Pizarro, brother of Francisco Pizarro. It was a success and Gonzalo ruled over the Inca territory for 2 years. The arrival of a Spanish army resulted in his execution and the restoration of Spanish authority. The revolt raised the issue of control. Spain needed to govern its territories and control the rebellious conquistadors and encomenderos. This led to the founding of La Paz in 1548.

Pirates and Privateers

Spanish treasure was a target for Pirates and Privateers (funded by government/monarchy).



The ships were easy to find as they took well-defined and predictable routes across the Atlantic.

War with France (1542-46) meant Spain had to adapt ships and develop systems to deal with French privateers.

Galleons patrolled the sea routes and started carrying treasure as they were well armed.

Treasure fleet system developed: the **Tierra Firme** (went to S. America) and the **New Spain** (went to Mexico).

Growth of Seville

All goods imported to Europe had to go through Seville. Merchants travelled from all over Europe to buy and sell goods. This gave Spain a monopoly over trade with the New World.

The Slave Trade

Due to the number of deaths of natives in the New World, there was a labour shortage. Under the Treaty of Tordesillas, Spain could not directly get slaves from W. Africa. Spanish merchants could get licences (asientos) to supply slaves to the New World. Licences sold to the highest bidder who could then buy from Portuguese merchants and sell to merchants in the New World.

Casa de Contratacion (House of Trade)

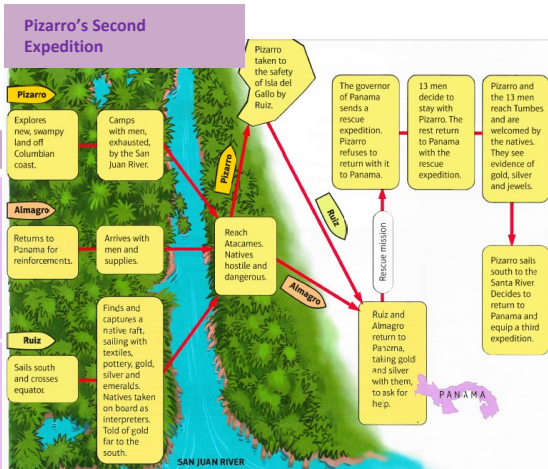
Established in 1503 by Isabella. Collected colonial taxes. Approved voyages of exploration and trade and kept secret information on new lands and trade routes. Licenced captains of ships. In theory, no Spaniard could sail anywhere without the approval of the Casa.

Council of the Indies

Formed in 1524 and based in Spain. Controlled all matters concerning the New World. Messages received from Viceroys would be discussed and advice given to the King. Decisions made were sent from the Council to the Viceroys. This was Spain's way of trying to maintain control over its empire in the New World.



3. The Spanish Empire 1528-1555



Pizarro's appeal to the Spanish King Charles I

Pizarro and the Conquest of the Inca Empire

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Bartolome de las Casas –

The New Laws:

The role of the Viceroy:

The role of the **encomienda** system:

Significance of the New Laws 1542:

Founding of La Paz, 1548

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A. Can you define these key words?	
Key word	Key definition
Forgiveness	Pardoning someone for wrongdoing
Holy War	A war that is fought for religious reasons, usually backed by a religious leader
Just War	A Christian theory that asks whether a war is fought justly
Justice	Bringing about what is right and fair, according to the law or God's will or moral values
Pacifism	A belief that all forms of violence are wrong, commonly held by Quakers
Conflict	A serious disagreement
Jihad	The struggle to defend against that which threatens Islam/ the internal struggle to defend against temptation that might lead you away from God
Protest	A public expression of disapproval, often in a big group, can be peaceful or violent
Reconciliation	Restoring a relationship after conflict
Retaliation	Deliberately harming someone as a response to them harming you
Self-Defence	Protecting yourself or others from harm
Terrorism	Using violence in order to further a political or religious message and to achieve an aim

What we are exploring this term: Pacifism . Protest. Terrorism. Weapons of mass destruction Just war

C Is violent protest or terrorism acceptable?	
<p>1. A small minority of Christians may say yes if it truly brings an end to suffering- love thy neighbour and 'free the oppressed'</p> <p>2. A small minority of Muslims may agree due to the duty of jihad to defend the faith against true oppression.</p> <p>3. A humanist may agree in a rare occasion if it truly had the best consequences for humanity as a whole</p> <p>4. Hindus may point to their warrior class to justify a god given right to fight if needed</p>	<p>1. Most Christians consider terrorist acts of violence to be wrong, as Jesus did not accept violence. He said 'put your sword pack in its place' when his disciple tried to protest against his arrest.</p> <p>2. Muslims do not agree with terrorism because terrorist acts of violence are considered to be wrong and against the wishes of God, especially as the victims are usually innocent people. There is no justification for terrorist acts in the teachings of Islam- Qur'an says that innocents much not be harmed.</p> <p>3. Humanists might say that it does not help human wellbeing as it created disorder and fear. As such the consequences are rationally seen to be not worth it.</p> <p>4. Hindus might argue that all violence is wrong (Ahimsa) as it causes bad karma and keeps us in the cycle of samsara</p>

E Is pacifism wrong? Yes	No
<p>1. The Muslim duty of Jihad suggests pacifism can be wrong</p> <p>2. Christians are called to 'free the oppressed' and 'protect the weak and needy</p> <p>3. Humanists may argue that pacifism is not reasonable or realistic in a world of violence and may not help humanity protect each other</p>	<p>1. It works- see Ghandi and Martin Luther King</p> <p>2. Christians believe 'blessed are the peacemakers'</p> <p>3. Muslims believe that greater Jihad is the struggle to defend the faith against the internal struggle to fall from the right path</p> <p>4. Innocent people should not be harmed in all religions and pacifism is the only way to truly ensure this</p>

D	What are the rules of the just war theory?	Can just war theory make war fair?
	<p>1. There must be a just cause such as to defend</p> <p>2. Intentions must be to do good and overcome evil</p> <p>3. War must be started by legitimate authority</p> <p>4. Innocents must not be harmed</p> <p>5. Force and damage must be proportionate to the good done by the war</p> <p>6. War must be the last resort</p> <p>7. There must be a reasonable chance of success</p>	<p>1. Yes as it protects innocents</p> <p>2. Yes as it allows us the right to self defence</p> <p>3. Yes as it has to be the last resort so it is really is the only option left</p> <p>4. It will mean the war is for a good/fair reason and not pointless greed</p> <p>5. It means nuclear weapons can't be used</p>
		<p>1. No as innocents will always be harmed in war</p> <p>2. A 'legitimate' authority could still be corrupt</p> <p>3. You never know the harm of war until many years later so you can't calculate whether it is proportionate</p> <p>4. You cannot know whether it will be successful until you have fought it</p> <p>5. For success someone will have to use a greater force so the 'proportionate ' rule will never be followed</p>

B. Religious and non religious beliefs about weapons of mass destruction	
1	It is wrong to damage the environment which is God's perfect creation. It would be a form of blasphemy to destroy God's Sacred work.
2	They hurt many innocent people and this is against all religious teachings. Lif e is a sacred God given gift and only God has the right to take life.
3	For humanists, if their use means we can end more human suffering than the weapons cause, then there might be a possible circumstance in which they could be deemed acceptable.



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Terrorism	

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C	Is violent protest or terrorism acceptable?	
	1.	1.
	2.	2.
	3.	3.
	4.	4.

E	Is pacifism wrong? Yes	No
	1.	1.
	2.	2.
	3.	3.
		4.

D	What are the rules of the just war theory?	Can just war theory make war fair?	
	1. 2. 3. 4. 5. 6. 7.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.

B.	Religious and non religious beliefs about weapons of mass destruction
1	
2	
3	



Year 11 RE Christianity Quotes: Peace and Conflict	
"Obey the authorities, for God is the one who put it there. All governments have been placed in power by God." Romans 13:1	Jesus said he was sent to 'free the oppressed' Old Testament 'let justice roll down like the waters, and righteousness like an ever-flowing stream.'
Genesis 9:5-6 From his fellow man I will require a reckoning for the life of man. "Whoever sheds the blood of man, by man shall his blood be shed, for God made man in his own image."	But I tell you, do not resist an evil person. If anyone slaps you on the right cheek, turn to them the other cheek also.
Beat your swords into ploughshares, and their spears into pruning hooks: nation shall not lift up sword against nation,	Old testament : 'When thou goest out to battle against thine enemies, be not afraid of them: for the LORD thy God is with thee'

Christianity Quotes For religion, peace and conflict	
'And the soldiers likewise demanded of him, saying, And what shall we do? And Jesus said unto them, "Put your sword back into its place; for all those who live by the sword, die by the sword."	Thou shalt not kill.
Luke 6:27 "But I say to you who hear, Love your enemies, do good to those who hate you,	New testament Blessed are the peacemakers: for they shall be called the children of God.
The catholic church and Church of England accept war under the conditions of just war theory.	Many weapons destroy the environment eg nuclear weapons. The quote below can be applied to this issue; 'You shall not defile the land in which you live, in the midst of which I dwell'
Jesus violently protested when 'he made a whip out of cords, and drove all from the temple courts, he scattered the coins of the money changers and overturned their tables '	The Lord will fight for you; you have only to be still.'
'protect the weak and needy'	Peace alone, not war, is holy (said by Pope Francis in the 2000s)

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Romans 13:1

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'You shall not defile the land in which you live, in the midst of which I dwell'

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What we are learning this term:

A. Learning about Spanish life and routines
 B. Learning about local customs
 C. Talking about a Spanish festival
 D. Learning about Latin American culture
 E. Skim reading for key information
 F. Using past expressions of time

4.1F Algunas costumbres regionales

la actuación	performance
agradable	pleasant
el ambiente	atmosphere
antiguo/a	old
la batalla	battle
el caballo	horse
la camisa	shirt
el concurso	competition
conmemorar	to commemorate
correr	to run
la costumbre	custom
demasiado	too much, too many
el desfile	parade, procession
el diablo	devil
divertirse	to enjoy oneself
emocionante	exciting
el encierro	bull run
encontrar	to find
enorme	enormous
entender	to understand
entrenarse	to train
el espectáculo	show, display
extraño/a	strange
fatal	awful
formar	to form
histórico	historic
humano	human
impresionante	impressive
incómodo/a	uncomfortable
llevar	to wear, take, carry
el Mediterráneo	Mediterranean
el/la moro/a	Moor (historically a person from North Africa)
nadie	no one
natural	natural
el origen	origin
pasarlo bien	to have a good time
el peligro	danger
peligroso/a	dangerous
por encima de	over
precioso/a	beautiful
el producto	product
saltar	to jump
la seguridad	safety, security
la suerte	luck
el toro	bull
la torre	tower
el traje	suit, costume
único/a	only, unique
varios/as	several
vestirse (de)	to dress (in)

6 Key Words for this term

1. divertirse	4. el desfile
2. hispánico	5. celebrarse
3. el turismo	6. los antepasados

4.1G La vida en familia

a media mañana	at mid-morning
acostarse	to go to bed
el bollo	bun
la cena	evening meal
coger	to catch
la comida	food, meal, lunch
el desayuno	breakfast
la dieta	diet
la leche	milk
levantarse	to get up
ligero/a	light
participar	to participate, to take part
probar	to try, to try out
el recreo	break
saludable	healthy
la sobremesa	sitting chatting at the table
after a meal	
el trabajador	worker
la tradición	tradition
traer	to bring
tranquilamente	calmly
el vaso	glass

4.1H ¿Cambian las costumbres?

acostarse	to go to bed
cerrarse	to close
coger	to catch
corto/a	short
empezar	to start
hace calor	it is hot
levantarse	to get up
el marido	husband
la mayoría	majority
el ordenador	computer

Celebrar To celebrate	Ir To go	Disfrutar To enjoy	Hacer – to do/make	Disfrazar To dress up
Celebro I celebrate	Voy I go	Disfruto I enjoy	Hago I do	Disfrazo I dress up
Celebras You celebrate	Vas You go	Disfrutas You enjoy	Haces You do	Disfrazas You dress up
Celebra – he/she celebrates	Va s/he goes	Disfruta He/she enjoys	Hace s/he does	Disfraza He/she dresses up
Celebramos We celebrate	Vamos They go	Disfrutamos We enjoy	Hacemos We do	Disfrazamos We dress up
Celebran They celebrate	Van They go	Disfrutan They enjoy	Hacen They do	Disfrazan They dress up

4.2G Las fiestas de España – la Tomatina

al final	at the end
americano/a	American
australiano/a	Australian
británico/a	British
el camión	lorry
la camiseta	T-shirt
el carnaval	carnival
divertirse	to enjoy oneself
duchar	to shower
empezar	to start
la entrada	(entry) ticket
la foto	photo
la gente	people
hace (+ tiempo)	(time) ago
japonés/esa	Japanese
limitar	to limit
limpiar	to clean
llegar	to arrive
la manguera	hose, hosepipe
mojado/a	wet, soaked
el montón	heap, pile
la plaza mayor	the main square
primero/a	first
pronto	soon
rojo/a	red
sucio/a	dirty
típico/a	typical
tirar	to throw
todo el mundo	everyone, everybody
el tomate	tomato
el turismo	tourism
varios/as	several
el/la visitante	visitor
el/la voluntario/a	volunteer
volver	to return, to go back

4.2F Las fiestas del mundo hispano

el altar	altar, shrine
los antepasados	ancestors
aparecer	to appear
el azúcar	sugar
la calavera	skull
celebrarse	to be held
el cementerio	cemetery
cerca de	close to, near to
la ciudad	city, town
comenzar	to start
completamente	completely
describir	to describe
el desfile	parade
el diablo	devil
disfrazado	dressed up, disguised
en honor a	in honour of
encendido/a	lit
el esqueleto	skeleton
el estaño	tin
los familiares	family members
famoso/a	famous
la flor	flower
hispánico	Hispanic (i.e. of the Spanish speaking world)
la mina	mine
el/la minero/a	miner
el mole	'mole' sauce / Mexican chocolate sauce
la montaña	mountain
muerto	dead
la normalidad	normality
el número	number
la plata	silver
proteger	to protect
el pueblo	village, (small) town

What we are learning this term:

A. Learning about Spanish life and routines
 B. Learning about local customs
 C. Talking about a Spanish festival
 D. Learning about Latin American culture
 E. Skim reading for key information
 F. Using past expressions of time

6 Key Words for this term

1. divertirse	4. el desfile
2. hispánico	5. celebrarse
3. el turismo	6. los antepasados

4.1G La vida en familia

a media mañana _____
 acostarse _____
 el bollo _____
 la cena _____

_____ to catch
 _____ food, meal, lunch
 _____ breakfast

la dieta _____
 la leche _____

_____ to get up
 _____ light
 _____ to participate, to take part
 _____ to try, to try out

el recreo _____
 saludable _____
 la sobremesa sitting chatting at the table
 after a meal _____
 el trabajador _____
 la tradición _____

_____ to bring
 _____ calmly
 _____ glass

4.1H ¿Cambian las costumbres?

_____ to go to bed
 _____ to close

coger _____
 corto/a _____
 empezar _____

_____ it is hot
 _____ to get up

el marido _____
 la mayoría _____

_____ computer

4.1F Algunas costumbres regionales

_____ performance
 _____ pleasant

el ambiente _____
 antiguo/a _____

_____ battle
 el _____ horse

la camisa _____
 el _____ competition
 conmemorar to _____
 correr _____

la _____ custom
 _____ too much, too many
 _____ parade, procession

el diablo _____
 divertirse to _____
 emocionante _____
 el encierro _____

_____ to find
 _____ enormous
 _____ to understand

entrenarse _____
 el espectáculo _____
 extraño/a _____

_____ awful
 _____ to form

histórico _____
 humano _____

_____ impressive
 _____ uncomfortable
 _____ to _____

llevar _____
 el Mediterráneo _____
 el/la moro/a Moor (historically a
 person from North Africa)
 nadie _____

_____ natural
 _____ origin

pasarlo bien _____
 el peligro _____
 peligroso/a _____

_____ over
 _____ beautiful
 _____ product
 _____ to jump
 la _____ safety, security

la suerte _____
 el toro _____
 la torre _____

_____ suit, costume
 _____ only, unique

varios/as _____
 vestirse (de) _____

To celebrate	To go	To enjoy	Hacer – to do/make	Disfrazar To dress up
I celebrate	Voy I go	Disfruto	Hago	Disfrazo
Celebras You _____	You go	You enjoy	You do	You dress up
Celebra – he/she celebrates	s/he goes	Disfruta He/she enjoys	Hace	Disfraza He/she dresses up
We celebrate	Vamos	Disfrutamos We enjoy	We do	Disfrazamos
Celebran	They go	They enjoy	They do	They dress up

4.2G Las fiestas de España – la Tomatina

al final _____
 _____ American
 australiano/a _____

_____ British
 _____ lorry

la camiseta _____
 el carnaval _____

_____ to enjoy oneself
 _____ to shower
 _____ to _____
 _____ (entry) ticket
 _____ photo

empezar _____

la _____ Japanese
 la gente to limit
 hace (+ tiempo) to clean

llegar _____
 la manguera _____
 mojado/a _____

_____ heap, pile
 _____ the main square
 _____ first

pronto _____
 rojo/a _____
 sucio/a _____

_____ typical
 _____ to throw

todo el mundo _____
 el tomate _____
 el turismo _____

_____ several

el/la visitante _____
 _____ volunteer
 _____ to return, to go back, to
 come back

4.2F Las fiestas del mundo hispano

_____ altar, shrine
 los antepasados _____
 aparecer _____
 el azúcar _____
 la _____ skull
 _____ to be held
 el _____ cemetery
 _____ close to, near to

la ciudad _____
 comenzar _____
 completamente _____

_____ to describe
 el _____ parade
 el _____ devil
 _____ dressed up, disguised

en honor a _____
 encendido/a _____
 el esqueleto _____
 el estaño _____
 los familiares _____
 _____ famous

la flor _____
 _____ Hispanic (i.e. of the
 Spanish speaking world)
 la mina _____
 el/la minero/a _____

_____ 'mole' sauce /
 Mexican chocolate sauce
 la montaña _____
 muerto _____
 la normalidad _____

el _____ number
 la _____ silver
 _____ to protect

el pueblo _____

Translation Practice. G – blue F – orange H - Green	
Normalmente _____ cereals	Normally for breakfast we have...
Ayer _____ una manzana	Yesterday I ate an apple
Carmen _____ de casa a las ocho	Carmen leaves the house at 8.00
Esta tarde _____ con la familia de mi amigo	This afternoon I chatted with my friend's family
Muchas veces no _____ nada	Many times they don't drink anything
No hablamos _____	We don't speak a lot
El año pasado _____ Pamplona	Last year I visited Pamplona
El _____ es una tradición extraña	The bull run is a strange tradition
Fue muy _____	It was very exciting
_____ dos años fuimos a Burgos	2 years ago we went to Burgos
Ayer fuimos a ver el _____	Yesterday we went to see the procession
El pueblo _____ interesante	The town was interesting
Vimos un _____ muy interesante	We saw a very interesting competition
¿Qué _____?	What did you do?
Hoy me _____ muy temprano	Today I got up very early
Compré _____ para mi familia.	I bought presents for my family
La _____ fue que..	The disadvantage was that...
_____ mucha basura.	There was a lot of rubbish.

Key Questions: Answer the following in your own words. Use these model answers	
Describe una fiesta popular en España	Una fiesta muy popular en España es la Tomatina. La gente celebra la Tomatina en Agosto en Buñol cerca de Valencia. Durante la fiesta, la gente tira tomates, hay desfiles y bailes, se puede comer comida tradicional, la gente lleva disfraces. Después de la fiesta las calles están llenas de tomates. Es mi fiesta española favorita porque es muy entretenida y cómica.
Describe una fiesta popular en tu país	En Inglaterra celebramos la fiesta de Fuegos artificiales. Cada 5 de noviembre, celebramos el día de Guy Fawkes. Durante la noche, la gente va a parques o el centro de la ciudad y hay muchos fuegos artificiales. Celebra la noche cuando GuyFawkes intentó poner fuego al gobierno de Inglaterra. Es muy entretenida y cómica.
Describe tu experiencia la última vez que fuiste a una fiesta en tu país	La última vez que fui a una fiesta en Inglaterra fue muy entretenida y cómica. Fue en Noviembre cuando celebramos la fiesta de Guy Fawkes. Fuimos en el centro de la ciudad o el parque para ver muchos fuegos artificiales. Fue muy entretenido, porque comí algodón de azúcar y pasé la noche con mis amigos.
¿Qué diferencias notas entre la vida española y la vida de tu propio país?	La vida en España y en Inglaterra es un poco diferente. En España se come una dieta mediterránea, la gente come muchas frutas, verduras, mucho pescado y aceite de oliva. En Inglaterra comemos más patatas fritas y más carne y menos frutas y verduras. En Inglaterra los jóvenes suelen llevar uniforme para ir al colegio pero en España los jóvenes no llevan uniforme. ¡Qué bueno! También, en España los jóvenes de 17 o 18 años no suelen emborracharse durante el fin de semana pero en Inglaterra hay más problemas con los jóvenes y el alcohol.

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
Imperfect Tense (<i>Past, ongoing actions, descriptions, 'used to' or 'was doing'</i>)	-ar -aba, -abas, -aba, -ábamos, -abais, -aban -er and -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

Year 11 Computer Science – Term 1

What we are learning this term:	
A. Ethical Terms	
B. Networking Terms	
C. Laws	
C. Malware	
E. Stages of Software Development	

A.	Ethical Terms
E-Waste	Electronic Waste consisting of digital products.
Planned Obsolescence	Producing goods which are designed to become obsolete and require replacement.
Ethical Concerns	Ensuring public safety and the security of data.

B.	Networking Terms
	A network that covers a small area, e.g. a school or office.
	A piece of hardware used in Computer Networks to connect multiple devices.
	A network of personal devices, such as Bluetooth etc.
	A device for connecting multiple networks together.
	A group of two or more computers connected together and communicating with each other.
	A circuit board installed in a computer allowing it to connect to a network.
	A network which spans across a large geographical area. Multiple buildings, national, internet. Etc.

C.	Laws										
Computer Misuse Act of 1990.	<table border="1"> <thead> <tr> <th>Offence</th> <th>Penalty</th> </tr> </thead> <tbody> <tr> <td>Unauthorised access to computer material</td> <td>Up to six months in prison and/or an up to a £5,000 fine</td> </tr> <tr> <td>Unauthorised access to computer materials with intent to commit a further crime</td> <td>Up to a five-year prison sentence and/or an unlimited fine</td> </tr> <tr> <td>Unauthorised modification of data</td> <td>Up to a five-year prison sentence and/or an unlimited fine</td> </tr> <tr> <td>Making, supplying or obtaining anything which can be used in computer misuse offences</td> <td>Up to a ten-year prison sentence and/or an unlimited fine</td> </tr> </tbody> </table>	Offence	Penalty	Unauthorised access to computer material	Up to six months in prison and/or an up to a £5,000 fine	Unauthorised access to computer materials with intent to commit a further crime	Up to a five-year prison sentence and/or an unlimited fine	Unauthorised modification of data	Up to a five-year prison sentence and/or an unlimited fine	Making, supplying or obtaining anything which can be used in computer misuse offences	Up to a ten-year prison sentence and/or an unlimited fine
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Data Protection Act 1998.	Controls how your personal information is used by organisations, businesses or the government. You have the right to find out what information the government and other organisations store about you.										
GDPR General Data Protection Regulation.	<table border="1"> <tr> <td>Limit Storage of Personal Data</td> <td>Don't keep it longer than you need it.</td> </tr> <tr> <td>Integrity and Confidentiality</td> <td>Use encryption, 2FA, and tamper-evident logging.</td> </tr> <tr> <td>Accountability</td> <td>Keep a paper trail to demonstrate compliance.</td> </tr> </table>	Limit Storage of Personal Data	Don't keep it longer than you need it.	Integrity and Confidentiality	Use encryption, 2FA, and tamper-evident logging.	Accountability	Keep a paper trail to demonstrate compliance.				
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Investigatory Powers Bill 2016	Requires companies and internet service providers to store records on emails and browsing histories. It also gives the authority for police and security services to access computers and phones to search for data.										
Copyright, Designs and Patents Act	As soon as something is created, it becomes intellectual property and is protected by copyright. In the case of software, the copyright holder can choose to sell and license it (proprietary) or give that right away (open-source).										

D.	Malware	Legal? Tick or cross
Adware	Software which causes advertising popups and collects marketing data.	✓
Ransomware	Malware which encrypts a user's files then demands a ransom to decrypt them.	✗
Spyware	Malware which collects information about the user and their activities.	✗
Trojan	Malware which appears legitimate but performs malicious activity when running.	✗
Virus	Malware which replicates itself and damages computer systems and files.	✗

E.	Stages of Software Development
Design	This should be a representation of the algorithm such as in a flowchart or pseudocode.
Implementation	Implementing the designed algorithm in code in order to turn it into a working program/ solution.
Testing	Testing the implemented program for errors. This looks for valid, boundary and erroneous data.
Evaluation	Refining and assessing the implemented program based on testing.

Year 11 Computer Science – Term 1

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A. Ethical Terms	
B. Networking Terms	
C. Laws	
C. Malware	
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	Adware	
	Ransomware	
	Spyware	
	Trojan	
	Virus	

E.	Stages of Software Development
	Design
	Implementation
	Testing
	Evaluation

1. Methods of growth

When a market is growing, it is important for a business to grow in order to retain market share.

Method of growth	Explanation
Internal/organic growth	A business can grow by creating new products, entering new markets, increasing their advertising and opening new premises.
External/inorganic growth	A business can grow by merging with another company or by winning a takeover of another company.

2. Finance for growth

A business must find sources of capital to pay for growth.

Term:	Definition:
Internal sources of financing.	A business can use 'retained profit' (capital they have saved from profit) or they could 'sell assets' (selling old or unused machinery/equipment). Internal sources of funding are from an internal sources such as an existing business owner or the business itself rather than from someone or an organisation outside of the business.
External Sources of financing.	A business could take out a loan (loan capital), or sell shares (share capital). External sources of funding are from an external sources such as a bank or an investor rather than from the business owners or the business itself.

3. Why do aims & objectives change?

As businesses evolve, they need to adapt their aims and objectives to changing circumstances.

Changing market conditions	Controlled by customer behaviour, what do customers want?
Changing technology	As technology changes, business needs to adapt to how customers use technology.
Changes in performance	If costs increase, the chances are the profit margin of the business will decrease. A business needs to be clear on whether they are aiming for quality or price.
Changes in legislation	If the law changes, this can bring uncertainty as the business may have to stop manufacturing/selling a certain product or be unable to predict future trends.
Internal Reasons	Changes in management or changes to the culture of the company.

1. Methods of growth

When a market is growing, it is important for a business to grow in order to retain market share.

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As businesses evolve, they need to adapt their aims and objectives to changing circumstances.

Changing market conditions	
Changing technology	
Changes in performance	
Changes in legislation	
Internal Reasons	

4. Globalisation

The increasing tendency for countries to trade with each other and to buy global goods such as Coca-Cola or services such as Costa Coffee.

Imports

Goods brought into one country from another.

Exports

Goods sold to one country from another

4. Globalisation

Barriers to trade

Definition: Measures put in place by a government to control the numbers of goods imported into a country.

Tariffs

Import taxes – taxes on imported goods.

Trade blocs

An agreement between some countries to trade freely without any tariffs, but countries not within the agreement will be charged tariffs.

5. Ethics & business

How the behaviour of a business is judged against human morals.

Term

Definition

Fair Trade

A global scheme that states that farmers or producers are paid a fair price for their goods. Business costs are higher, but customers will pay more for Fair Trade products.

Environmental

Businesses are constantly monitored for their environmental impact. Behaving in an environmentally ethically manner means to not pollute or damage the local/national/global environment – sea, land or sky.

Labour

Human morals dictate that a business should pay its workers fairly and that working conditions should be safe and clean. If a business sub-contracts work to international manufacturers in Asia, human morals dictate that those workers of the contractor are paid fairly and work in safe, clean conditions also.

6. Ways to extend the Product Life Cycle of a Product

Idea:

Explanation

Find new uses for the product

If a product can be used for multiple purposes, ensure that your target audience is aware of this

Change the appearance, format or packaging

Changing the appearance of a product can give it a new lease of life and allow the customer is perceive it as new again.

Encourage use of the product on more occasions

If a product can be used for multiples different occasions make sure the customer base is aware of this

Adapt the Product

Continue to make small adaptations to products to improve the quality of the product on offer.

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Find new uses for the product

Change the appearance, format or packaging

Encourage use of the product on more occasions

Adapt the Product



A. New and emerging technologies 


Companies are trying to **save money, improve products, develop new materials** and become more **efficient**. New technologies are developed to positively **impact** the **manufacturing industry** and **society**.

Crowdfunding Uses websites to advertise products as investment opportunities, where people can choose to back a project with a financial donation

Virtual marketing and retail Promotion of products online and sharing experiences, reviews and recommendations

Cooperatives Cooperatives are organisations with lots of people working together towards common goals.


Fair trade Fair trade is a trading partnership that ensures workers in developing countries are given suitable working conditions and are paid a fair wage.

B. Sustainability 

If materials are not reused or recycled, the planet will run out of them. If trees are not replanted as quickly as they are felled, we will run out of timber. A material is said to be sustainable if it can be replaced continuously or if it can be recycled or reused indefinitely.

What we are learning this term:

A. New and emerging technologies B. Sustainability
C. Impact on environment D. Impact on People E. Informing design decision

C. Impact on the environment 

Modern companies are encouraged to be less wasteful and more considerate of how they affect the natural environment.

Continuous improvement

Continuous improvement is the practice of continually making small adjustments to production techniques to improve speed and quality and save resources.

Efficient working


It is important to ensure that companies work in an efficient manner. This includes increasing the speed of production, reducing errors and reducing waste, which can be done by utilising **automation** or **computer aided manufacture (CAM)**.

Pollution

Pollution is caused when harmful substances are released into the natural environment. Pollution can occur in the air, water or natural land. Legislation has been brought in to help with this issue.

Global warming

- Manufacturing processes in factories or the use of day-to-day products like cars can cause harmful chemicals, such as carbon monoxide and nitrogen oxides.
- These chemicals pollute the air and natural land.

D. Impact on people 

People influence how technology is developed to suit their own wants and needs; however, technological developments can change people's lifestyle and behaviours.

Technology push

- Research and development in science and industry can lead to new discoveries
- This is known as technology push, and it happens before there is consumer demand for a product.
- SMART phones are a good example of technology push

Market Pull

- Market pull is when product ideas are produced in response to market forces or customer needs.

Changes in culture

- Fashion trends continue to be influenced by changing technology.
- Wearable items embrace new technology, such as high-tech watches, while textile technology utilises electrically-conductive material or 3D-printing technology.

E. Informing design decision 

Physical Disability

Products aimed at users with physical disabilities will ensure they can use the product with ease.

- User needs are met by understanding the nature of the physical disability, eg visual impairment, mobility restrictions or motor control.

Elderly

When designing products aimed at elderly users, it is important to understand –

- The difficulties this user group may experience, such as mobility issues, visual impairment and hearing loss.

Religious Groups

Religious groups have a variety of preferences that can be addressed through design. The use of certain symbols, dietary restrictions and clothing requirements all need to be considered so that beliefs are upheld.

User centred design

User-centered design (UCD) is a design process in which designers **focus on the users and their needs** in each **phase of the design process**. In UCD, design teams **involve users** throughout the design process via a **variety of research and design techniques**, to create highly **usable and accessible** products for them.

Universal Design

Universal Design: focuses on serving the broadest range of users as possible (90%), rather than trying to address individual accessibility or inclusion objectives.



Year 11 PRODUCT DESIGN Term 1



A. New and emerging technologies

Companies are trying to _____
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_____ and become more _____. New
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Crowdfunding

Virtual marketing and retail

Cooperatives

Fair trade

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developed to suit their own _____ and
_____; however, technological
developments can change people's
_____ and _____.

Technology push

Market Pull

Changes in culture

E. Informing design decision

Physical Disability

Elderly

Religious Groups

User centred design

Universal Design

Universal Design:



Year 11 Food & Nutrition Term 1



What we are learning this term:

A. Proteins B. Carbohydrates C. Fibre & Water D. Fats E. Minerals F. Vitamins

A. Proteins – contain amino acids	
	Used for growth, repair and maintenance of the body.
Source 	Seeds, meat, fish, dairy, nuts and beans. Alternative: soya, mycoprotein, TVP & tofu.
Excess 	Strain on liver and kidneys. These organs process the proteins consumed.
Deficiency 	Slows growth, weak immune system, oedema, kwashiorkor, poor hair /skin / nails.
High Biological Value Proteins 	These contain ALL the essential amino acids. These come from mainly animals sources (as well as soya and quinoa).
Low Biological Value Proteins 	These are missing <u>one or more</u> of the essential amino acids. These come from plant sources.
Protein Completion: when you combine LBV proteins to get all the essential amino acids.	

B. Carbohydrates – used for energy	
	Sugars – digested quickly & energy released quickly. Monosaccharides or Disaccharides
Source 	Fruit or added to food.
	Starch – digested slowly & slow released of energy. Polysaccharides.
Source 	Potatoes, cereals. Have a lot of nutrients & fibre.
Excess 	Gets converted into fat (may lead to obesity), tooth decay, type 2 diabetes.
Deficiency 	Low blood sugar (hunger, dizziness, tiredness), body starts to use up fat & protein (weight & muscle loss).
Glycaemic Index (GI): show how quickly carbohydrates affect blood sugar levels.	

D. Fats	
	Needed for energy, vitamins, insulation (warmth) and protecting your bones & organs, making cholesterol.
Saturated Fats	Unsaturated Fats
Usually come from animal sources	Mostly from vegetable sources.
Excess 	Obesity, Type 2 Diabetes, higher Cholesterol (increased risk Coronary Heart Disease).
Deficiency 	Vitamin deficiency, weight loss, less insulation / bone & organ protection.

F. Vitamins	
	Micronutrients which help the body to function.
Fat Soluble Vitamins	
Found in fatty food. Stored in fat tissue if not used up.	
A	For good eyesight, healthy immune system / skin
D	Helps absorb minerals (especially calcium)
E	For healthy skin, eyes & immune system
K	Helps heal wounds, keeps immune system / bones healthy

E. Minerals	
Calcium	Strong bones & teeth, healthy nerves & muscles, blood clotting
Iron	Forms part of haemoglobin in red blood cells
Sodium	Controls body's water content, helps nerves / muscle function
Phosphorus	Healthy bones & teeth
Fluoride	Helps strengthen teeth & prevent tooth decay
Iodine	Helps make some hormones

Water Soluble Vitamins	
Vitamins that dissolve in water & lost through urine – need to take daily! They are also lost when fruit and vegetables are exposed to air.	
B	Keep the nervous system healthy
B1, B2 & B3	Help with energy release
B9 & B12	Help make red bloody cells.
C	Protects body from infection, heals wounds
Antioxidants	
Vitamins A, C & E are antioxidants which may protect cells from free radicals - chemicals you encounter every day.	

C. Fibre & Water	
Fibre	Water
<ul style="list-style-type: none"> Helps with digestion Prevents constipation Found in fruit, pulses, nuts, veg, wholegrain foods 	<ul style="list-style-type: none"> Helps get rid of waste & digest food Controls body temperature 6-8 glasses of water a day More during a hot day or exercising



Year 11 Food & Nutrition Term 1



What we are learning this term:

A. Proteins B. Carbohydrates C. Fibre & Water D. Fats E. Minerals F. Vitamins

A.	Proteins – contain amino acids
Source	
Excess	
Deficiency	
High Biological Value Proteins	
Low Biological Value Proteins	
Protein Completion:-.	

B.	Carbohydrates – used for energy
	Sugars
Source	
	Starch
Source	
Excess	
Deficiency	
Glycaemic Index (GI): .	

D.	Fats
Saturated Fats	Unsaturated Fats
Excess	
Deficiency	

E.	Minerals
Calcium	
Iron	
Sodium	
Phosphorus	
Fluoride	
Iodine	

F.	Vitamins
Fat Soluble Vitamins	
A	
D	
E	
K	
Water Soluble Vitamins	
B	
B1, B2 & B3	
B9 & B12	
C	
Antioxidants	

C.	Fibre & Water
Fibre	Water
• -	• -
• -	• -
• -	• -



What we are learning this term:

- A. Client briefs and building specifications
- B. Product analysis
- C. Design generation and analysis
- D. Planning production

A. Client briefs and building specifications

As an engineer you may be given a **brief** of what the customer wants from their product. The steps to analyze this are:

1. Highlight the **key information**, what are they actually asking for?
2. Consolidate the information into a **bullet point list**
3. **Rank** the list in terms of importance, most important first. Make those points the focus of your design.

Specifications: Documents listing the specific properties a design should have. These are most useful when given as **quantitative information**, as you can more easily check if you have completed it.
Quantitative information – can be measured/counted i.e number of wheels on a car, how much it weighs.
Qualitative information – opinions based/ descriptive i.e how beautiful something is

C. Design generation and analysis

S	C	A	M	P	E	R
Substitute	Combine	Adapt	Modify	Put to another use	Eliminate	Reverse
Replace a part, material, or process with something else.	Join elements, ideas, or functions together in new ways – or find a new element you can merge with.	Modify something to better suit a new purpose, person or context.	Enlarge, reduce, change the shape, or alter attributes. Can a small change have a big effect?	Rather than changing the thing itself, consider changing the context it exists in.	Remove elements, simplify, or pare down to essentials.	Flip the script, re-order your priorities, invert cause and effect, and turn it all upside-down.

Strengths

- Key features that match the design brief
- Key features that match the specification
- Things that the target market would like

Weaknesses

- Limitations of the idea
- Things the target market might not like
- Points on the specification it did not meet

SWOT evaluation for new design ideas

Opportunities

- The ways in which the design could be improved
- New ideas or technology that could change the way the product could be used

Threats

- Other products in the market that are similar
- Extra resources needed to make it
- Extra money / time/ skills needed to make it

B. Product analysis

A is for **Aesthetics**



Aesthetics means **what does the product look like?**
 What is the: Colour? Shape? Texture? Pattern? Appearance? Feel? Weight? Style?

C is for **Cost**



Cost means **how much does the product cost to buy?**
 How much does it: Cost to buy? Cost to make?
 How much do the different materials cost? Is it good value?

C is for **Customer**



Customer means **who will buy or use your product?**
 Who will buy your product? Who will use your product?
 What is their: Age? Gender?
 What are their: Likes? Dislikes? Needs? Preferences?

E is for **Environment**



Environment means **will the product affect the environment?**
 Is the product: Recyclable? Reusable? Repairable? Sustainable?
 Environmentally friendly? Bad for the environment?
6R's of Design: Recycle / Reuse / Repair / Rethink / Reduce / Refuse

S is for **Size**



Size means **how big or small is the product?**
 What is the size of the product in millimeters (mm)? Is this the same size as similar products? Is it comfortable to use? Does it fit?
 Would it be improved if it was bigger or smaller?

S is for **Safety**



Safety means **how safe is the product when it is used?**
 Will it be safe for the customer to use? Could they hurt themselves?
 What's the correct and safest way to use the product? What are the risks?

F is for **Function**



Function means **how does the product work?**
 What is the products job and role? What is it needed for? How well does it work? How could it be improved? Why is it used this way?

M is for **Material**

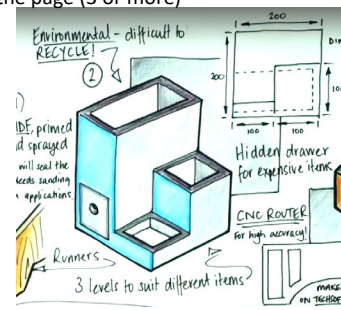


Material means **what is the product made out of?**
 What materials is the product made from? Why were these materials used? Would a different material be better? How was the product made? What manufacturing techniques were used?

C. Design generation example

Is part of a range of ideas on the page (3 or more)

Notes on material/ production choices and why



Notes link designs to the brief and specification

Very clear drawings, use of rendering to show depth

D. Planning production

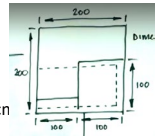
Calculating the cost of a product:

1. Calculate area/volume of material used
2. Research what **stock** is used and what price a **unit** of stock is
3. Calculate how many **whole products** can be made from that unit of stock
4. Divide the cost of the unit of stock by the number of **whole products** can be made from it

Worked example

Calculate the cost of the 20x20cm component if it is Made from a sheet of 100x100cm plywood that cost £4.

1. Component area = 20x20=40cm
2. Stock = £4 for 1000cm²
3. 1000 / 40 = 25
4. £4 / 25 = 400p/25 = **16p**





What we are learning this term:
A. Client briefs and building specifications
B. Product analysis
C. Design generation and analysis
D. Planning production

A. Client briefs and building specifications

Analyse this brief. Show you can: Highlight the **key information**, **bullet point list** the info, **Rank** the list.


A company which sells products online is creating a new range of designs. Create a concept for a pendant light. The light must be low cost to manufacture so suitable processes and materials should be considered. To keep transportation costs down, the light must be lightweight. The dimensions of the light must not exceed 45cm in any direction.

Ranked Bullet points:

B. Product analysis

A C C

M E



Analyse this collapsible plywood shade using ACCESSFM

F S S

C. Design generation and analysis

Use the SWOT tool to analyse the design of the existing lampshade.

Strengths	Weaknesses
Opportunities	Threats

Draw below how you would **adapt** the design to be more lightweight or attractive

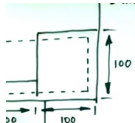
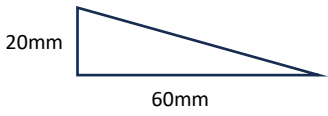
D. Planning production

Calculating the cost of a product:

1. Calculate area/volume of material used
2. Research what **stock** is used and what price a **unit** of stock is
3. Calculate how many **whole products** can be made from that unit of stock
4. Divide the cost of the unit of stock by the number of **whole products** can be made from it

Pactice questions:

1. What is the cost of the 100x100mm component if it is made from 1000x1000mm plywood that costs £4?
2. What is the cost of this component if it is made from 1000x1000mm plywood that costs £4?

What we are learning:	
A.	Key words
B.	What are the different types of health care services?
C.	What are the different types of social care services?
D.	What barriers are there to accessing care services?

A.	Key words for this Unit
Primary care	First point of contact when seeking health care
NHS	National Health Service – Tax funded health care in the UK.
Secondary care	Specialist health treatment and/or care
Tertiary care	Advanced specialist health treatment and/or care.
Allied health professionals	Professionals who are involved in patient care from diagnosis to recover
Clinical support staff	Support allied health professionals with the treatment and care of patients.
Foster care	A stable family home where care is provided on either a short or long-term basis.
Residential care	Accommodation and care for a number of children, young people or adults living together in one building.
Respite care	Short-term care which provides relief for family member who are carers.
Domiciliary care	Care received in the person's own home.
Sensory impairment	Difficulties with senses, most commonly vision and hearing.
Braille	Raised lettering to help visually impaired.
Occupational therapist	Offers support to develop independence for daily living activities.

B	What are the different types of health care services?
Primary Care	<ul style="list-style-type: none"> Primary care is the first point of contact a patient is likely to have with the NHS – you can refer yourself to primary care providers. Primary care providers include pharmacists, Registered GPs/doctors, walk-in centres, accident and emergency departments (A&E), dentists and Opticians.
Secondary Care	<ul style="list-style-type: none"> Secondary care is specialist treatment or care. A primary care provider will refer a patient for secondary care if they feel it is necessary for the patient to receive further advice, tests or treatment. Secondary care providers include cardiologists (heart), gynaecologists (female reproduction), paediatrics (children), obstetrics (childbirth and midwifery), psychiatry (mental health) and dermatology (skin).
Tertiary Care	<ul style="list-style-type: none"> Tertiary Care is advanced specialist treatment or care. A secondary care provider will refer a patient for tertiary care for long-term treatment and/or care. Tertiary care areas include spinal, cardiac (heart), cancer care, chronic pain, burns and neonatal (premature and ill new born babies).
Allied Health Professionals	<ul style="list-style-type: none"> Allied health professionals work in a range of specialities They support patients through all stages of care – from diagnosis to recovery. To work with the public they must register with the Health and Care Professions Council (HCPC). Allied health professionals include art therapists, dieticians, paramedics, physiotherapists, speech and language therapists and radiographers.
Clinical Support Staff	<ul style="list-style-type: none"> Clinical support staff work within a range of departments under the guidance of allied health professionals. They are trained in their roles but are not required to register with the HCPC. Clinical support staff include theatre support workers, prosthetic technicians, dietetic assistant, phlebotomist (collects blood samples), hearing aid dispensers and maternity support workers.

C.	What are the different types of social care services?
Children and young people	<ul style="list-style-type: none"> Children and young people may need support on a temporary or permanent basis because their parent or carer is ill; they have family problems, they have behavioural issues or additional needs. Types of support for children and young people include foster care, residential care and youth work.
Children or adults with specific needs	<ul style="list-style-type: none"> Children and adults may need support with specific needs including learning disabilities, sensory impairments and long-term health issues. Types of support for children and adults with specific needs include residential care, respite care and domiciliary care.
Older Adults	<ul style="list-style-type: none"> Older adults may need support with a range needs including arthritis, cardiovascular disease, dementia and depression. Types of support for older adults include residential care, carers and personal assistants.
Informal Social Care	<ul style="list-style-type: none"> Not all carers get paid for what they do – they are known as informal carers and social services would really struggle without them. Informal carers include a spouse or partner, children, friends and neighbours. Informal carers do practical household duties, shopping, laundry, walk the dog and help with personal care.











What we are learning:	
A.	Key words
B.	What are the different types of health care services?
C.	What are the different types of social care services?
D.	What barriers are there to accessing care services?









A.	Key words for this Unit
Primary care	
NHS	
Secondary care	
Tertiary care	
Allied health professionals	
Clinical support staff	
Foster care	
Residential care	
Respite care	
Domiciliary care	
Sensory impairment	
Braille	
Occupational therapist	

B	What are the different types of health care services?
Primary Care	
Secondary Care	
Tertiary Care	
Allied Health Professionals	
Clinical Support Staff	

C.	What are the different types of social care services?
Children and young people	
Children or adults with specific needs	
Older Adults	
Informal Social Care	










D. What barriers are there to accessing care services?	
Physical Barriers 	<ul style="list-style-type: none"> • Difficulty accessing care due to mobility and/or disability. • Obstacles include uneven and rough pavements and services, narrow doorways, no lift and transport. • Access could be improved by planning journeys in advance and reporting any problems to the council.
Sensory Barriers 	<ul style="list-style-type: none"> • Sensory impairments can be a barrier to accessing care. • A person with poor vision may need glasses or documents in large print. Profound sight problems may benefit from Braille. • A person with a hearing impairment may benefit from a hearing aid or sign language interpreter.
Social, Cultural and Psychological Barriers 	<ul style="list-style-type: none"> • Social, cultural and psychological barriers may leave people feeling nervous about accessing support. • These can include: religion/cultural barriers, negative experience, self-diagnosis, substance misuse, opening hours. • Care services can give individuals opportunities to share their concerns, offer different gender practitioners, facilities to worship and show respect and understanding.
Language Barriers 	<ul style="list-style-type: none"> • Language can be a barrier to accessing care services because individuals and care providers may struggle to understand each other. • Support for individuals could include translated documents, translators and interpreters and support from family members.
Geographical Barriers 	<ul style="list-style-type: none"> • Individuals may struggle to reach care services because public transport may not run regularly, specialist treatments may require long distance travel and travel can be expensive. • Support could include being provided with direct travel or having travel costs reimbursed.
Intellectual Barriers 	<ul style="list-style-type: none"> • If an individual has a learning disability it can cause difficulty in them accessing care services. • Support might include a learning disability nurse, speech and language therapist or occupational therapist.
Resource Barriers 	<ul style="list-style-type: none"> • As the population ages and more disorders are being successfully treated, there is a huge strain on health and social care resources – at times it might seem that not everyone can access what they need. • There are huge staff shortages which puts strain on people that work in the health and social care sector.
Financial Barriers 	<ul style="list-style-type: none"> • Seeing a GP or using emergency services are free but some services, such as optical and dental care, often involve some payment. • This can be difficult for people if they are from a low-income household as they may not feel they can afford to access the care they need.

D.	What barriers are there to accessing care services?
Physical Barriers 	
Sensory Barriers 	
Social, Cultural and Psychological Barriers 	
Language Barriers 	
Geographical Barriers 	
Intellectual Barriers 	
Resource Barriers 	
Financial Barriers 	








What we are learning:
E. Define the key words
F. What are the care values and how can they be implemented?

E.	Define the key words
Self-respect	Valuing yourself
Person centred approach	Planning care around the wants and needs of a service user
Empowerment	Supporting people to take control of their lives and futures by involving them decisions on their care and treatment
Confidentiality	Not passing on information or discussing a private conversation to anyone
Dignity	Being respected and treated with care
Safeguarding	Policies to ensure children and vulnerable adults are protected from harm, abuse and neglect
Discrimination	Treating a person or group of people unfairly or less well than others
Compassionate	Feeling or showing sympathy and concern for others
Competence	The ability to do something successfully and efficiently
Consequences	A result or effect, typically one that is unwelcome or unpleasant
Review	Involves assessing or inspecting something with the intention of making change if necessary
Empathy	Being able to understand and share feelings and views of another person.
Insomnia	Difficulties in sleeping

F.	What are the care values and how can they be implemented?
Empowering and promoting independence 	<ul style="list-style-type: none"> Empowerment is when an individual feels in control of their own life and have a say in what happens to them. Some people might need help with empowerment because of their age, circumstances or confidence e.g. elderly people, children, adult with learning disabilities. You can promote empowerment and independence by involving individuals, where possible, in making choices about their treatment.
Respect for others 	<ul style="list-style-type: none"> You can show respect for the individual by respecting their privacy, needs, beliefs and identity. Show respect by being patient when someone takes longer to perform simple tasks due to their age, disability or injury. Do not leave personal files around for others to see or discuss your patients' case with friends. Gain permission before entering a room, provide private place for personal conversations.
Maintaining confidentiality 	<ul style="list-style-type: none"> It is a person's right by law to have information about them kept confidential. Care workers are not allowed to talk about one service user to another, or someone who is not involved in helping them get better. This involves not having those private conversations in public places where other can overhear. Paper and electronic files are to be kept confidential and only shared with care workers which are involved in the treatment of the patient.
Preserving dignity 	<ul style="list-style-type: none"> Preserving the dignity of individuals to help them maintain self-worth, privacy and self-respect. You do this by involving the person in their own care; helping them go to the bathroom; giving the person time they need, checking what they would like to be called; closing door or curtain when they are changing; making sure their clothes are clean; dealing with embarrassing situations sensitively and professionally.
Effective communication 	<ul style="list-style-type: none"> In health and social care it is important to communicate effectively with service users in order to build trusting relationships. These can be lost if the care worker appears not to care or listen. Recognising different communication needs and trying to overcome them shows that care workers respect the individual e.g. when visually impaired providing a leaflet in braille; if can't speak English well, have a translator organised beforehand. Show you value the person through showing empathy, asking questions, not judging, smiling, using their name, giving appropriate eye contact, open body language, giving time to process.
Safeguarding and duty of care 	<ul style="list-style-type: none"> Health and social care workers have a legal duty to protect service users from harm, neglect or abuse. They must recognise the signs and symptoms of abuse so they can protect people. Signs of abuse include low self-esteem, STDs, unexplained injuries or bruises, insomnia, change in appetite, change of personality, self-harming, fear of being alone etc. What to do: report the abuse, never promise to keep the abuse secret, make it clear that you will have to tell someone e.g. your supervisor or the police. <p>DUTY OF CARE</p> <ul style="list-style-type: none"> Care workers must work in ways that never put individuals at any risk or harms. They need to know their responsibilities, procedures, deliver care as the care plan states and always report and record any concerns about the service user even if they appear minor.
Promoting anti-discriminatory practice 	<ul style="list-style-type: none"> Discrimination can be obvious but sometimes it can be subtle and hidden, and The Equality Act 2010 makes it illegal to discriminate against people because of their e.g. age, gender, race, disability, religion, sexual orientation, marital status etc. You can promote anti-discriminatory practice by: having patience with someone who doesn't speak English well; communicating in a way that the person will understand; showing tolerance towards people who have different beliefs and values from you; challenging unkind behaviour.

What we are learning:	
E.	Define the key words
F.	What are the care values and how can they be implemented?

E.	Define the key words
Self-respect	
Person centred approach	
Empowerment	
Confidentiality	
Dignity	
Safeguarding	
Discrimination	
Compassionate	
Competence	
Consequences	
Review	
Empathy	
Insomnia	

F.	What are the care values and how can they be implemented?
Empowering and promoting independence 	
Respect for others 	
Maintaining confidentiality 	
Preserving dignity 	
Effective communication 	
Safeguarding and duty of care 	
Promoting anti-discriminatory practice 	

What we are learning:
G. How to apply care values in a compassionate way. H. Identifying own strengths and areas for improvement against the care values

G	How to apply care values in a compassionate way?
Show empathy and care by:	<ul style="list-style-type: none"> • Being patient • Showing sensitivity • Understanding • Actively listening • Having a positive outlook • Being encouraging • Having genuine concern for other people.
Care workers can check themselves against the ' Six C's of Compassionate Care ' checklist to make sure they are applying care values with compassion.	
Care	Helps to improve an individual's health and wellbeing. Care should be tailored to each person's needs and circumstances
Compassion	Shows the care worker understands what the individual is experiencing. Being empathetic to their situation shows care and value to the individual
Competence	Shows that care workers can safeguard and protect individuals from harm
Communication	How to adapt to individuals and their circumstances to ensure important information is given and shared- keeping the individual at the heart of everything that is done
Courage	Protecting individuals by speaking up if you think something is wrong; being brave enough to own up if you have made a mistake.
Commitment	Carrying out your duties to care for others to the best of your ability.

H	Identifying own strengths and areas for improvement against the care values
Working together	<ul style="list-style-type: none"> • All care workers have the responsibility to uphold care values. If everyone works together, doing their 'bit', service users and colleagues alike will all be able to have positive experiences. • Put any feelings aside, some clients can show anger or aggressions towards you, continues to work in a way that respects each of the care values. <p>Staff training:</p> <ul style="list-style-type: none"> • Staff training keeps everyone updated. Even if they already had care values training it is important to have it again and remind them of their importance.
Making mistakes	<ul style="list-style-type: none"> • Everyone sometimes make mistakes. It is crucial that staff own up to mistakes that they have made, no matter how small. This is part of the duty of care to safeguard individuals, it demonstrates respect. • You need to be honest about your mistake, do not pretend it never happened and do not blame someone else. • You can: <ul style="list-style-type: none"> • Tell your supervisor, admit it and apologise • Be honest and accurate about what happened, • Suggest ways to avoid it happening again • Earn back the trust of the person involved • Prove you can do the job • Do not be too hard on yourself; seek help and guidance from others.
Reviewing own applications of care values	<ul style="list-style-type: none"> • One way to improve skills is to look carefully at the areas you are good at, what you are able to do well and things that you find difficult. • Knowing your strengths will allow you to take on tasks with ease and make you feel confident that you are doing a good job. • Knowing your weaknesses and what needs improving will help you work on them and develop. It is important to be open with yourself and others in order to progress further and be better at your job. • Regularly review your strengths and weaknesses because they change overtime
Receiving feedback	<ul style="list-style-type: none"> • The purpose of feedback is to let you know what you are doing well and the areas you need to improve. • This can be formal- like reports and following an observation at work and Informal- like chatting to colleagues at break time. • Both types encourage you to feel pleased with what you have done well and motivate you to improve in weaker areas, perhaps even provide a way forward. • Remember: when giving and receiving feedback, positives must be noted so that you know what you are doing well and continue to do so. Negatives are hard to uncomfortable to hear, but do not take them personally, you need them to get better at your job and feel more confident.
Using feedback	<ul style="list-style-type: none"> • Create yourself a SMART action plan to set yourself Specific, Measurable, Achievable, Realistic and Time-related targets or goals to help plan for your improvements

What we are learning:
G. How to apply care values in a compassionate way. H. Identifying own strengths and areas for improvement against the care values

G	How to apply care values in a compassionate way?
→	
Care	
Compassion	
Competence	
Communication	
Courage	
Commitment	

H	Identifying own strengths and areas for improvement against the care values
Working together	
Making mistakes	
Reviewing own applications of care values	
Receiving feedback	
Using feedback	



What we are learning this term:

- The different user groups who may participate in sport*
- The barriers which affect participation*
- The solution to these barriers*
- Factors affecting the popularity of a sport*
- Current trends in the popularity of a sport*
- Growth of new and emerging sports*

A.	Key question from Assessment objectives?
Key word	Key definition
Ethnic minorities	A group that has different national or cultural traditions
Disposable income	Money left over after paying all bills
Accessibility	How easy something is to access
Provision	Providing or supplying something
Infrastructure	The available space and facilities to take part in sport. EG- Tennis courts
Acceptability	How accepted and tolerated something is
Emerging	Becoming more mainstream
Concessions	Providing something cheaper for certain groups

A.	What sports are growing in popularity in the UK?
1.	Ultimate frisbee
2.	American Football
3.	Climbing
4.	Handball

Main assessment objectives
Learning outcome: Understand the issues which affect participation in sport

C.	What are the most popular sports in the UK?
Football, Rugby, Cricket, Netball, Walking, Cycling and fishing	
How the factors can impact on the popularity of sport in the UK	
<ol style="list-style-type: none"> Climate- Lack of snow in the UK means the opportunities for snow sports are limited Provision- Lack of facilities such as tennis courts limit who can access them Elite success- cycling success at the Olympics leads to increased participation in cycling 	

A.	The user groups who may participate in sport are...
1.	Ethnic minorities
2.	Retired people/ over 50
3.	Families with young children
4.	Single parents
5.	Children
6.	Teenagers
7.	Disabled people
8.	Unemployed/ economically disadvantaged
9.	Working singles and couples

A.	The possible barriers which affect participation...
1.	Employment/time
2.	Work restrictions
3.	Disposable income
4.	Accessibility of facilities
5.	Lack of role models
6.	Provision of activities
7.	Awareness of activity provision
8.	Portrayal of gender issues

G.	The possible solutions to barriers...
<i>Provision-</i>	
<i>Programming of sessions</i>	
<i>Appropriate activity for user groups</i>	
<i>Timing of sessions</i>	
<i>Promotion-</i>	
<i>Targeted promotion</i>	
<i>Using role models</i>	
<i>Initiatives aimed at promoting participation</i>	
<i>Access-</i>	
To facilities	
To equipment	
Sensible pricing and concessions	

Factors affecting popularity	
Participation	Football has high participation rates due to the infrastructure already in place
Provision	The available equipment and facilities required to play
Environment/ climate	The UK weather is suitable for certain sports and not suitable for others
Spectatorship	The amount of people going to watch the sport
Media coverage	How much coverage the sport gets across various media platforms
Elite level success	Olympic success usually increase participation
Role models	A lack of role models can restrict participation levels
Acceptability	Some sports are not accepted in UK culture due to the nature of the sport



What we are learning this term:

- A. *The different user groups who may participate in sport*
- B. *The barriers which affect participation*
- C. *The solution to these barriers*
- D. *Factors affecting the popularity of a sport*
- E. *Current trends in the popularity of sport*
- F. *Growth of new and emerging sports*

Main assessment objectives

Learning outcome: Understand the issues which affect participation in sport

Factors affecting popularity

A. Key question from Assessment objectives?

C. What are the most popular sports in the UK?

Participation

Key word	Key definition
----------	----------------

How the factors can impact on the popularity of sport in the UK

Provision

Ethnic minorities	
-------------------	--

1	
2	
3	

Environment/
climate

Disposable income	
-------------------	--

A. The user groups who may participate in sport are...

G. The possible solutions to barriers...

Spectatorship

Accessibility	
---------------	--

1	
2	
3	
4	
5	
6	
7	
8	

Provision-

- 1
- 2
- 3

Media coverage

Provision	
-----------	--

Promotion-

- 1
- 2
- 3

Elite level success

Infrastructure	
----------------	--

A. The possible barriers which affect participation...

Access-

- 1
- 2
- 3

Role models

Acceptability	
---------------	--

1	
2	
3	
4	
5	
6	
7	
8	

Emerging	
----------	--

A. What sports are growing in popularity in the UK?

1	
2	
3	
4	

Acceptability

BUILDING BRICKS:

Exploring the Elements of Music and the Functions of a Keyboard
Why? – To excel in listening, analysis, composition & performance












A. MELODY

Melody is a succession of pitches in rhythm. The melody is usually the most memorable aspect of a song, the one the listener remembers and is able to perform.

B. ARTICULATION


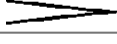
Articulation refers to the way that notes should be performed. There are many types of articulation, with each having a different effect on how the note is played.

C. DYNAMICS

The dynamics of a piece is the variation in loudness between notes or phrases. Musicians use a variety of dynamics to add excitement and emotion to songs.

KEYWORD	MEANING
Pitch	How high or low a sound is
Octave	A series of 8 notes e.g., C-C, D-D
Pentatonic	A musical scale with 5 notes
Range	The distance between the lowest and highest pitched note in a melody
Motif	A repeated theme that is memorable
Hook/Riff	A very catchy melodic phrase
Imitation	Repeated melody in a different instrument or voice

KEYWORD	MEANING
Staccato	Short and detached notes
Legato	Smooth and slurred notes
Accent	Emphasis placed on a particular note/beat
Pizzicato	Plucked strings
Arco	Bowed strings
Col Legno	Hitting strings with the wood of the bow
Glissando	Sweeping notes (think of the harp)
Vibrato	Subtly vibrating the sound by alternating the pitch between two notes

KEYWORD	MEANING	SYMBOL
Pianissimo	Very quiet	<i>pp</i>
Mezzo Piano	Moderately quiet	<i>mp</i>
Piano	Quiet	<i>p</i>
Mezzo Forte	Moderately loud	<i>mf</i>
Forte	Loud	<i>f</i>
Fortissimo	Very loud	<i>ff</i>
Crescendo	Gradually louder	
Diminuendo	Gradually quieter	

D. TEXTURE

Texture describes how layers of sound within a piece of music interact. Texture is determined by how many instruments are playing and how many different parts there are.

E. STRUCTURE

Structure is the order that different parts of the song are played in. The basic structure of a song can include an intro, verse, pre-chorus, chorus, and bridge.


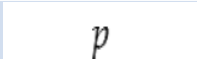



F. HARMONY

Harmony is the blending of simultaneous sounds of different pitch. A harmony differs from a melody in the way that it stacks multiple notes on top of one another to create a sound.

KEYWORD	MEANING
Unison	All playing or singing the same note
Thick/Thin	Number of layers of instruments/voices
Monophonic	A single line of musical notes
Homophonic	Moving together in chordal fashion
Polyphonic	Multiple layers, weaving melodic lines
Tutti	Meaning 'everyone' or 'all together'
Call & Response	Like question and answer – two parts having a musical conversation
Counter melody	A tune that complements the main melody

KEYWORD	MEANING
Binary	Two main sections, AB
Ternary	Three distinct sections, ABA
Rondo	Initial section that recurs, ABACADA
Theme & Variations	A melody is stated and is then repeated several times with changes
Verse	Tells the main story of a song
Chorus	A catchy part that is repeated in a song
Bridge	A contrasting section that prepares the listener for the return of the chorus

KEYWORD	MEANING
Chord	Three or more notes played together
Triad	Three notes: root, third, fifth
Arpeggio	Broken chord: notes are sounded individually
Perfect Cadence	Two chords at the end of a passage that sound as though the music has come to an end
Imperfect Cadence	Two chords at the end of a passage that make the music sound unfinished
Modulation	The change from one tonality to another
Dissonance	Two or more clashing notes

Question	Answer	Question	Answer
Identify this musical symbol		What is a Motif ?	
What does this symbol mean? 		What does pizzicato mean?	
What does Homophonic mean? 		What does Fortissimo mean?	
How many sections are there in a Binary form piece of music?	1 2 3 4	Draw the symbol for Fortissimo	
What sections are in a Ternary Form piece of music?	AB ABA ABACA	Identify this musical symbol 	
Identify this musical symbol 		What does the above symbol mean?	
What does this symbol mean? 		Put these dynamic markings in order from quietest to loudest: p ff f mp pp mf	
What is the definition for a hook/riff ?		What is an accent ? The symbol is >	
How many beats is this note worth?		What's the musical term for notes that are played short and detached ?	
What is the musical term for notes that are played smooth and slurred ?		What does Pentatonic mean?	
What is an Octave ?		What texture has multiple layers and weaving melodic lines?	

G. INSTRUMENTS

H. RHYTHM

I. TIMBRE

KEYWORD	MEANING
Strings	Violin, Viola, Cello, Double Bass, Harp
Brass	Trumpet, French Horn, Trombone, Tuba
Woodwind	Piccolo, Flute, Clarinet, Oboe, Bassoon
Percussion	Timpani, Xylophone, Glockenspiel, Maracas
Soprano	Highest female singing voice
Alto	A lower female singing voice
Tenor	Standard male singing voice
Bass	Low male singing voice

Rhythm involves time—the duration of musical sounds. Rhythm can exist without melody, as in the drumbeats of music, but melody cannot exist without rhythm.

KEYWORD	MEANING	SYMBOL
Semiquaver	¼ beat	
Quaver	½ beat	
Pair of Quavers	1 beat	
Crotchet	1 beat	
Minim	2 beats	
Dotted Minim	3 beats	
Semibreve	4 beats	
Breve	8 beats	

Timbre refers to the quality of a sound made by a particular voice or musical instrument. It is what makes a musical note sound different from another one.

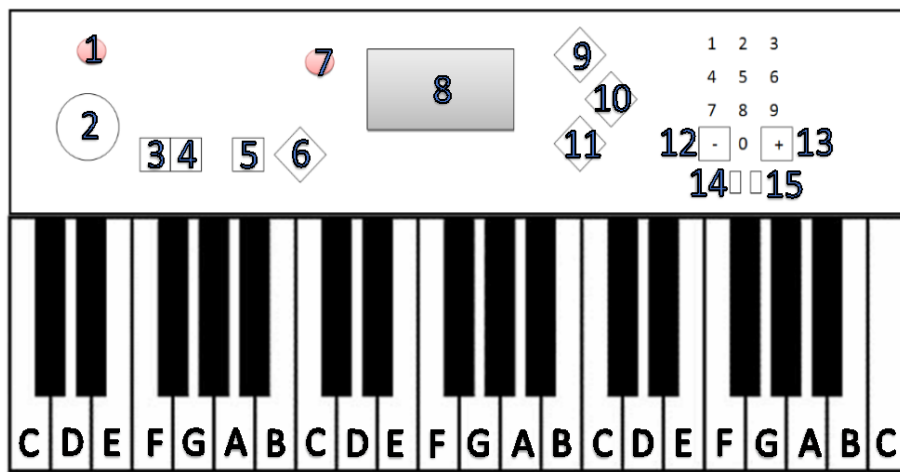
ADJECTIVE	INSTRUMENT	ADJECTIVE	INSTRUMENT
Sweet	Flute	Hollow	Xylophone
Nasal	Oboe	Booming	Bass Drum
Tinkly	Glockenspiel	Muted	French Horn
Pounding	Timpani	Dull	Viola
Brassy	Trumpet	Breathy	Saxophone
Mellow	Clarinet	Shrill	Piccolo
Rich	Cello	Pure	Violin
Crashing	Cymbals	Rattly	Maracas
Dark	Double Bass	Reedy	Bassoon

J. TEMPO

K. LAYOUT AND FUNCTIONS OF A KEYBOARD

Tempo means the speed at which a piece of music should be played. As with many other musical terms, Italian words are used to describe different tempos of music.

KEYWORD	MEANING	SYMBOL
Presto	Very fast	168-200bpm
Allegro	Fast	120-168bpm
Moderato	Moderate	108-120bpm
Andante	Walking pace	76-108bpm
Adagio	Slow	66-76bpm
Largo	Very slow	40-66bpm
Accelerando	Gradually faster	accel.
Rallentando	Gradually slower	rall.








1. Power Button (on/off)
2. Volume
3. Accompaniment
4. Intro/Ending
5. Sync. Start
6. Start/Stop Button
7. Tempo Button
8. Screen
9. Song
10. Voice
11. Style
12. Go left on options
13. Go right on options
14. Dual

L. DRILL TERMS

KEYWORD	MEANING
Treble Clef	Also known as the G Clef as it starts on the G line
Bass Clef	Also known as the F Clef as it starts on the F line
Stave	5 lines, 4 spaces that music notes are written on

KEYWORD	MEANING
Quaver	A note that lasts for ½ beat
Crotchet	A note that lasts for 1 beat
Minim	A note that lasts for 2 beats

KEYWORD	MEANING
Dotted Minim	A note that lasts for 3 beats
Semibreve	A note that lasts for 4 beats
Sharp/Flat	Higher/Lower by 1 semitone

Question	Answer	Question	Answer
How many Semi-quavers are in a Crochet ?		What Instrument has a Dark Timbre ?	
What does Accelerando mean?		What is the definition of Allegro ?	
Give the names of 4 Brass instruments ...		How many Quavers are in a Minim ?	
How many Beats is this note?		What does Alto mean?	
What is the name the note?		What Clef is also know as the F Clef ?	
What does the word Presto mean?		Identify this musical symbol	
List 3 instruments found in the Brass section of an orchestra		How many beats is this symbol?	
Solve this problem: 		List 3 instruments found in the Woodwind section of an orchestra	
What note lasts for 4 beats ?		What musical term is used for the highest female singing voice ?	
What does Sharp/Flat mean?		What Timbre does the Violin have?	
What does the key word Andante mean?		List 3 instruments that can be found in the string section	



Remember:

The Component is externally assessed by an Examiner. It counts for 20% (60 marks in total).

Important Things!

Remember: Read your text, decide on your interpretation of the character and artistic intention. Be confident – full marks can be achieved in the Component.

YOUR DRAMA:

After deciding on the play you want to perform:

Remember: Read the whole play in order to understand the style, the playwright's intention, the period involved before analysing and interpreting your role.

Style: The style of the play - Naturalistic, Realistic, Absurd, Symbolic, Brechtian, Physical Theatre.

The Playwright's Intention: Discuss contemporary themes, e.g. mental health, family problem, anorexia, drugs. Discuss a historical theme, e.g. War and its impact on society?

Period: Historical, Political, Cultural

Research: Go online, look at Youtube clips and write rough notes.

ACTING ELEMENT:

Remember: Groups of 2 to 4

Time:

- groups of 2 actors – 5 to 10 minutes
- groups of 3 actors – 7 to 12 minutes
- groups of 4 actors – 9 to 14 minutes

You must: Perform two sections 10 minutes long that are key parts of the text.

You must: Perform a text that contrasts with the play you're studying for Component 3.

The play must: Be written by a different playwright, in different historical period and with different themes to the text in Component 3.

Why? To give you new experiences, and to be able to enjoy and challenge yourselves to learn and interpret different texts.

CHARACTERISATION:

Remember the criteria:

You will be marked on your physical skills, vocal skills, interaction, interpretation, communication with the audience and individual contribution.

Also remember:

Your artistic intention must be written and submitted to the examiner before or on the day of the examination.

Once you know your text, you will need to focus on your character. Remember to use a range of practice techniques that will help you develop your role and create the rounded character: The Red Chair, Role on the Wall, Improvisation, Mime Work, The Missing Scene, Emotional Memory, The Magic If.

During the rehearsal periods, develop your vocal and physical skills:

VOICE: pronunciation, emphasis, pauses, tone and tempo, accent, pitch, constructiveness, highlights.

MOVEMENT: gesture, body posture, walk, position on the stage, characters' territories.

INTERACTION: distance, proximity, back turned, eye-rolling, facial response, moving away, approaching, physical gestures.

Discuss with your group what your stage shape will be, what type of set will be needed, stage equipment and props. It is also a good idea to use sound to create a mood and atmosphere either at the beginning, between scenes or at the end. You will need to carefully consider the costume, hair and make-up suitable for your role. Remember that you need consistent rehearsals and a full dress rehearsal before your final performance.

Sentence Stems: Year 10 to Year 13



Listen and Mark

Pay close attention to others and point out important moments.

- I notice you used the word / phrase ____, which implies ____ .
- When you said ____, it anchored the idea that ____ .
- Did anyone notice what ____ said about ____ ? This seems important because ____ .

Introduce and Invite

Begin your contribution and encourage others to participate.

- I suggest that ____ because ____ .
- ____, what is your perspective on ____, and why?
- We should discuss ____ because ____ .

Challenge and Verify

Disagree and ask others to prove or clarify information.

- You said ____ . How do you know?
- I think you said ____, which implies that you believe ____ . Is that right?
- I disagree with what you said about ____ because ____ .

Defend and Unpack

Defend your perspective and explain your thought process.

- I understand your perspective on ____, but have you thought about ____ ?
- I actually think this because ____ . (Furthermore, finally).
- Actually, [evidence] suggests that ____ .

Build and Support

Add to others' ideas and bolster points by giving evidence.

- Your point about ____ implies ____, and I would like to further this by saying ____ .
- ____ supports the idea that ____ .
- Drawing upon points made by ____ and ____, we can conclude that ____ because ____ .

Summarise and Map

Draw together big themes and track the discussion.

- Our main findings were ____ .
- On the whole, we believe that ____ .
- Initially, we thought ____, but we eventually decided ____ .



SWINDON ACADEMY READING CANON

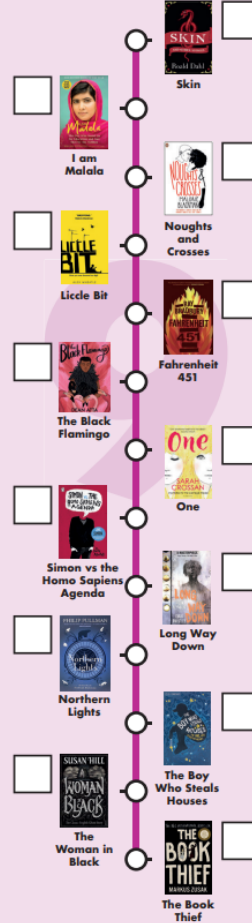
Year 7



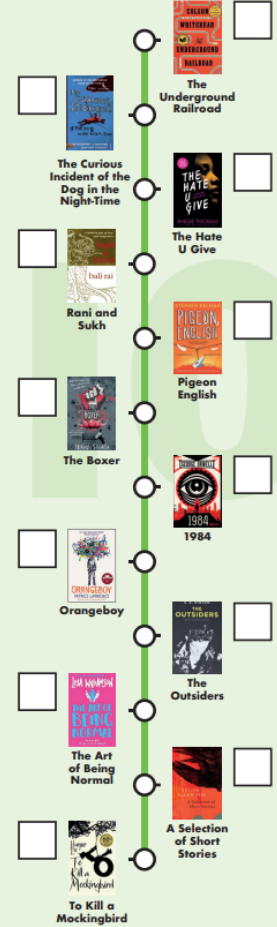
Year 8



Year 9



Year 10



#ReadingisPower