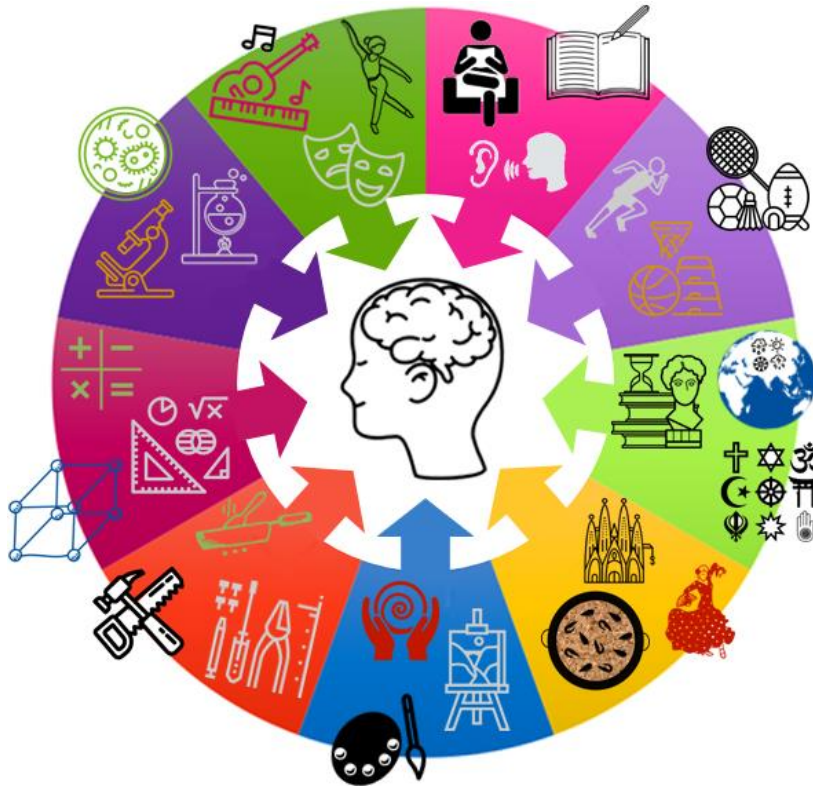


100% book - Year 11 Booster 11C/3

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

Term 4



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

“If you are not willing to learn, no one can help you.
If you are determined to learn, no one can stop you.”

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

Knowledge Organisers

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

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

Quizzable Knowledge Organisers

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

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

Top Tip

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

Expectations for Prep and for using your Knowledge Organisers

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

How do I complete Knowledge Organiser Prep?

Step 1

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

The image shows the Epraise website interface. On the left is a 'Planner' for the week of 20th May to 26th May 2020, with columns for Sun, Mon, Tue, Wed, Thu, Fri, and Sat. The main area displays a 'New 7 Year 1 Science Lessons: Topic 10 Particle Theory' knowledge organiser. It includes sections for 'What is particle theory?', 'What is the law of conservation of mass?', 'What are the different states of matter?', and 'What are the differences between the states of matter?'. There are also diagrams of particle arrangements for solid, liquid, and gas.

Step 2

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

This image shows a printed page from the knowledge organiser. Handwritten in blue ink is the date '29th May 2020' and the title 'Particle theory'. The page contains sections: 'A. What is particle theory?' (The theory that all matter is made up of particles), 'A. What is the law of conservation of mass?' (The Law of Conservation of Mass states that mass cannot be created or destroyed), 'B. What are the different changes of state?' (Melting, Freezing, Evaporation, Condensation), and 'What are the differences between the states of matter?' (Solid, Liquid, Gas). There are also diagrams of particle arrangements and a flowchart for changes of state.

Step 3

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

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

Step 4

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

Handwritten notes on lined paper showing the definition of solid repeated three times: 'Solid = regular pattern particles vibrate in fixed position'.

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 page from the quizzable knowledge organiser. Handwritten in blue ink are the answers to the questions: 'Self quizzing' for 'What is the law of conservation of mass?', and 'Arrangement/movement of matter' for 'What are the different...'. There are also diagrams of particle arrangements and a flowchart for changes of state.

Step 6

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

Handwritten notes on lined paper showing the definition of solid with corrections. The text is: 'Particle theory = all matter is made of particles', 'Solid = regular pattern particles vibrate in fixed position', 'Liquid = particles are arranged randomly but are still touching each other Particles can slide past each other and move around', and 'Gas = Particles are far apart and are arranged randomly. Particles carry a lot of energy'. There are checkmarks and an 'X' indicating corrections.

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

AN INSPECTOR CALLS Foundation

1. Context

Playwright: JB Priestley (1894-1984)
Dates: Written in 1945
First performed: In Moscow, Russia, in 1945
Era: Edwardian
Genre: Drama
Set: Fictional town Brumley 'an industrial city in the north Midlands' in 1912
Structure: Three Act Play

Biography of Priestley

- Born in Yorkshire in 1894.
- Fought in the first world war
- Became concerned with the effects of social inequality in Britain in 1930s
- Set up a new political party in 1942, The Commonwealth Party. It merged with the labour Party and was integral in developing the welfare state

Pre and Post War – Before the first world war, many people didn't believe that a war would take place. There were strong distinctions between upper and lower classes, society was deeply patriarchal. After the second world war ended in 1945, class distinctions had been greatly reduced by the two wars and women had earned a more valued place in society. After 1945 there was a desire for more sweeping social change.

Socialism – Socialism is a political belief in greater levels of equality. Socialism is generally concerned with ensuring that differences between wealth and social status are erased from society. After the two World Wars British society was far more open to socialist ideas. In *An Inspector Calls*, the Inspector presents socialist attitudes.

Social and Moral Responsibility – Attitudes towards social and moral responsibility changed rapidly in the time between when the play was set (1912) and the time the play was written (1945). In 1912 the general attitude of those with social status and wealth was towards looking after one's own. By the mid-1940s however, the Labour party under Attlee won a landslide election reflecting a wave of enthusiasm towards communal responsibility for everyone in society.

The Titanic – RMS Titanic was a British passenger liner that sank in the North Atlantic ocean in the morning hours of 15th April 1912, killing around 1500 people. The Titanic was designed to be the pinnacle of both safety and comfort, and due to its enormous size and quality was frequently labeled 'unsinkable'. In *An Inspector Calls* Birling claims this, thus immediately losing the respect of the audience. It can serve as a symbol of the hubris and arrogance of man.

FORM – The play fits into three possible forms:

Well-Made Play	Morality Play	Crime Thriller
<ul style="list-style-type: none"> A popular type of drama from the 19th century The events build to a climax Plot is intricate and complex 	<ul style="list-style-type: none"> Most popular during 15th and 16th centuries They taught the audience lessons that focused on the seven deadly sins Characters who committed those sins were punished 	<ul style="list-style-type: none"> Involves a gripping tale based around a crime The audience receives clues and must guess what has happened before the end All is revealed by the climax

2. Key Characters

Inspector Goole: An mysterious figure who serves as Priestley's mouthpiece and advocates social justice. He serves as the Birling's conscience and exposes their sins.

Mr Arthur Birling: A capitalist and business owner who opposes social change and greater equality. He is a self-made man and lacks the refined manners of the upper classes. Made a fool by Priestley to highlight the arrogance and absurdity of his views.

Mrs Sybil Birling: Her husband's social superior, Mrs Birling is involved in charity work but contradictorily believes in personal responsibility and looking after one's-self. Fails to understand her own children.

Sheila Birling: Young and initially enthusiastic, Sheila grows and changes throughout the play, embracing the views of the Inspector and challenging the social indifference of her parents. She becomes wiser and more cautious in her relationship with Gerald.

Eric Birling: In his early twenties, he drinks too much and forces himself upon Eva Smith. Whilst she is pregnant with his child, he steals from his father to attempt to support her. Grows and changes, realises his own wrongs along with everyone else's. Critical of parents.

Gerald Croft: A businessman engaged to Sheila, Gerald a relationship with Daisy Renton (Eva Smith). Even though he sits between he two generations he is politically closest to Birling and fails to embrace the Inspector's message, instead seeking to prove he wasn't real.

Eva Smith: Doesn't appear in the play, but her suffering and abuse represents that of all the working classes. She also calls herself both Daisy Renton and Mrs Birling. The older characters begin to question whether she really is one person.

3. Central Themes

Social Responsibility Priestley advocates a socialist message of collective responsibility for one another. The Inspector serves as his voice in conveying this ideology, but the younger generation also come to embrace it. The suffering of Eva Smith highlights the powerlessness of the working classes and the need for a society that protects its most vulnerable.

Age and the Generational Divide Priestley presents a view that there is hope for change and that it lies with the younger generation. Both Sheila and Eric change for the better, maturing and becoming more empathetic as they come to embrace the Inspector's message. They also become vocal critics of their parents' indifference to Eva's suffering.

Class and Power Priestley highlights the immense power that business owners wielded over their workers and presents them as arrogant and lacking in empathy. He demonstrates Edwardian society's preoccupation with wealth and status at the cost of the individual as a way of promoting change in post-WW2 Britain.

Gender At the time the play was first performed, women had just played a pivotal role in World War 2 and were empowered by the freedom work provided them. In the 1912 setting, we see Sheila's growing independence vs her mother. However, the play still highlights the awful vulnerability of women and the outdated stereotyping of them.

4. Key Vocabulary

Capitalist	Believing in private wealth and business aimed at making profit for business owners. Independent and self-reliant.
Socialist	Believing in shared ownership, collective responsibility for one another and social equality for all.
Ideology	A political viewpoint or set of beliefs, for example socialism.
Responsibility	Being accountable or to blame for something, or having a duty to deal with something.
Hierarchy	A ranking of status or power e.g. the strict class hierarchy of Edwardian England.
Patriarchy	A society in which power lies with men.
Prejudice	An opposition to or opinion about something/someone based upon what they are e.g. working class, female etc.
Morality	The belief that some behaviour is right and some is wrong.
Proletariat	The working class.
Bourgeoisie	The capitalist class in possession of the means of acquiring wealth.
Aristocracy	The highest class in society and often holding titles passed from father to son, for example Lord and Lady Croft.
Façade	A false front or surface-level illusion, for example the façade of family happiness in the opening scene of the play.
Catalyst	Someone or something that speeds up or triggers an event.
Antithesis	When something is the opposite of something else.

5. Key Terminology, Symbols and Devices

Dramatic Irony	When the audience is aware of something that a character is not aware of, for example Birling believing war won't happen.
Plot Twist	When a story suddenly departs from its expected path and something very unexpected happens. The final phone call.
Cliffhanger	Each act ends on a particularly dramatic, revealing moment that creates a sense of tension and anticipation.
Stage Directions	When the playwright instructs actors/director to perform in a particular way. Priestley's are unusually detailed.
Entrances/Exits	Characters frequently leave or enter the stage at dramatic moments. Some characters miss important events.
Lighting	Priestley uses stage directions to indicate how the stage should be lit. Changes to 'brighter and harder' for Inspector.
Props	Physical objects used in the play. The photograph plays a key role in identifying Eva. The doorbell interrupts Birling.
Contrast and Juxtaposition	Deliberately placing two very different things along side one another to draw comparisons e.g. Birling and the Inspector.

AN INSPECTOR CALLS Foundation

1. Context		
Playwright:	Biography of Priestley	
Dates:	•	
First performed:	•	
Era:	•	
Genre:	•	
Set:	•	
Structure:		
Pre and Post War –	Socialism –	
Social and Moral Responsibility –	The Titanic –	
FORM – The play fits into three possible forms:		
Well-Made Play	Morality Play	Crime Thriller
•	•	•
•	•	•
•	•	•

2. Key Characters
Inspector Goole:
Mr Arthur Birling:
Mrs Sybil Birling:
Shelia Birling:
Eric Birling:
Gerald Croft:
Eva Smith:

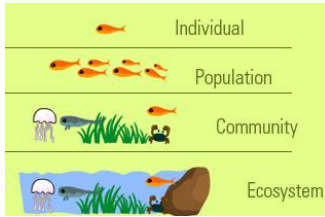
3. Central Themes	
Social Responsibility	
Age and the Generational Divide	
Class and Power	
Gender	

4. Key Vocabulary	
Capitalist	
Socialist	
Ideology	
Responsibility	
Hierarchy	
Patriarchy	
Prejudice	
Morality	
Proletariat	
Bourgeoisie	
Aristocracy	
Façade	
Catalyst	
Antithesis	

5. Key Terminology, Symbols and Devices	
Dramatic Irony	
Plot Twist	
Cliffhanger	
Stage Directions	
Entrances/Exits	
Lighting	
Props	
Contrast and Juxtaposition	

Ecosystems

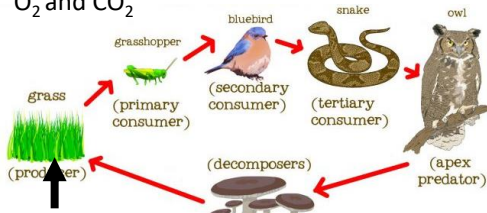
An ecosystem is all the living organisms within an area (community) plus the physical habitat



Interdependence

Organisms rely on each other for...

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



photosynthesis

Competition

Competition between organism occurs when resources within an ecosystem are limited.

Animals and plants compete for different resources.

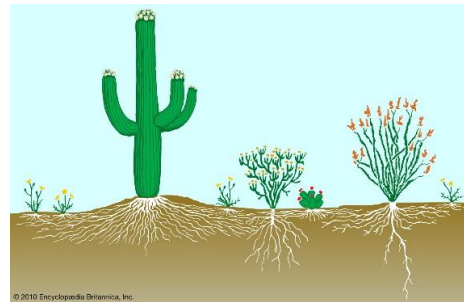
Plants	Animals
Light	Food
Space	Mates
Minerals ions	Territory
Water	

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.

Plant adaptations



Plants in desert areas have :

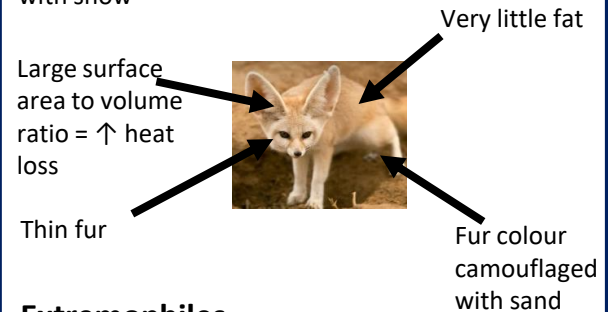
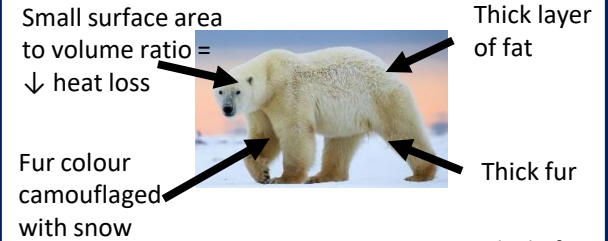
- deep roots to maximise water uptake
- thin/no leaves to minimise water loss
- Spines to stop them being eaten

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)



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.

Science T3 Y11 B5.16 Mainstream Adaptations, interdependence, and competition

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 resources plants compete for

8. Name two resources animals compete for

1. Name two biotic factors that can affect organisms within a habitat

2. What does the term 'abiotic' mean?

3. Name two abiotic factors

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?

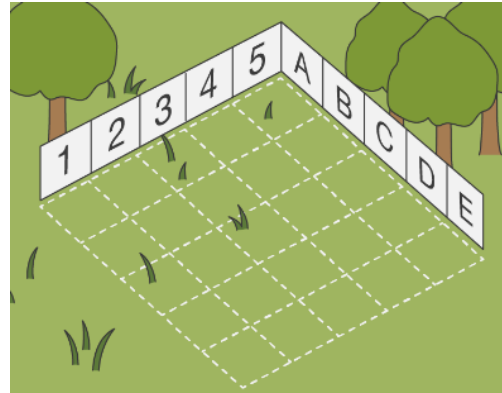
6. Give an example of an extremophile

Science T3 Y11 B5.16 Mainstream Adaptations, interdependence, and competition

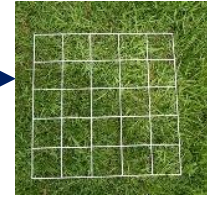
Required practical – Estimating Populations (Measuring abundance)

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:

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

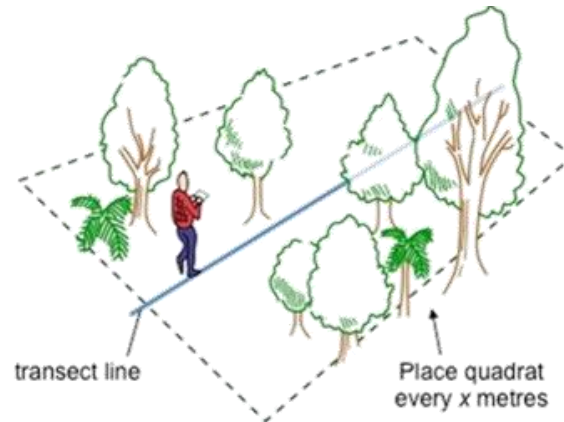
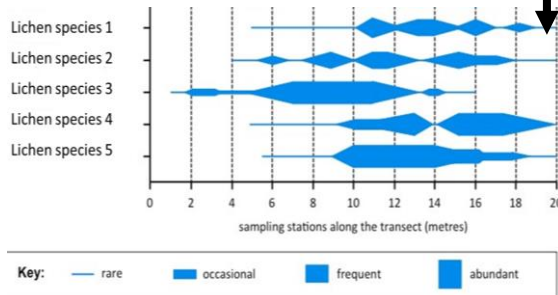


a quadrat →



Required Practical – How populations may change over a distance (Measuring distribution)

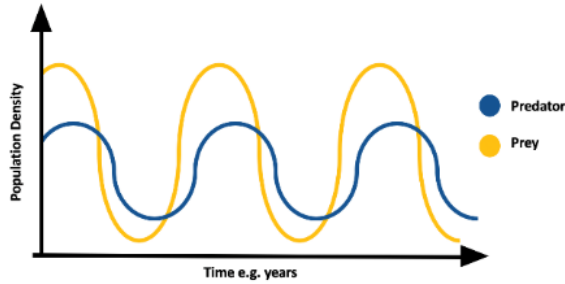
1. Place tape measure (a transect line) through ecosystem being investigated.
2. Place quadrat at regular, random intervals along the transect line and count the number of particular organisms.
3. Draw a distribution graph of your results. (They might look like this.)



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

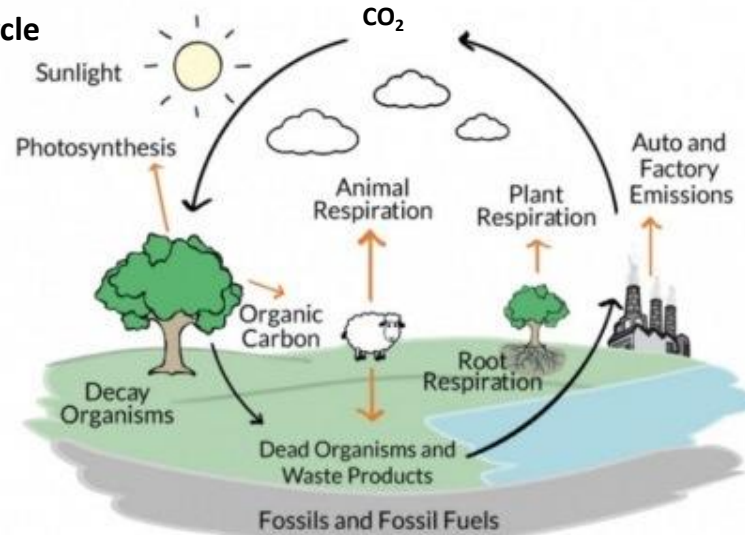
Predator-Prey Relationships



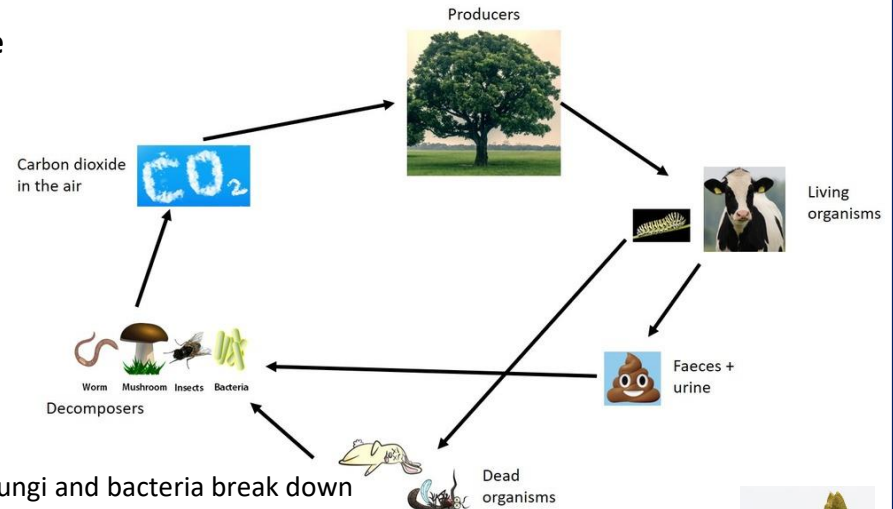
Population increases and decreases follow similar pattern in a cycle because they affect each other – more prey = more food for predator.

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

The Carbon Cycle

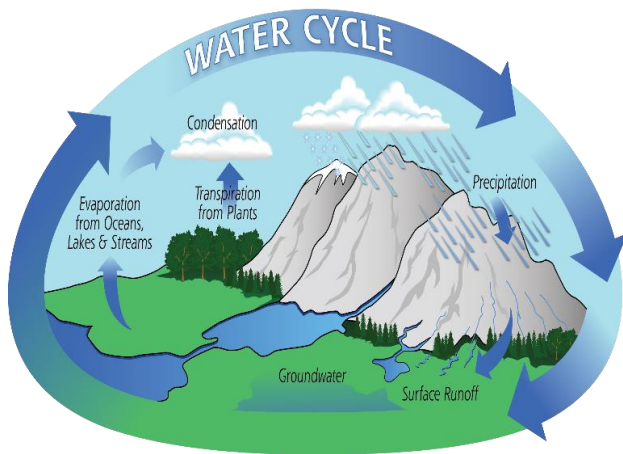


The Decay Cycle



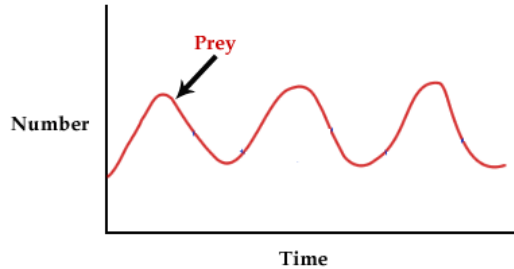
Microbes such as fungi and bacteria break down dead or dying material. This returns carbon to the atmosphere as carbon dioxide and mineral ions to the soil.

The Water Cycle



Science T3 Y11 B5.17 Mainstream – Organising an ecosystem

1. Sketch the line to show how the predator population would change on the graph below



1. Which process takes carbon into plants?
2. What do plants make with the carbon (and water)
3. Name 2 process that releases carbon into the atmosphere as carbon dioxide.
4. What happens to carbon that gets trapped deep underground for millions of years?

1. What are the main stages in the water cycle?

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

Science T3 Y11 B5.18 Mainstream Biodiversity and ecosystems

Biodiversity

Biodiversity is a measure of the variety of different organisms living in an area/ecosystem.

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'. This can cause sea level rises, flooding, changes in species distribution, changes in migration patterns.

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

Water pollution

- Fertilisers: nitrates from fertilisers are easily washed from the soil into stream, lakes and river.
- Untreated sewage: contains high levels of nitrates and can be washed into rivers or pumped into the sea.
- Toxic chemicals: from landfill sites can also be washed into waterways.

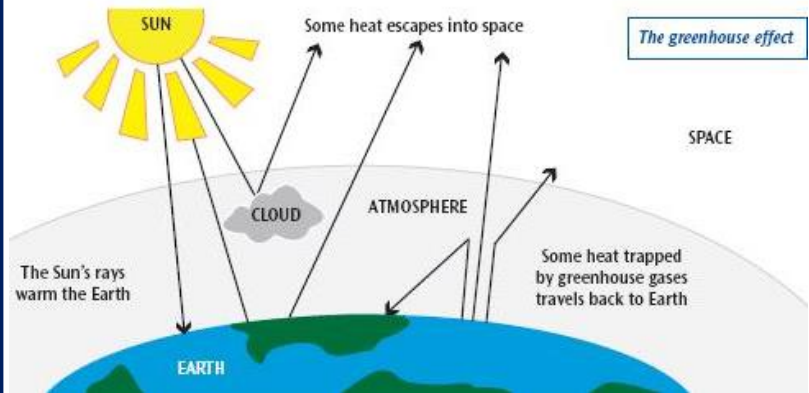
Land pollution

- Household waste: toxic chemicals from landfill sites can leak into the soil.
- Industrial waste: toxic chemicals from industrial process can poison large areas.
- Agricultural waste: pesticides and herbicides get into the soil and can be washed into streams and rivers. They can also become part of the food chain and be passed up the food chain causing dangerous levels in the top predators (bioaccumulation).

Air pollution

- Acid rain: sulphur dioxide and nitrogen dioxides dissolve in rain turning it acidic.
- Smog: a haze caused by smoke particles and acidic gases.
- Smoke pollution: particulates (tiny solid particles) reflect the sunlight causing global dimming.

The greenhouse effect



1. What is biodiversity ?

1. What is the impact of waste management on biodiversity?
2. What is the impact land use on biodiversity?
3. What is the impact of deforestation biodiversity?
4. What is the impact of global warming on biodiversity?

1. How is biodiversity maintained?

1. Give three causes of water pollution?

1. Give three causes of land pollution?

1. Give three examples of air pollution?

1. What is the greenhouse effect?

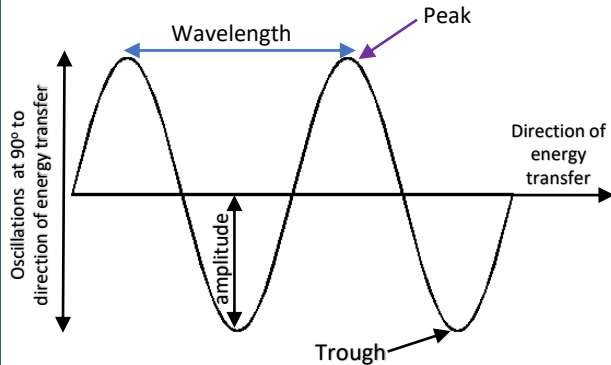
Science T3 Y11 P4.12 Mainstream Wave Properties

Transverse Waves

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

Examples:

- Electromagnetic waves
- Ripples on water.

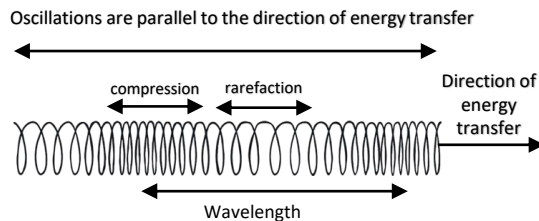


Longitudinal Waves

- 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 frequency wavelength

(m/s) (Hz) (m)

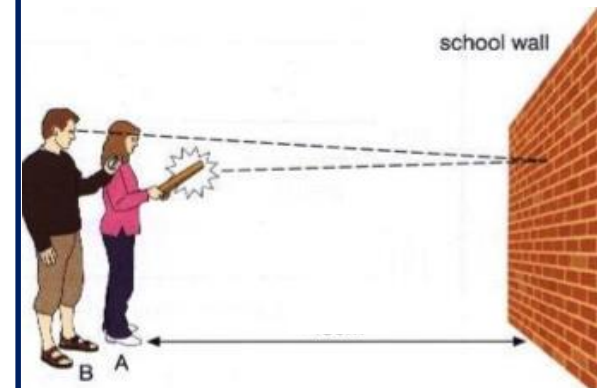
Measuring speed of sound waves in air

- 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.

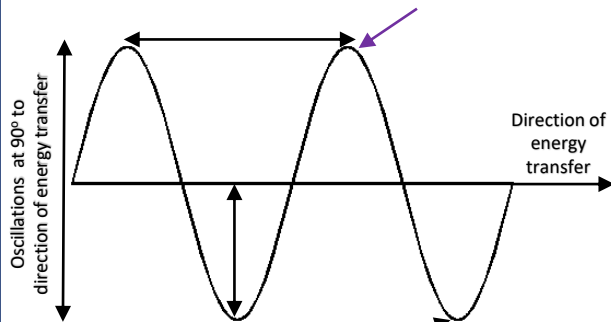
This is unlikely to produce an accurate value for sound in air (330 m/s) as the reaction time of the person operating the stopwatch is likely to be a significant proportion of the time measurement.



Science T3 Y11 P4.12 Mainstream Wave Properties

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

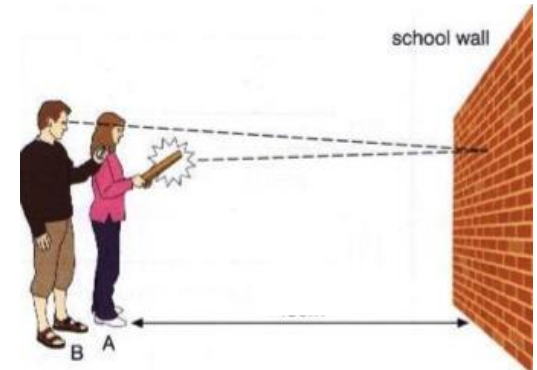
Wavelength

Frequency

2. What are the units for frequency?

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

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



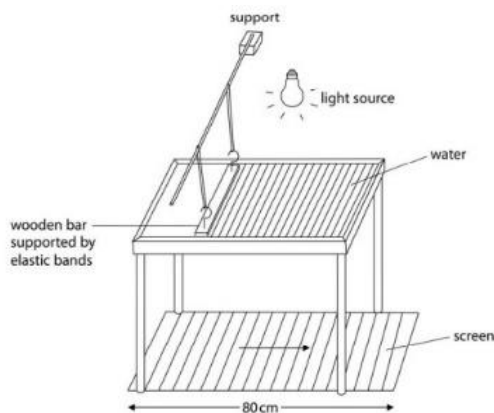
2. What is the biggest source of error in this investigation?

3. What is the speed of sound in air?

Measuring waves in a liquid

Equipment

- Ripple tank
- Measuring ruler
- Stop watch



Method

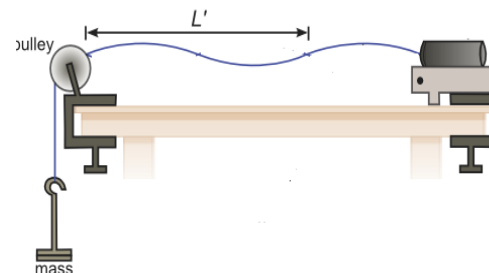
1. Set up the equipment as shown and turn on the motor to produce low frequency waves so that they are able to be counted.
2. Adjust the lamp until pattern is seen clearly on white screen underneath
3. Use a ruler to measure the length of a number of waves (e.g 10) and divide the length by the number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

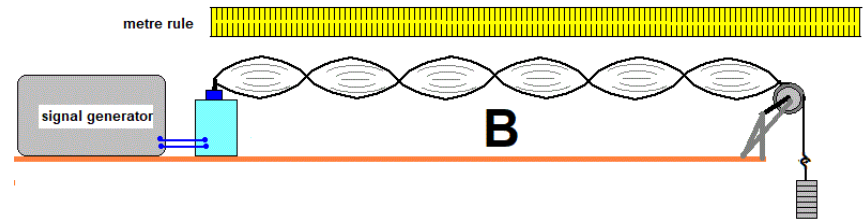
Science T3 Y11 P4.12 Mainstream Wave Properties Required Practical – investigating wave in a solid and a ripple tank

1. 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	

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

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

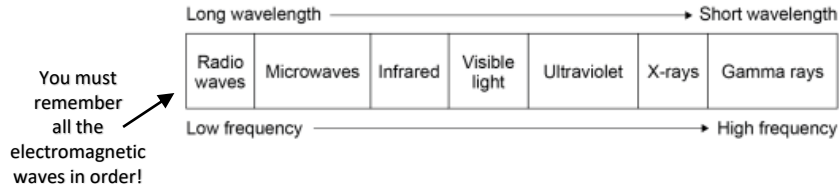


2. How many complete waves are shown in the image above?
3. If the length from the generator to the pulley was measured at 66 cm, what is the wavelength?
4. Why is it better to measure multiple waves and divide to find wavelength rather than measure one single wave?
5. What happens to wavelength when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

Science T3 Y11 P4.13 Mainstream Electromagnetic 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

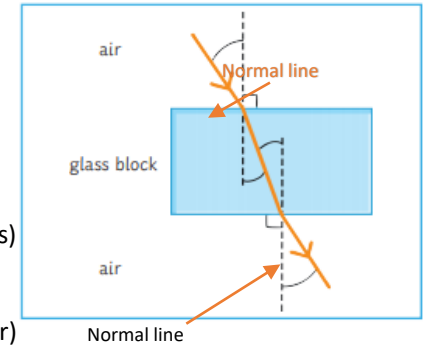


Wave	Use	Other information
Radio waves	Television and radio	Easily transmitted through the air. Harmless if absorbed by the body.
Microwaves	Satellite communications and cooking food	Can be harmful when internal body cells become heated by over exposure.
Infrared	Electrical heaters, cooking food and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

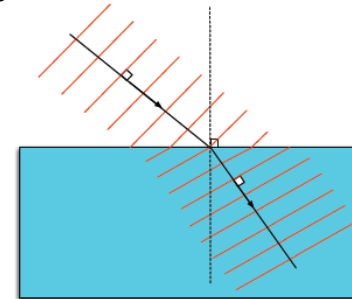
1. State two properties of electromagnetic waves.
2. Write the EM spectrum in order of **increasing** wavelength
3. Write the EM spectrum in order of **increasing** frequency
4. How fast do electromagnetic waves travel?
5. State the uses of:
 - a) radio waves
 - b) microwaves
 - c) infrared
 - d) visible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

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.

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. 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?

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)

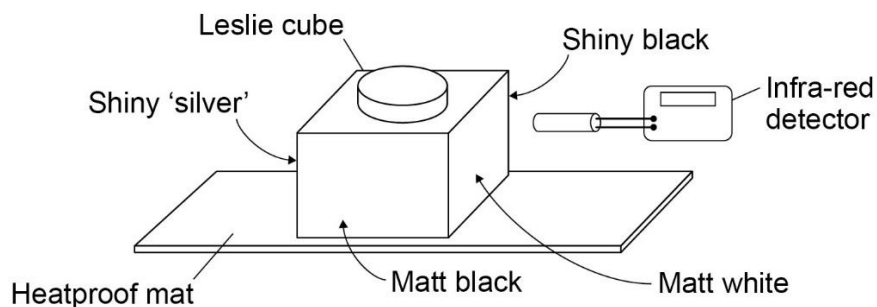
Control variables: Temperature of the water inside, the distance between the cube surface and the infrared thermometer

Conclusion

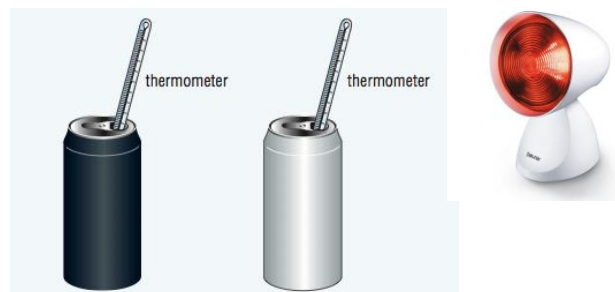
Black matt surfaces absorb and emit the most infrared radiation.

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

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?

Magnets

- Have two poles - **north** and **south**.



- **Like poles** will **repel** each other (e.g. N-N or S-S)
- **Opposite poles** will **attract** (e.g. N-S)
- Magnetism is a **non-contact** force – magnets do not need to be touching for effect to be observed.

Magnetic materials: only **iron/steel, cobalt** and **nickel** are magnetic.

Types of magnets

Permanent magnet

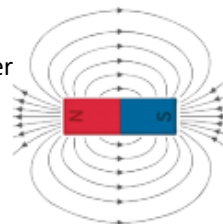
- Produces its own magnetic field.
- Magnetism cannot be turned on or off.

Induced magnet

- Induced magnet = a material which becomes magnetic when placed in a magnetic field.
- Induced magnets only attract other materials and lose magnetism when removed from the magnetic field.

Magnetic Fields

Magnetic field = the area surrounding a magnet where the force will act on another magnet or magnetic material.



- Magnet field is strongest at the **poles** where the field lines are **closest together**.

- Field lines always go away from **magnetic north** and towards **magnetic south**.

Earth's Magnetic Field

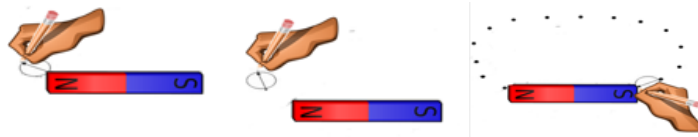
- Earth produces a magnetic field.
- Magnetic compasses use this to help navigation.
- The core of the Earth is made of **iron** (magnetic).

Plotting Magnetic Field Lines

A magnetic compass can be used to plot and draw the magnetic field lines around a magnet.

You need to be able to describe this method!

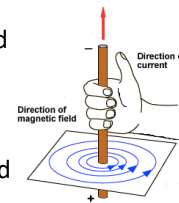
1. Place the bar magnetic in centre of paper.
2. Place a plotting compass at one end of the magnet.
3. Put a pencil dot at the place the compass arrow is pointing to
4. Move the compass to line up the tail of the compass needle to the dot you just made.
5. Repeat until you reach the other end of the magnet



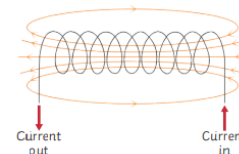
6. Join the dots using a line – this is the magnetic field line. Mark on the direction the arrow pointed – it should run **N→S**

Electromagnetism

- When a current passes through a wire, a **magnetic field** is produced
- The direction of the field can be found by the right hand thumb rule
- curl the fingers of the right hand around the wire and point the thumb in the direction of the current (+ to -)
- The direction of the circular field is shown by the fingers
- Strength of magnet can be increased by increasing the current
- When the current is switched off, the magnetic field is lost



Coiling the wire will form a **solenoid**.



To increase strength of magnetic field around a solenoid you can:

- Add an **iron core**
- **Increase number of turns** in coil
- **Increase the current** passing through wire

Electromagnets

- Electromagnet is a solenoid with an iron core.
- Are **induced magnets** (can be turned on and off)

Uses = electric motors, loudspeakers, electric bells, scrapyards.

Science T3 Y11 P4.15 Mainstream Electromagnetism

<ol style="list-style-type: none">1. Name the two poles on a magnet.2. What will like poles do?3. What will opposite poles do?4. Why is magnetism a 'non-contact' force?5. Which metals are magnetic?	<ol style="list-style-type: none">1. What is a magnetic field?2. Where is the magnetic field the strongest?3. Which direction do the field lines go?4. Draw the magnetic field around a bar magnet.5. What is the Earth's core made of?6. What can the Earth's magnetic field be used for?	<ol style="list-style-type: none">1. What is produced when a current flows through a wire?2. How can you increase the strength of a magnetic field of a straight wire?3. What is produced when you coil the wire?4. How can you increase the magnetic field around a solenoid? (3 ways)
<ol style="list-style-type: none">1. What are the two types of magnets?2. Name two differences between these two types of magnets.	<ol style="list-style-type: none">1. Describe a method to plot the magnetic field of a bar magnet.	<ol style="list-style-type: none">5. What is an electromagnet?6. What is meant by induced magnet?7. State 2 uses of electromagnets.

Year 11 OCR A Term 1 – People of the world

A. How can we measure development?	
Life expectancy	The average lifespan of someone born in that country
Birth rate	Number of live births per 1000 per year
GDP per capita	An average of the national gross domestic product per person per year in \$
Literacy rate	Percentage of people over the age of 15 who can read and write
Death rate	Number of deaths per 1000 people per year
HDI	Measures life expectancy, education and income per capita. Scored 0-1, 0 is low.
Internet users	Percentage of people who have access to the internet

A.	How can we measure development?	
	POSITIVE	NEGATIVE
Life expectancy W	Shows condition of healthcare and quality of services	Does not consider political factors such as war
Birth rate	Shows development of healthcare (e.g., contraception)	Does not consider how long babies survive in the country
GDP per capita	Shows how wealthy a country's population is (quality of life)	Very small/ large populations can disrupt data (e.g. China)
Literacy rate	Shows the quality of education received in a country	Does not consider other factors that disrupt education (e.g. water collection)
Death rate	Shows the quality of healthcare/ disease/ food/water	Can be disrupted if country has an elderly population (Japan)
HDI	Uses a combination of measures= more accurate	
Internet users	Shows the development of infrastructure in a country	Does not consider the quality of this infrastructure

D. How does aid promote and hinder development?	
Promote	Aid can help a country improve its healthcare, communications rapidly by using ready developed technology from more developed nations. It can also help a country recover quickly after a natural disaster.
Hinder	Aid can hinder a country's development by encouraging dependence on money from more developed nations. If a government is corrupt, money given in aid could be used in the wrong places (e.g. armament). Tied aid can put a country into more debt as they spend money buying goods from wealthy nations,

B. What has caused uneven development?	
Natural resources	Fuel sources (oil, gas) can be traded. Access to clean, safe water
Colonialism	One country goes into another country and claims they are in power. They can steal their raw materials.
Industrialisation	Factories are built, increasing trade and increasing economic development
Trade	Can be fair or unfair. Helps a country increase their economy.
Climate	Extreme climate (too hot or too cold) will limit industry and affect health

C. The different types of aid	
Aid	When a country or organisation gives resources to another country (e.g. Money, products or technology)
Bi lateral aid	International aid given by one country to another. Often has 'strings' attached.
Multilateral aid	Given by many different countries or charity organisations (e.g. Oxfam, red cross)
Short-term aid	Aid given to support a country following a disaster (e.g. after an earthquake)
Long-term aid	Aid given over a long period of time to support a country's development (e.g. Oxfam goat aid)

E. What is Nigeria like?	
<u>Nigeria's environmental./ political/ economic context</u>	
<ul style="list-style-type: none"> Nigeria is an EDC in west Africa. It borders Niger to the north and Benin to the west. Nigeria lies on the Atlantic Ocean. Nigeria has a tropical climate in the South (near the Niger delta) and semi-desert climate in the North. Nigeria was colonised by the UK and became independent in 1960 It has high levels of international migration due to jobs in the oil industry Agriculture in Nigeria provides a stable food supply for much of West Africa Nigeria has had a stable government since 2015 	

<u>What has enabled Nigeria to develop?</u>	
<ul style="list-style-type: none"> With a population of 182 million, Nigeria has the largest population of any African country. Nigeria has grown mainly through the export of raw materials such as oil, oil palm and cocoa. They export In 2014 it has the highest GDP in Africa 	

Factors contributing to Nigeria's economic growth	
Imports	Goods coming into a country
Exports	Goods leaving a country
International investment	When one country (e.g. UK) funds businesses in another country (e.g. Nigeria)
Population structure	The 'make-up' of the population. E.g how old or young/ males and females.
Employment structure	How the workforce is divided up (primary/ secondary/ tertiary)

Year 11 OCR A Term 1 – People of the world

A.	How can we measure development?	
Life expectancy		
Birth rate		
GDP per capita		
Literacy rate		
Death rate		
HDI		
Internet users		

B.	What has caused uneven development?	
Natural resources		
Colonialism		
Industrialisation		
Trade		
Climate		

E.	What is Nigeria like?
<u>Nigeria's environmental,/ political/ economic context</u>	

A.	How can we measure development?	
	POSITIVE	NEGATIVE
Life expectancy		
Birth rate		
GDP per capita		
Literacy rate		
Death rate		
HDI		x
Internet users		

C.	The different types of aid	
Aid		
Bi lateral aid		
Multilateral aid		
Short-term aid		
Long-term aid		

E.	What has enabled Nigeria to develop?

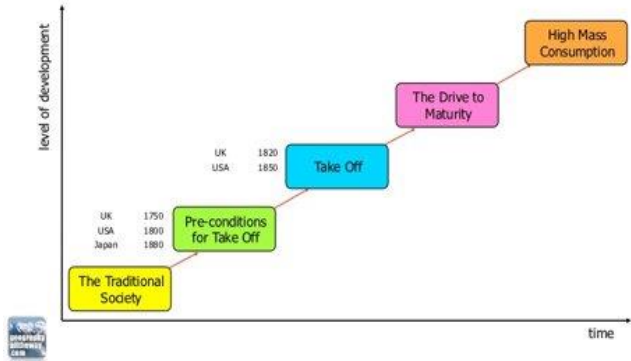
D.	How does aid promote and hinder development?	
Promote		
Hinder		

	Factors contributing to Nigeria's economic growth
Imports	
Exports	
International investment	
Population structure	
Employment structure	

Where is Rio?

Rio de Janeiro is located in South America. It is located in south Brazil. It borders the Atlantic Ocean.

- G. Why is Rio de Janeiro a global city?**
- Until 1960 Rio was the capital of Brazil however this has not changed to Brasilia. Rio is still very important.
 - Brazil is in an Emerging Developing Country. This means that it is experiencing rapid economic growth
 - Rio is a mega-city. This means it has a population of over 10 million people.
 - The exact population of Rio is unknown however it is over 18 million.
 - Rio is the cultural capital of Brazil with an annual carnival and over 50 museums. It is also a UNESCO World Heritage Site.
 - In 2014 the world cup took place in Rio
 - In 2016 Rio hosted the Olympics.



- F. What is Rostow's model?**
- Human Influence**
- Currently Nigeria is in stage 3. This is where secondary industries dominate.
 - In the future Nigeria may develop to stage 4
 - They will do this by becoming more self-reliant by improving education.
 - This will lead to increase in tertiary employment such as nursing and IT support.

Positive impacts of urbanisation

- Employment opportunities in banking, finance and insurance.
- Good infrastructure (roads) which link different areas together.
- Better quality of life
- More jobs in secondary and tertiary sectors

Year 11 OCR A Term 1 – People of the world

- H. Where do people in Rio come from?**
- Migration accounts for 65% of urban growth in Rio de Janeiro. Largely people come from Europe, in particular Portugal because they speak Portuguese in Rio.
 - However, large numbers of people come from other parts of Brazil including the Amazon Basin because there are better jobs, higher income, improved medical care and education.
 - People also travel from other countries in South America- Argentina/ Bolivia due to the cultural opportunities in Rio.
 - Many people come from the USA and UK. These are largely people who are highly skilled and are attracted due to the growing secondary and tertiary industry (specifically in oil exploration).
 - Many people come from China and Japan, this is because Rio de Janeiro has a growing finance and banking industry which is well paid.

I. How has migration influenced the character and way of life within Brazil?

Copacabana Beach: The beaches in Brazil are stunning and so are the natural surroundings. Rio is one of the most visited cities in the southern hemisphere. It is a UNESCO world Heritage Site which means that it should be protected from environmental harm.

Crime and government: Due to over population, there are not many jobs which means that many people must resort to crime. As a result, gangs often rule over the favelas. Police have been sent in to pacify these slum areas (make peaceful) with the aim to improve quality of life for people living there.

Negative impacts of urbanisation

- 40% of people living in favelas do not have a job.
- Due to unemployment there's not much tax being paid by a large proportion of the population.
- Not enough houses – 40% of population live in favelas (illegal squatter settlements).
- Only 50% of people have access to healthcare.
- Air pollution – 5,000 deaths/year

K.	
Sustainable Management in Rio- Transport	Due population growth, means that the use of cars has grown by 40% in the last 10 years. They have expanded the public transport system which is a metro that runs under the bay and connects various parts of Rio. More and more people are using the metro system and buses; however, they are no extremely busy as there aren't enough services to go around. They have also put tolls into the city centre, this means that traffic is reduced because people don't want to pay. Lastly, they have made busy roads one way in rush hour. Car use has reduced slightly, however many still use cars for their own safety.
Sustainable Management in Rio- Housing	Hillside were secured and new health and education facilities were built in these areas, however the budget of US\$1Billion is probably not going to be enough to do this in every Favela. It has also led to rent rising and many people can't afford to live in their old homes.

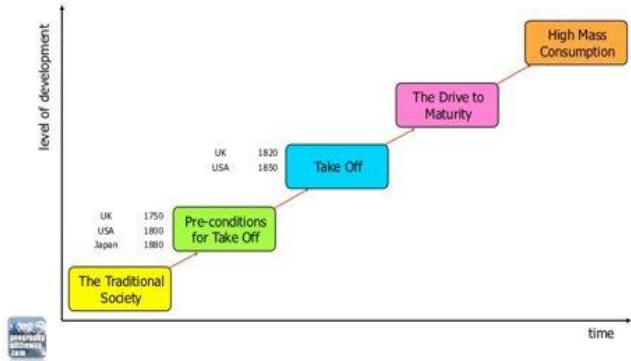
Sustainable Management in Rio- Waste

As we saw before, the largest problems concerning waste disposal are in the Favelas. Many are built on steep slopes and have few proper roads meaning that it is difficult for waste collection lorries to get through. Imagine if rubbish in Swindon wasn't collected every week – it would pile up outside our houses, attracting rats and foxes. It would also really smell. The waste in Rio does the same, it builds up and pollutes the water system spreading diseases like Cholera. To reduce this, a power plant has been set up near the University or Rio which uses methane gas from rotting rubbish to produce energy. This is more environmentally friendly than a lot of electricity production, however it does release some methane which is a greenhouse gas. It consumes 30 tonnes of rubbish a day (that's 2 busses) and produces electricity for 1000 homes. However, because of the methane gas it can be a stinky business.

Where is Rio?

Rio de Janeiro is located in South America. It is located in south Brazil. It borders the Atlantic Ocean.

- G. Why is Rio de Janeiro a global city?**
- Until 1960 Rio was the capital of Brazil however this has not changed to Brasília. Rio is still very important.
 - Brazil is in an Emerging Developing Country. This means that it is experiencing rapid economic growth
 - Rio is a mega-city. This means it has a population of over 10 million people.
 - The exact population of Rio is unknown however it is over 18 million.
 - Rio is the cultural capital of Brazil with an annual carnival and over 50 museums. It is also a UNESCO World Heritage Site.
 - In 2014 the world cup took place in Rio
 - In 2016 Rio hosted the Olympics.



- F. What is Rostow's model?**
- Human Influence**
- Currently Nigeria is in _____. This is where secondary industries _____
 - In the future Nigeria may develop to _____
 - They will do this by becoming _____
 - This will lead to increase in _____ such as nursing and IT support.

Positive impacts of urbanisation

- Employment opportunities in _____.
- Good infrastructure (_____).
- Better _____
- More jobs in _____ sectors

Year 11 OCR A Term 1 – People of the world

- H. Where do people in Rio come from?**
- Migration accounts for 65% of _____ growth in Rio de Janeiro. Largely people come from E_____e, in particular Portugal because they speak P_____e in Rio.
 - However, large numbers of people come from other parts of Brazil including the _____ because there are _____, _____, improved _____ and education.
 - People also travel from other countries in South America- _____
 - Many people come from the USA and UK. These are largely people who are _____ and are attracted due to the _____ industry (specifically in oil exploration).
 - Many people come from _____, this is because Rio de Janeiro has a growing _____ industry which is well paid.

I. How has migration influenced the character and way of life within Brazil?

Copacabana Beach: The beaches in Brazil are stunning and so are the natural surroundings. Rio is one of the most visited cities in the southern hemisphere. It is a UNESCO world Heritage Site which means that it should be protected from environmental harm.

Crime and government: Due to _____, there are not many _____ which means that many people must resort to _____. As a result, _____ often rule over the _____. Police have been sent in to pacify these slum areas (make _____) with the aim to improve quality of life for people living there.

Negative impacts of urbanisation

- 40% of people living in f____s do not _____
- Due to un____t there's not much _____ being paid by a large proportion of the population.
- Not enough _____s – 40% of population live in _____s (illegal squatter settlements).
- Only 50% of people have access to h_____e.
- Air p_____ion – 5,000 deaths/year

K.	
Sustainable Management in Rio- Transport	<p>Due population growth, means that the use of c_____ has grown by _____ in the last _____ years.</p> <p>They have expanded the _____ system which is a m_____ that runs under the bay and connects various parts of Rio. More and more people are using the _____ and buses; however, they are now extremely busy as there _____. They have also put tolls into the city centre, this means that traffic is _____. Lastly, they have made _____ one way in rush hour. Car use has reduced slightly, however many still use cars for their own safety.</p>
Sustainable Management in Rio- Housing	<p>Hillsides were secured and new _____s were built in these areas, however the budget of US\$1Billion is probably not going to be enough to do this in every Favela. It has also led to _____ and many people can't afford to live in their old homes.</p>
Sustainable Management in Rio- Waste	<p>As we saw before, the largest problems concerning _____ are in the Favelas. Many are built on _____ and have few _____ meaning that it is difficult for _____ lorries to get through. Imagine if rubbish in Swindon wasn't collected every week – it would pile up outside our houses, attracting _____. It would also _____. The waste in Rio does the same, it builds up and pollutes the water system spreading _____. To reduce this, a _____ has been set up near the _____ which uses _____ from _____ environmentally friendly than a lot of electricity production, however it does release some methane which is a greenhouse gas. It consumes _____ of rubbish a day (that's 2 busses) and produces electricity for 1000 homes. However, because of the _____ it can be a stinky business.</p>

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.

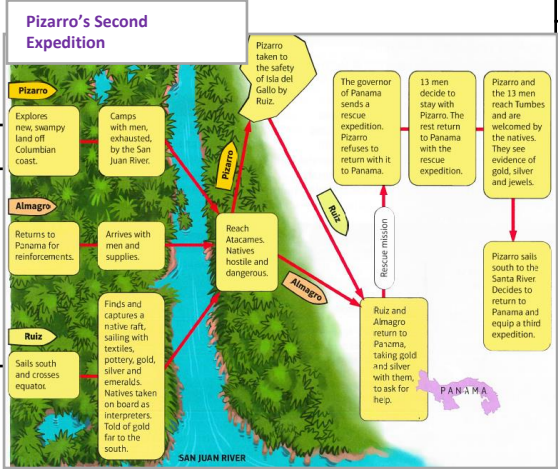
75% of wealth went to Spanish merchants and conquistadors.

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 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.

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.

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.

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.

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.

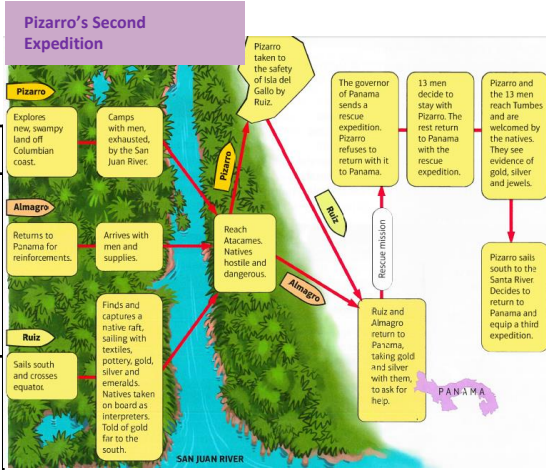
Council of the Indies

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 – First Expedition



Pizarro's appeal to the Spanish King Charles I

Pizarro and the Conquest of the Inca Empire

Date	Event
Dec 1518	
Sept 1520	
1525-1527	
1527	
1529	
April 1532	
Nov 1532	
July 1533	
1533	

Revolt of the Incas 1536

The Siege of Cuzco 1536-1537

Governing the Empire

The New Laws:

The role of the Viceroy's:

The role of the encomienda system:

Significance of the New Laws 1542:

Founding of La Paz, 1548

Growth of Seville

The Slave Trade

Casa de Contratacion (House of Trade)

Discovery of silver in Bolivia and Mexico

Conquistador Revolt in Peru 1544

Pirates and Privateers



Council of the Indies



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.

1. Gross Profit Margin	
	Explanation
Gross profit	Gross profit is the difference between a product's selling price and what it costs the business to manufacture/purchase.
Gross profit margin	The percentage of gross profit made from the sales revenue for a product.
Gross profit margin calculation.	Gross profit margin = $\frac{\text{Gross Profit}}{\text{Sales revenue}} \times 100$

2. Net Profit Margin	
There are three main types of production:	
Type of Production	Advantages and Disadvantages
Job Production	Advantages: Highly flexible; gives the customer exactly what they want. Disadvantages: High production costs. Skills may be in short supply, making it hard for the business to grow
Batch Production	Advantages: Gain some cost advantages from producing several items at once...yet still able to offer customers the colour/size they want Disadvantages: May be limited scope for automation, making production costs far higher than with flow production. Not as flexible as job production.
Flow Production	Advantages: Can automate production fully, making it highly cost effective (which should be good for customers as well as suppliers). Many customers value consistency, and flow will provide an identical product each time. Disadvantages: Likely to be expensive to set up and inflexible to use; could be a disaster if a product life cycle proves much shorter than expected. Lacks flexibility in terms of meeting individual customer needs.

2. Procurement – Working with Suppliers	
There are five main factors at the heart of a relationship between a company and its suppliers:	
Quality	Suppliers must supply high quality products to businesses, suppliers will struggle to maintain a good relationship with a company if they are not supplying good durable products. First and fore most suppliers must supply high quality materials to businesses.
Delivery	Suppliers must deliver on time to clients, there is little point supplying at the right price and with the right product, if the product doesn't arrive on time. Failing to deliver supplies on time can bring manufacturing to a halt or leave shops with empty shelves.
Availability	Suppliers must be available and able to cope with varying orders in a timely fashion and sometimes within a short timeframe. Suppliers must be flexible and aware of the needs of their customers.
Cost	Cheaper supplies mean lower variable costs and higher profit margins. Therefore, the price charged by a supplier will be a key factor in the relationship between a firm and its suppliers. Price to highly and firms may look to alternative suppliers, price to low and firms may question the quality of merchandise. Pricing is key to the relationship between supplier and firm.
Trust	Trust is key for the relationship between firm and supplier. Most business transactions are on credit and not cash – therefore suppliers have to be able to trust that a firm will make a profit and be able to pay them back in cash.

8. Placing Strategy – Managing Quality within a Business	
Type of Quality Control	Explanation:
Quality Control	Quality control is a system of inspection to try to make sure that customers don't experience a poor-quality product or service. Such controls may include Factory Inspectors at the end of a production line checking the quality of a product
Quality Assurance	Quality Assurance describes the system put into place by a company to assure quality within the production system. Every member of staff will have responsibilities to quality assure products. Over time this should lead to quality products as people become better at their roles.
Quality Culture	Quality culture means the general attitudes and behaviours among staff within a workplace is focussed on high quality production. Quality culture describes motivated, punctual, diligent and invested employees who care about the business and strive to improve it.

9. The Sales Process	
Term	Definition
Customer Engagement	The attempt to make a customer feel part of something rather than an outsider.
Customer Feedback	Comments, praise or criticisms given to the company by its customers
Post-Sales Service	Service received after the purchase is completed because something has gone wrong or as a way of promoting customer engagement
Product Knowledge	How well staff know all the features of the products and service issues surrounding the products.

9. Customer Service	
Great Customer Service is pivotal to any successful business, but there is far more than that to the sales process. To succeed in sales, a business must make sure it provides:	
Component of Customer Service	Term
Product Knowledge	<p>Customers expect that staff will be sufficiently well trained and well-motivated to have good knowledge of the products and services being offered. In order to ensure staff, have good product knowledge, certain things are essential:</p> <p>Good Training – if businesses provide good training to staff, then staff will be knowledgeable about products and therefore will be able to improve the customer experience</p> <p>Loyal Staff – The longer staff stay working in a job the better they become. If staff only stay three to six months, they will never develop a rich understanding of the products and services that the business provides. Well managed businesses pay fairly and treat staff with respect.</p> <p>Committed Staff – Committed and enthusiastic staff are crucial to the smooth running of any business. This is affected by the quality of recruitment, the standard of training and the overall culture that exists within the company’s workforce.</p>
Speedy and Efficient Service	<p>Good customer service is designed for the customer not the company.</p> <p>Efficient service:</p> <p>Gets products to customers exactly when you want them</p> <p>Gets products to customers in good condition</p> <p>If there is anything wrong - it will be sorted out as soon as possible and considerately</p>
Customer Engagement	<p>In the world of social media, it becomes possible to try to keep customers engaged with the business on a regular basis.</p> <p>Companies engage customers in a variety of ways:</p> <p>E-Mail</p> <p>Social Media (Facebook and Instagram)</p> <p>Post</p> <p>Text</p> <p>Television/Web advertisements.</p> <p>It is vital that customers feel up to date and informed about any product innovations</p>
Responses to Customer Feedback	<p>How companies respond to customer feedback is vital, providing great customers service where people feel listened too ensures customers continue to come back and buy products from the business.</p> <p>It can cost a lot of money to persuade new customers to come advertising is expensive and it’s affects are hard to judge. Building up a reputation for responding to customer feedback can travel by word of mouth and this is much cheaper.</p>



Year 11 PRODUCT DESIGN Term 4




<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e1eef6;">A. Finite Resources</td> <td style="text-align: right;"></td> </tr> <tr> <td colspan="2">Finite resources will eventually run out.</td> </tr> <tr> <td colspan="2" style="text-align: center;">Coal</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> Produces high amounts of energy Enough to last 100s of years </td> <td> <ul style="list-style-type: none"> Produces CO2 when burned Natural land damage from mining </td> </tr> <tr> <td colspan="2" style="text-align: center;">Natural Gas</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> Emits less CO2 UK has shale deposits </td> <td> <ul style="list-style-type: none"> Highly flammable Pollutes water </td> </tr> <tr> <td colspan="2" style="text-align: center;">Oil</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> Produces high amounts of energy Easy to store </td> <td> <ul style="list-style-type: none"> Creates air pollution Large impact on nature </td> </tr> <tr> <td colspan="2" style="text-align: center;">Nuclear</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> No harmful gases are released More efficient </td> <td> <ul style="list-style-type: none"> Power stations close after 40yrs Disposal is difficult & costly </td> </tr> </table>	A. Finite Resources		Finite resources will eventually run out.		Coal		Advantages	Disadvantages	<ul style="list-style-type: none"> Produces high amounts of energy Enough to last 100s of years 	<ul style="list-style-type: none"> Produces CO2 when burned Natural land damage from mining 	Natural Gas		Advantages	Disadvantages	<ul style="list-style-type: none"> Emits less CO2 UK has shale deposits 	<ul style="list-style-type: none"> Highly flammable Pollutes water 	Oil		Advantages	Disadvantages	<ul style="list-style-type: none"> Produces high amounts of energy Easy to store 	<ul style="list-style-type: none"> Creates air pollution Large impact on nature 	Nuclear		Advantages	Disadvantages	<ul style="list-style-type: none"> No harmful gases are released More efficient 	<ul style="list-style-type: none"> Power stations close after 40yrs Disposal is difficult & costly 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">What we are learning this term:</td> </tr> <tr> <td>A. Finite Resources</td> <td>B. CAD</td> </tr> <tr> <td>C. Renewable Metals & Alloys</td> <td>D. Electronic Systems</td> </tr> <tr> <td>E.</td> <td>F. Surface Treatments</td> </tr> <tr> <td style="background-color: #e1eef6;">C. Renewable Resources</td> <td style="text-align: right;"></td> </tr> <tr> <td colspan="2">Available naturally</td> </tr> <tr> <td colspan="2" style="text-align: center;">Wind</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> Constantly available Low running cost </td> <td> <ul style="list-style-type: none"> High start up Low wind = no energy Eyesore </td> </tr> <tr> <td colspan="2" style="text-align: center;">Solar</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> Reduces energy bills Clean resource </td> <td> <ul style="list-style-type: none"> High start up No sun = no energy Eyesore </td> </tr> <tr> <td colspan="2" style="text-align: center;">Tidal</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> Long lasting Clean resource </td> <td> <ul style="list-style-type: none"> High start up Unknown impact </td> </tr> <tr> <td colspan="2" style="text-align: center;">Hydro Electricity</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> No pollution Values can be opened quickly </td> <td> <ul style="list-style-type: none"> Affects wildlife through flooding Eyesore </td> </tr> <tr> <td colspan="2" style="text-align: center;">Biomass</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> CO2 released used by plants Replacements can be grown </td> <td> <ul style="list-style-type: none"> Creates pollution when burned Takes up land needed </td> </tr> </table>	What we are learning this term:		A. Finite Resources	B. CAD	C. Renewable Metals & Alloys	D. Electronic Systems	E.	F. Surface Treatments	C. Renewable Resources		Available naturally		Wind		Advantages	Disadvantages	<ul style="list-style-type: none"> Constantly available Low running cost 	<ul style="list-style-type: none"> High start up Low wind = no energy Eyesore 	Solar		Advantages	Disadvantages	<ul style="list-style-type: none"> Reduces energy bills Clean resource 	<ul style="list-style-type: none"> High start up No sun = no energy Eyesore 	Tidal		Advantages	Disadvantages	<ul style="list-style-type: none"> Long lasting Clean resource 	<ul style="list-style-type: none"> High start up Unknown impact 	Hydro Electricity		Advantages	Disadvantages	<ul style="list-style-type: none"> No pollution Values can be opened quickly 	<ul style="list-style-type: none"> Affects wildlife through flooding Eyesore 	Biomass		Advantages	Disadvantages	<ul style="list-style-type: none"> CO2 released used by plants Replacements can be grown 	<ul style="list-style-type: none"> Creates pollution when burned Takes up land needed 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e1eef6;">D. Electronic Systems</td> </tr> <tr> <td style="text-align: center;">Input / Sensor</td> </tr> <tr> <td> Light-dependent resistor (LDR) <i>changes with light</i> </td> <td></td> </tr> <tr> <td> Thermistor <i>changes with temperature</i> </td> <td></td> </tr> <tr> <td> Piezoelectric Sensor <i>changes with sound / electric energy</i> </td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;">Process / Control Device</td> </tr> <tr> <td> Switch <i>turn on and off power</i> </td> <td></td> </tr> <tr> <td> Resistor <i>to limit flow of current</i> </td> <td></td> </tr> <tr> <td> Microcontroller <i>programmable decisions</i> </td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;">Output</td> </tr> <tr> <td> Speaker <i>releases sound</i> </td> <td></td> </tr> <tr> <td> Motor <i>releases movement</i> </td> <td></td> </tr> <tr> <td> Light-emitting diode (LED) <i>releases light</i> </td> <td></td> </tr> </table>	D. Electronic Systems	Input / Sensor	Light-dependent resistor (LDR) <i>changes with light</i>		Thermistor <i>changes with temperature</i>		Piezoelectric Sensor <i>changes with sound / electric energy</i>		Process / Control Device		Switch <i>turn on and off power</i>		Resistor <i>to limit flow of current</i>		Microcontroller <i>programmable decisions</i>		Output		Speaker <i>releases sound</i>		Motor <i>releases movement</i>		Light-emitting diode (LED) <i>releases light</i>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e1eef6;">E. Metals & Alloys</td> </tr> <tr> <td colspan="2">Metals are extracted from natural ore.</td> </tr> <tr> <td style="background-color: #e1eef6;">Ferrous</td> <td style="background-color: #e1eef6;">Non-ferrous</td> </tr> <tr> <td>Low-carbon steel (mild steel)</td> <td>Aluminium</td> </tr> <tr> <td>Cast Iron</td> <td>Copper</td> </tr> <tr> <td>High-carbon steel (tool steel)</td> <td>Tin</td> </tr> <tr> <td></td> <td>Zinc</td> </tr> <tr> <td>Contain iron and are magnetic, prone to rust.</td> <td>Do not contain iron, not magnetic. Do not rust.</td> </tr> <tr> <td colspan="2" style="text-align: center;">Alloys</td> </tr> <tr> <td colspan="2">Alloys are mixtures of two or more metals to improve its properties or aesthetic.</td> </tr> <tr> <td>Brass</td> <td>Stainless steel</td> <td>High-speed steel</td> </tr> <tr> <td colspan="2" style="background-color: #e1eef6;">F. Surface Treatments of Timber</td> </tr> <tr> <td colspan="2">Used to improve their appearance and to enhance certain properties such as durability</td> </tr> <tr> <td>Paint</td> <td></td> <td>Oil or Wax</td> <td></td> </tr> <tr> <td>Wood Stain</td> <td></td> <td>Varnish</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;">Tanalisng / Pressure-treated</td> </tr> <tr> <td colspan="2">Preservatives can be added to extend the lifespan of the timber, protecting it from rot, decay and insects.</td> </tr> <tr> <td colspan="2" style="text-align: right;"> Pressure-treated timber will have no need to paint, s coat it. </td> </tr> </table>	E. Metals & Alloys	Metals are extracted from natural ore.		Ferrous	Non-ferrous	Low-carbon steel (mild steel)	Aluminium	Cast Iron	Copper	High-carbon steel (tool steel)	Tin		Zinc	Contain iron and are magnetic, prone to rust.	Do not contain iron, not magnetic. Do not rust.	Alloys		Alloys are mixtures of two or more metals to improve its properties or aesthetic.		Brass	Stainless steel	High-speed steel	F. Surface Treatments of Timber		Used to improve their appearance and to enhance certain properties such as durability		Paint		Oil or Wax		Wood Stain		Varnish		Tanalisng / Pressure-treated		Preservatives can be added to extend the lifespan of the timber, protecting it from rot, decay and insects.		Pressure-treated timber will have no need to paint, s coat it.	
A. Finite Resources																																																																																																																																									
Finite resources will eventually run out.																																																																																																																																									
Coal																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> Produces high amounts of energy Enough to last 100s of years 	<ul style="list-style-type: none"> Produces CO2 when burned Natural land damage from mining 																																																																																																																																								
Natural Gas																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> Emits less CO2 UK has shale deposits 	<ul style="list-style-type: none"> Highly flammable Pollutes water 																																																																																																																																								
Oil																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> Produces high amounts of energy Easy to store 	<ul style="list-style-type: none"> Creates air pollution Large impact on nature 																																																																																																																																								
Nuclear																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> No harmful gases are released More efficient 	<ul style="list-style-type: none"> Power stations close after 40yrs Disposal is difficult & costly 																																																																																																																																								
What we are learning this term:																																																																																																																																									
A. Finite Resources	B. CAD																																																																																																																																								
C. Renewable Metals & Alloys	D. Electronic Systems																																																																																																																																								
E.	F. Surface Treatments																																																																																																																																								
C. Renewable Resources																																																																																																																																									
Available naturally																																																																																																																																									
Wind																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> Constantly available Low running cost 	<ul style="list-style-type: none"> High start up Low wind = no energy Eyesore 																																																																																																																																								
Solar																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> Reduces energy bills Clean resource 	<ul style="list-style-type: none"> High start up No sun = no energy Eyesore 																																																																																																																																								
Tidal																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> Long lasting Clean resource 	<ul style="list-style-type: none"> High start up Unknown impact 																																																																																																																																								
Hydro Electricity																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> No pollution Values can be opened quickly 	<ul style="list-style-type: none"> Affects wildlife through flooding Eyesore 																																																																																																																																								
Biomass																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> CO2 released used by plants Replacements can be grown 	<ul style="list-style-type: none"> Creates pollution when burned Takes up land needed 																																																																																																																																								
D. Electronic Systems																																																																																																																																									
Input / Sensor																																																																																																																																									
Light-dependent resistor (LDR) <i>changes with light</i>																																																																																																																																									
Thermistor <i>changes with temperature</i>																																																																																																																																									
Piezoelectric Sensor <i>changes with sound / electric energy</i>																																																																																																																																									
Process / Control Device																																																																																																																																									
Switch <i>turn on and off power</i>																																																																																																																																									
Resistor <i>to limit flow of current</i>																																																																																																																																									
Microcontroller <i>programmable decisions</i>																																																																																																																																									
Output																																																																																																																																									
Speaker <i>releases sound</i>																																																																																																																																									
Motor <i>releases movement</i>																																																																																																																																									
Light-emitting diode (LED) <i>releases light</i>																																																																																																																																									
E. Metals & Alloys																																																																																																																																									
Metals are extracted from natural ore.																																																																																																																																									
Ferrous	Non-ferrous																																																																																																																																								
Low-carbon steel (mild steel)	Aluminium																																																																																																																																								
Cast Iron	Copper																																																																																																																																								
High-carbon steel (tool steel)	Tin																																																																																																																																								
	Zinc																																																																																																																																								
Contain iron and are magnetic, prone to rust.	Do not contain iron, not magnetic. Do not rust.																																																																																																																																								
Alloys																																																																																																																																									
Alloys are mixtures of two or more metals to improve its properties or aesthetic.																																																																																																																																									
Brass	Stainless steel	High-speed steel																																																																																																																																							
F. Surface Treatments of Timber																																																																																																																																									
Used to improve their appearance and to enhance certain properties such as durability																																																																																																																																									
Paint		Oil or Wax																																																																																																																																							
Wood Stain		Varnish																																																																																																																																							
Tanalisng / Pressure-treated																																																																																																																																									
Preservatives can be added to extend the lifespan of the timber, protecting it from rot, decay and insects.																																																																																																																																									
Pressure-treated timber will have no need to paint, s coat it.																																																																																																																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e1eef6;">B. CAD</td> </tr> <tr> <td>Computer Aided Design</td> </tr> <tr> <td style="background-color: #27ae60; color: white;">Advantages</td> <td style="background-color: #e91e63; color: white;">Disadvantages</td> </tr> <tr> <td> <ul style="list-style-type: none"> Can make quick and easy edits Can be easily shared High quality </td> <td> <ul style="list-style-type: none"> High start up costs Need training Computer issues e.g. freeze </td> </tr> </table>	B. CAD	Computer Aided Design	Advantages	Disadvantages	<ul style="list-style-type: none"> Can make quick and easy edits Can be easily shared High quality 	<ul style="list-style-type: none"> High start up costs Need training Computer issues e.g. freeze 																																																																																																																																			
B. CAD																																																																																																																																									
Computer Aided Design																																																																																																																																									
Advantages	Disadvantages																																																																																																																																								
<ul style="list-style-type: none"> Can make quick and easy edits Can be easily shared High quality 	<ul style="list-style-type: none"> High start up costs Need training Computer issues e.g. freeze 																																																																																																																																								




Year 11 PRODUCT DESIGN Term 4



A. Finite Resources 	
Finite resources will _____	
Coal	
Advantages	Disadvantages
• _____ • _____	• _____ • _____
Natural Gas	
Advantages	Disadvantages
• _____ • _____	• _____ • _____
Oil	
Advantages	Disadvantages
• _____ • _____	• _____ • _____
Nuclear	
Advantages	Disadvantages
• _____ • _____	• _____ • _____

B. CAD	
CAD stands for _____	
Advantages	Disadvantages
• _____ • _____ • _____	• _____ • _____ • _____

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

C. Renewable Resources 
Renewable resources are _____

Wind	
Advantages	Disadvantages
• _____ • _____	• _____ • _____

Advantages	Disadvantages
• _____ • _____	• _____ • _____

Solar	
Advantages	Disadvantages
• _____ • _____	• _____ • _____

Advantages	Disadvantages
• _____ • _____	• _____ • _____

Tidal	
Advantages	Disadvantages
• _____ • _____	• _____ • _____

Advantages	Disadvantages
• _____ • _____	• _____ • _____


Hydro Electricity	
Advantages	Disadvantages
• _____ • _____	• _____ • _____


Advantages	Disadvantages
• _____ • _____	• _____ • _____

Biomass	
Advantages	Disadvantages
• _____ • _____	• _____ • _____


Advantages	Disadvantages
• _____ • _____	• _____ • _____


D. Electronic Systems
Input / Sensor


_____	
= _____	


_____	
= _____	


_____	
= _____	

Process / Control Device	
_____	
= _____	

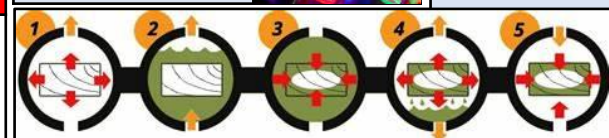
_____	
= _____	

_____	
= _____	

Output	
_____	
= _____	

_____	
= _____	

_____	
= _____	



E. Metals & Alloys	
Metals are extracted from _____	

Ferrous	Non-ferrous
_____	_____

_____	_____
_____	_____

Contain iron and are magnetic, prone to rust.	Do not contain iron, not magnetic. Do not rust.
---	---

Alloys	
Alloys are _____ to improve its _____ or _____.	

_____	_____	_____
-------	-------	-------

F. Surface Treatments of Timber	
Used to _____ and to _____ such as _____	



Tanalising / Pressure-treated	
--------------------------------------	--

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

Pressure-treated timber will have no need to _____, _____, _____, _____, _____.

Food choice_

Food choice

Food choices for a balanced diet depend on many factors, such as:

- advertising and other point of sale information;
- cost and economic considerations;
- cultural or religious practices;
- environmental and ethical considerations;
- food availability;
- food preferences;
- food provenance;
- health concerns;
- individual energy and nutrient needs;
- portion size;
- social considerations.

Consumer information

Information can help consumers make informed choices, including:

- advertising and marketing;
- media, online blogs/forums;
- packaging, nutrition and health claims;
- point of purchase information and product placement;
- recipe ideas.

Cost and economic considerations

The cost of food and money available will influence people's food choices. If money is limited, people may choose to buy more basic items. Luxury items might then be selected for special occasions.

Food prices

Food prices can and do change throughout the year and over time. This may be due to a variety of reasons, including:

- climate and weather patterns;
- crop failure;
- crop disease;
- seasonality;
- consumer demand;
- agricultural costs increase;
- fuel prices go up;
- increased use of bio fuels.

Budgeting

There are many things that we can do to spend money wisely on food.

Examples can include:

- eating the seasons;
- stocking up on food with a long shelf-life;
- taking time to plan meals and write a shopping list;
- cooking using one pot;
- making fake-aways rather than buying takeaways;
- using leftovers;
- replacing branded items with cheaper items;
- comparing prices and shop around to find the cheapest items;
- growing your own food.

Environmental and ethical considerations

Some considerations when buying food might be:

- fair trade;
- local food;
- genetically modified (GM) food;
- organic food;
- free range.

Food availability

Buying food when it is in season will often mean that the price is lower. Technology and the importation of food has allowed food to be available all year round.

Personal preferences

A number of factors can influence personal preferences, including:

- colour, size and shape of crockery and cutlery used;
- portion size;
- serving style;
- taste, aroma, texture, appearance, shape and colour of food.

Food provenance

Food provenance is about where food is grown, caught or reared, and how it was produced. Food certification and assurance schemes guarantee defined standards of food safety or animal welfare. There are many in the UK, including:



Health concerns

People may choose their food based on their own or their family's health and wellbeing:

- allergy and intolerance, e.g. lactose intolerance, coeliac disease, wheat allergy, dairy allergy;
- body image;
- health issues, e.g. coronary heart disease, type 2 diabetes, inflammatory bowel disease, over or under malnutrition;
- mental health.

Individual energy and nutrient needs

The amount of energy and nutrients needed differs between different age groups and between males and females. Energy needs also depend on activity levels. For example, athletes will have much higher energy requirements due to their high level of physical activity.

Key terms

Advertising: Advertising is a form of communication for marketing and used to encourage, persuade, or manipulate an audience to continue or take some new action.

Ethical: Relating to personal beliefs about what is morally right and wrong.

Food certification and assurance schemes: Defined standards of food safety, quality or animal welfare.

Food provenance: Knowing where food was grown, caught or raised and how it was produced.

Marketing: Promoting and selling products or services, including market research and advertising.

Religion: A particular system of faith and worship.

Seasonal food: Food grown at a particular time of year.

Portion size

Having a healthy, balanced diet is about getting the right types of foods and drinks in the right amounts.



Social considerations

- Body image and peer pressure.
- Development of ready meals and a wider range of convenience foods.
- Development of labour saving devices.
- Lack of competence and confidence in the kitchen.
- Lack of time.
- Living arrangement (e.g. living alone).

Food availability

Buying food when it is in season will often mean that the price is lower. Technology and the importation of food has allowed food to be available all year round.

Food choice_

Food choice

Food choices for a balanced diet depend on many factors, such as:

-
-
-
-
-
-

Consumer information

Information can help consumers make informed choices, including:

-
-
-
-
-

Cost and economic considerations

The cost of food and money available will influence people's food choices. If money is limited, people may choose to buy more basic items. Luxury items might then be selected for special occasions.

Food prices

Food prices can and do change throughout the year and over time. This may be due to a variety of reasons, including:

-
-
-
-
-
-

Budgeting

There are many things that we can do to spend money wisely on food.

Examples can include:

-
-
-
-
-
-

Environmental and ethical considerations

Some considerations when buying food might be:

-
-
-
-
-
-

Food availability

Buying food when it is in season will often mean that the price is lower. Technology and the importation of food has allowed food to be available all year round.

Personal preferences

A number of factors can influence personal preferences, including:

-
-
-
-

Food provenance

Food provenance is about where food is grown, caught or reared, and how it was produced. Food certification and assurance schemes guarantee defined standards of food safety or animal welfare. There are many in the UK, including:



Health concerns

People may choose their food based on their own or their family's health and wellbeing:

-
-
-
-

Individual energy and nutrient needs

The amount of energy and nutrients needed differs between different age groups and between males and females. Energy needs also depend on activity levels. For example, athletes will have much higher energy requirements due to their high level of physical activity.

Key terms

Advertising:

Ethical:

Food certification and assurance schemes:

Food provenance:

Marketing:

Religion:

Seasonal food:

Portion size

Having a healthy, balanced diet is about getting the right types of foods and drinks in the right amounts.



Social considerations

-
-
-
-
-

Food availability

Buying food when it is in season will often mean that the price is lower. Technology and the importation of food has allowed food to be available all year round.



What we are learning this term:

Component three is the best and most difficult of the components. It requires you to draw on your knowledge of making drama and create your own piece of theatre in response to a given scenario and stimulus. You have 12 weeks to collaborate with a group, create and refine a piece of theatre and then finally perform to an audience. This will be externally moderated.

Keywords	
Brief	A creative brief is a document used to outline the strategy of a creative project. A creative brief contains project details including: Project purpose Objectives Requirements Demographics Deadlines
Stimulus	A starting point for inspiration. Either a picture, a quote, a poem or song lyrics.
Narrative	A story through line.
Fractured Narrative	A non-linear story line.
Verbatim	Copied, quoted, or translated in exactly the same words as were used originally.
Devising process	Devising in drama demands inventiveness, an understanding of the rules of structuring a piece of theatre and a readiness to collaborate with others.
Analyse	Recording insights, ideas and observations
Evaluate	Discuss your development and final work. To help others understand what you were trying to achieve explain your successes and weaknesses. To demonstrate your knowledge and understanding of art and design.
Characterisation	Physical and vocal attributes, individualized to a character that conveys personality and background.
Physicality	Stance, stride, posture, weight.
Vocality	Pitch, pace, pause, accent, intonation.

Component 3 – What is required:	
Activity One	An ideas log completed and saved as a PDF (up to 800 words). An hour exam and one page of notes allowed.
Activity Two	A skills log completed and saved as a PDF (up to 800 words). An hour exam and one page of notes allowed.
Activity Three	Performers must submit a digital recording of a workshop performance of between 7 to 15 minutes per group performance. Designers must submit a digital recording of their pitch/presentation of between 5 to 10 minutes. These performances/pitches/presentations must be to an audience.
Activity Four	An evaluation report completed and saved as a PDF (up to 800 words). An hour exam and one page of notes allowed.

Key learning aims from Component 3	
AO1 Understand how to respond to a brief	Understand how to respond to a brief through discussion and practical exploration activities. Response to stimulus.
AO2 Select and develop skills and techniques in response to a brief	Demonstrate how to select and develop skills and techniques that are needed to realise the creative ideas in response to a brief
AO3 Apply skills and techniques in a workshop performance in response to a brief	Demonstrating effective use of performance skills and effective realisation of design skills and techniques in a workshop performance to the target audience. Communicate effectively through performance. Work well within a group dynamic.
AO4 Evaluate the development process and outcome in response to a brief	Ability to reflect on the performance and the process. By reflecting on; Individual contribution Group contribution effectiveness of the response to the brief o individual strengths and areas for improvement o overall impact of the work of the group.



Where to research:

[Devising - GCSE Drama Revision - Edexcel - BBC Bitesize](#)
[News | Swindon Advertiser](#)
[Ideas about Creativity \(ted.com\)](#)
[Knife crime | UK news | The Guardian](#)



What we are learning this term:

Component three is the best and most difficult of the components. It requires you to draw on your knowledge of making drama and create your own piece of theatre in response to a given scenario and stimulus. You have 12 weeks to collaborate with a group, create and refine a piece of theatre and then finally perform to an audience. This will be externally moderated.

Key learning aims from Component 3

AO1 Understand how to respond to a brief	Understand how to respond to a brief through discussion and practical exploration activities. Response to stimulus.
AO2 Select and develop skills and techniques in response to a brief	Demonstrate how to select and develop skills and techniques that are needed to realise the creative ideas in response to a brief
AO3 Apply skills and techniques in a workshop performance in response to a brief	Demonstrating effective use of performance skills and effective realisation of design skills and techniques in a workshop performance to the target audience. Communicate effectively through performance. Work well within a group dynamic.
AO4 Evaluate the development process and outcome in response to a brief	Ability to reflect on the performance and the process. By reflecting on; Individual contribution Group contribution effectiveness of the response to the brief o individual strengths and areas for improvement o overall impact of the work of the group.



Keywords

Brief	
Stimulus	
Narrative	
Fractured Narrative	
Verbatim	
Devising process	
Analyse	
Evaluate	
Characterisation	
Physicality	
Vocality	

Component 3 – What is required:

Activity One	
Activity Two	
Activity Three	Performers must submit a digital recording of a workshop performance of between 7 to 15 minutes per group performance. Designers must submit a digital recording of their pitch/presentation of between 5 to 10 minutes. These performances/pitches/presentations must be to an audience.
Activity Four	An hour exam and one page of notes allowed.

Where to research:

[Devising - GCSE Drama Revision - Edexcel - BBC Bitesize](#)
[News | Swindon Advertiser](#)
[Ideas about Creativity \(ted.com\)](#)
[Knife crime | UK news | The Guardian](#)




What we are learning in LAA:

- A. Key words
- B. Definitions of health and wellbeing
- C. Genetic inheritance

A. Key words for this Unit

Genetic inheritance	The genes a person inherits from their parents
Predisposition	Someone is more likely to suffer from a particular condition
Chronic	Gradual illness that is long term (longer than 3 months) and generally can be treated but not cured
Acute	A short-term illness that can be cured
Monitor	To check progress over a period of time.
Person-Centred	Planning care around the wants and needs of a service user
Bereavement	The process of coming to terms with the death of someone close.
Circumstances	Events that change your life, over which you have no control
Physiological	Relates to how a person and their bodily parts function normally.
Interpret	understand an action, mood, or way of behaving as having a particular meaning
Collaboratively	Working well together with other people or services
Obstacles	Difficulties a person might face when they implement a plan.
Goal	What you want to achieve in the long term
Norm	Something that is usual, typical or standard
Targets	Challenges to help you reach your goal

B Definitions of health and well-being

Positive Definition 	Looks at how physically fit and mentally stable a person is. You have a positive attitude towards health and wellbeing if you realise that there is something you can do to improve your health and wellbeing and do it.
Negative definition 	Looks at the absence of physical illness, disease, and mental distress. You have a negative attitude towards your health and wellbeing if you: <ul style="list-style-type: none"> • Base your attitude on not having anything wrong with you. • Continues as you are- Inc. keeping bad habits like smoking. • Assume that because you currently feel fine you will stay healthy in the future.
Holistic definition 	It is a combination of physical health and social and emotional wellbeing. It is not just the absence of disease or illness; it looks at all aspects of a person's health and wellbeing. You have a holistic attitude towards health and wellbeing if you look after your: <ul style="list-style-type: none"> • Physical Health: Be meeting the needs we have to keep our bodies working as well as they can, e.g. Food, water, shelter, warmth, clothing, rest, exercise and good personal hygiene. • Intellectual health: By meeting the needs we have to develop and keep our brains working as well as possible; these include mental stimulation to keep us motivated and interested. • Emotional aspects of wellbeing: By meeting the needs we have that make us feel happy and relaxed, e.g. being loved, respected and secure. Knowing how to deal with negative emotions, having positive self-concept and being respected by others. • Social aspects of wellbeing: By meeting the needs we have to help us develop and enjoy good relationships with others, including mixing with others in appropriate environments and having access to leisure facilities/ activities.

C. Genetic inheritance

Inherited physical Characteristics		Genes and environment	
<ul style="list-style-type: none"> • Children inherit their physical; characteristics from their parents e.g. height, skin and eye colour and hair type and colour. • These characteristics can affect social and emotional wellbeing because they influence a person's self-concept (self-image and esteem). 		<ul style="list-style-type: none"> • Chromosomes carry genes that determine aspects of persons physical makeup. • Gene is a section of DNA that carries a code. Different versions of a gene are called alleles (they can be faulty). • Environmental factors such as diet, also influence physical appearance. For example, a person may not grow to their full, genetically determined height if they do not have enough food. 	
Allele type	Dominant: If a gene is dominant a child inheriting it from only one birth parent will have the condition, e.g Huntington's disease.	Effects of inherited disorders	<ul style="list-style-type: none"> • Physical health: Body systems, growth and mobility • Intellectual wellbeing: learning, thinking, problem solving and decision making. • Emotional wellbeing: how people feel about themselves. • Social wellbeing: the ability to build relationships and maintaining them.
	Recessive: If the gene is recessive a child would only develop the condition if it was inherited from both birth parents, e.g. Cystic fibrosis.		



What we are learning in LAA:

- D. Balanced diet
- E. Chronic and acute illness
- F. What are the effect of exercise?
- G. What are the effect of excessive substance use?

D.	Balanced diet
What is a balanced diet?	<ul style="list-style-type: none"> • Diet that contains the correct nutrients in the right proportions to keep out bodies and minds healthy. • It is also a lifestyle choice • Choosing to eat too much or too little might make us less able to take all the opportunities that life offers.
Overweight or underweight may:	<p>A person over weight or under weight may:</p> <ul style="list-style-type: none"> • Be prone to illness and conditions • Have their life expectancy reduced • Be less able to exercise effectively • Miss out on learning experiences • Miss out on some sporting activities • Be less successful in job interviews • Feel embarrassed and self-conscious about their appearance in social situations.
Essential parts of a healthy diet:	<ul style="list-style-type: none"> • Fats (saturated and unsaturated) • Carbohydrates (sugars and starches) • Minerals • Vitamins • Proteins
Est well guide says you should eat:	<ul style="list-style-type: none"> • Eat at least 5 portions of a variety of fruit and vegetables every day. • Base meals on potatoes, bread, rice, pasta or other starchy carbohydrates; choosing wholegrain versions where possible. • Have some dairy or dairy alternatives (such as soya drinks); choosing lower fat and lower sugar options. • Eat some beans, pulses, fish, eggs, meat and other proteins (including 2 portions of fish every week, one of which should be oily). • Choose unsaturated oils and spreads and eat in small amounts. • Drink 6-8 cups/glasses of fluid a day.
If you eat more than you need:	<ul style="list-style-type: none"> • The body will store food as fat and this can lead to: • Obesity, heart disease, high blood pressure, Strokes, Tooth decay or cancer
If you eat less than you need	<ul style="list-style-type: none"> • The body does not get enough nutrients to grow and develop properly and this can lead to: • Eating disorders, stunted growth, anaemia, heart failure, depression, tiredness, cancer or rickets.

E	Chronic or Acute Illness	
	<p>Chronic illness- Illness comes on gradually, is long term (more than 3 months) and generally can be treated but not cured. E.g Asthma, Diabetes, epilepsy, bipolar disease, Alzheimer's disease</p>	<p>Acute illness- Illness comes on quickly, is short term and can be cured. E.g. Cold, flue, broken bones, heartburn, appendicitis or Diarrhoea.</p>
<p>Some chronic conditions are acute but may develop because of chronic conditions. For example: osteoporosis (a chronic condition that weakness bones) masking their bones fragile and more likely to break. Broken bones are then an acute condition.</p>		
Possible negative effects of chronic illness		
Physical:	<ul style="list-style-type: none"> • poor rate of growth • Unusual physiological change during puberty • Restricted movement 	Emotional: <ul style="list-style-type: none"> • Negative self-concept • Stress • Decision making
Intellectual:	<ul style="list-style-type: none"> • Disturbed learning because of missing school • Difficulties in thinking and problem solving • Memory problems. 	Social <ul style="list-style-type: none"> • Isolation • Loss of independence • Difficulties developing relationships

F.	What are the effect of exercise?	
Positive effects of exercise		<p>Physical: maintain a healthy weight, reduce BMI, boosting energy levels. Improved flexibility, stamina, endurance and stronger bones and muscles. Reduce risk of heart disease and diabetes.</p> <p>Intellectual: improved brain function like mentor and thinking skills.</p> <p>Emotional: improves confidence and mood and reduces stress. Aid relaxation and sleep and lead to better self concept.</p> <p>Social: encourages social interaction, reducing isolation and improving social skills.</p>
Negative effects of exercise		<p>Physical: Obesity and associated health problems.</p> <p>Intellectual: Reduced pain performance, hard to concentrate and retain information.</p> <p>Emotional: poor self-concept and reduced ability to cope with stress.</p> <p>Social: Fewer opportunities for social interactions.</p>

G.	What are the effect of excessive substance use?	
Negative effects of excessive alcohol consumption		<p>Physical: Alcohol dependence, damage to major organs: liver, heart, kidneys, pancreas. Cancers: mouth, throat, oesophagus, liver, breast. Infertility and impotence, weight gain.</p> <p>Intellectual: difficulty in making decisions, depression and anxiety, chance of stroke and brain damage, impaired brain development of unborn baby.</p> <p>Emotional: poor self-concept, poor judgement leading to a risk of accidents and unsafe sex, can have an impact on relationships, depression.</p> <p>Social: breakdown of relationships, domestic violence, social isolation</p>

What we are learning in LAA:

- H. The effects of social interactions on wellbeing
- I. What are the effects of stress on health and wellbeing
- J. What are the hazards of smoking
- K. What are the effects of personal hygiene

H. The effects of social interactions on wellbeing

Social integration	When people feel they belong to a group and can interact with others. Social interactions can happen between family members and friends, work colleagues, school learners, members of a community or interest groups.
Social isolation	Occurs when people do not have regular contact with others. This may be because they don't go out much because of physical illness, reduced mobility or unemployment. They might have a difficulty in communicating if they have a mental illness, depression or learning difficulties. Lastly, a person might be discriminated against because of culture, religion or disability.

Positive effects of relationships



Physical: physical support and day to day care and practical assistance.
Intellectual: shared experiences, supported learning and thinking
Emotional: unconditional love, security and encouragement, positive self-concept, feeling content, ability to build relationships with people outside the family, independence and confidence.
Social: Companionship, social circle increases.

Negative effects of social isolation



Physical: poor lifestyle choices like smoking and drinking, poor diet that can cause eating disorders.
Intellectual: reduced ability to use thinking skills, missing school/work
Emotional: feelings insecure, depression, anxiety, negative self-concept, feeling of hurt, loneliness and distrust, lack of independence, difficulty in controlling emotions.
Social: difficulties in building relationships as lack skills.

I. What are the effects of stress on health and wellbeing

Physical effects	Intellectual effects	Emotional effects	Social effects
Increased heartbeat Increased breathing rate Tense muscles Sweaty palms Dry mouth High blood pressure Loss of appetite Sleeplessness Digestive problems	Forgetfulness Poor concentration Difficulty in making decisions	Difficulty in controlling emotions Feeling insecure Negative self-concept Feeling anxious and frightened Loss of confidence	Difficulty in making friends and building relationships Breakdown of close relationships Social isolation

J. What are the hazards of Smoking

Heart disease and poor circulation mean:

- increased blood pressure
- increased risk of heart attack
- narrowing of the arteries.

Carbon monoxide causes:

- decreased oxygenation
- poor growth
- extra work for the heart
- increased risk of thrombosis.

Exposure in childhood means that children:

- are prone to chest infections and asthma
- tend to be smaller and weaker
- do less well at school.

Irritant particles cause:

- bronchitis
- emphysema
- asthma
- smoker's cough.

Nicotine causes:

- addiction
- increased blood clotting leading to thrombosis.

Conditions such as:

- stroke
- gum disease.

Tar causes cancers of the nose, throat, tongue, lungs, stomach and bladder.

The hazards of smoking

Exposure in pregnancy causes:

- smaller babies
- more stillbirths
- more miscarriages.

Smokers':

- breath and clothes smell of smoke
- hands and nails are nicotine stained
- faces often become wrinkled from the effects of smoking.

K. What are the effects of Personal Hygiene?

Positive effects of good personal hygiene



- Helps prevent the spread of infection
 - Improves self-concept
 - Reduces number of bacteria that lives on us.
- You must:**
- Brush you teeth
 - Shower daily or bath
 - Wash your hair regularly
 - Keep fingernails and toenails clean and trimmed

Negative effects of poor personal hygiene

Physical: catching and spreading disease like food poisoning, sore throat, meningitis and athlete's foot. Bad body odour, bad breath and tooth decay.
Emotional: loss of friendships and social isolation. Might be bullied and poor self-concept.
Social: low social interactions as people don't want to be friends with someone that neglects their hygiene. Social isolation.

When caring for others:

- Bad hygiene can stop effective communication.
- Negative effect on the person being cared for and their health and wellbeing- pass on infection
- Discomfort for the person being cared for because of the odour or visible dirt under fingernails.

What we are learning in LAA:	
L.	What are the barriers to seeking help.
M.	What are the effects of unexpected life events on health and wellbeing
N.	What are the effects of economic factors (e.g, income) on health and wellbeing
O.	What are the effects of expected life events on health and wellbeing
L.	What are the barriers to seeking help.
Culture	Accessing HSC services can be influenced by values, traditions, way of life and beliefs of the society or group. <ul style="list-style-type: none"> Some may have received discrimination when accessing other services. Some may not speak English well enough. Values and traditions not understood e.g. eye contact means respect in some cultures but not others. Some cultures a woman must be treated only by a female professional. Alternative therapies are used in some cultures
Gender	Research shows that men are less likely to talk about their health and wellbeing than woman. This is because men are: <ul style="list-style-type: none"> Often less open about their feelings Sometimes reluctant to appear vulnerable by asking for help Not aware of poor health signs as health campaigns target women's health more Unhappy to be examined by a female health worker.
Education	Research shows that people who are better educated are more likely to seek help. This is because: <ul style="list-style-type: none"> They like to research symptoms and know when help is needed Understand the importance of early diagnosis and treatment Know how and where to access services.
Stigma	In some cultural groups there is a stigma attached to certain condition like depression. Stigma is a word used to describe something that people feel embarrassed about. Therefore, they wouldn't seek help.

N.	What are the effects of economic factors (e.g, income) on health and wellbeing	
	Positive Effects:	Negative Effects:
Physical	<ul style="list-style-type: none"> Better financial resources can result in good housing conditions and healthy diet Manual jobs may improve muscle tone and stamina. 	<ul style="list-style-type: none"> Low wages can affect diet and housing, leading to poor health. Manual jobs can cause muscular and skeletal problems Desk jobs lead to less activity and weight gain.
Intellectual	<ul style="list-style-type: none"> Better financial resources can result in more leisure time for intellectual activities Work, education or training helps to develop problem solving and thinking skills 	<ul style="list-style-type: none"> Some people work very long hours to improve their financial position, leading to less leisure time and reduced learning opportunities. Being unemployed can result in poor mental health.
Emotional	<ul style="list-style-type: none"> A well-paid job gives a feeling of security. Being financially secure promotes positive self-concept 	<ul style="list-style-type: none"> Financially worried can result in stress and breakdown of relationships. Unemployment or low-status work can lead to low self-concept
Social	<ul style="list-style-type: none"> Better financial resources provide opportunities for socialising. Work gives opportunities for socialising with colleagues. 	<ul style="list-style-type: none"> Lack of financial resources reduces opportunities for socialising. Unemployment reduces opportunities for relationships, leading to social isolation.




O.	What are the effects of expected life events on health and wellbeing	
Life event	Positive Effects:	Negative Effects:
Starting school, college or uni	<ul style="list-style-type: none"> Build new relationships Extend knowledge and learning Develop new skills Improve confidence 	<ul style="list-style-type: none"> Anxiety about new routines and meeting new people Insecurity about leaving parents and other families
Start a new job or career	<ul style="list-style-type: none"> Develop independence Improve thought processes Improve self-concept 	<ul style="list-style-type: none"> Stress about learning new skills and routines Anxiety about meeting new people
Moving to a new house or area	<ul style="list-style-type: none"> Excitement Develop new friendships and relationships 	<ul style="list-style-type: none"> Unhappiness at loss of old life Stress of moving Social isolation
Retirement	<ul style="list-style-type: none"> Reduced stress Time to socialise with family and friends Opportunities for leisure of physical activities 	<ul style="list-style-type: none"> Loss of relationships with colleagues Possible loss of fitness and mobility Loss of intellectual stimulation and status

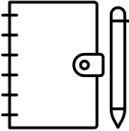
M.	What are the effects of unexpected life events on health and wellbeing	
Life event	Positive Effects:	Negative Effects:
Imprisonment	<ul style="list-style-type: none"> Depression Loss of contact with family and friends Social isolation Restrictions on physical activity 	<ul style="list-style-type: none"> Opportunity to study Improvement in health through balanced diet, lack of alcohol, reduced use of nicotine
Redundancy	<ul style="list-style-type: none"> Poor self-concept Anxiety about finances Fewer opportunities 	<ul style="list-style-type: none"> Opportunities to study or train for a new job More time to spend with family and friends
Exclusion or dropping out of education	<ul style="list-style-type: none"> Loss of contact with friends Social isolation Poor self-concept Lack of learning opportunities 	<ul style="list-style-type: none"> Catalyst for change of behaviour Opportunities for more suitable study or work situation

What we are learning in LAB:
A. Physiological health indicators
B. What are health indicators?
C. Interpreting lifestyle data

A.	Physiological health indicators
Pulse	Resting pule rate is measured when a person has been still for about 5 minutes. Health reading for an adult is 60-100 bpm. Pulse rate during exercise: 220bpm minus the person's age.
Blood pressure	<ul style="list-style-type: none"> This is the pressure exerted by blood against the artery walls. It is measured in millimetres of mercury (mm Hg) and is shown in two numbers: <ul style="list-style-type: none"> Systolic pressure: (the top number) is the maximum pressure in the blood vessels as the heart pushes out blood. Diastolic pressure: (the bottom number) as the minimum pressure in the vessels when the heart relaxes between the beats.
Peak flow	<ul style="list-style-type: none"> Measured how quickly you can blow air out of your lungs. it is measured in litters per min (L/min).
BMI	<ul style="list-style-type: none"> Measures the amount of fat on your body in relation to your height to tell you if your weight is healthy.

B.	<ul style="list-style-type: none"> What are health indicators?
Importance of understanding indicators	<ul style="list-style-type: none"> Detect health problems at an early stage Track improvements or deterioration in health Make recommendations about health and treatments Give advice about future health risks Support individuals to make different lifestyle choices.
What are lifestyle indicators?	<ul style="list-style-type: none"> These indicators can be used to assess risks to an individual's health and wellbeing now and in the future. Professionals collect information about lifestyle choices by asking about a person's: <ul style="list-style-type: none"> Weekly alcohol consumption Smoking habits Levels of physical activity and exercise.
What are physiological indicators?	<ul style="list-style-type: none"> They show how well the body's systems are functioning. Health professionals check a person's heath by taking measurements. They compare the results with published guidance.

C.	Interpreting lifestyle data
Interpreting data on smoking 	<ul style="list-style-type: none"> Smoking causes around 96,000 deaths in the UK annually. Smoker under the age of 40 are 5 times more likely to have a heart attack than non-smoker. Smoking causes 80% of deaths from lung cancer, 80% of bronchitis and 14% of deaths from heart disease. More than 25% of all cancer deaths are caused by smoking. On average a smoker will die 10 years earlier than a non-smoker. Smokers are more likely to develop facial wrinkles. Smoking is a cause of impotence and can lead to sperm abnormalities.
Interpreting data on alcohol 	<ul style="list-style-type: none"> Strongly linked to at least 7 types of cancer Alcohol-related liver disease accounts for 37% of liver disease and deaths. 2/3s of cases of chronic pancreatitis are caused by heavy drinking You are between 2 and 5 times more likely to have an accident or injury Each drink per day increases the risk of breast cancer in woman between 7-13% Men and woman should not drink more than 14 units a week and not all in one go.
Interpreting data on inactivity 	<ul style="list-style-type: none"> Increased risk of breast cancer by 17.8% and colon cancer by 18.7% Increased risk of type 2 diabetes by 13%. Increased risk of coronary heart disease by 10.5% Leads to obesity and joint pain 16.9% of all premature deaths are caused by inactive lifestyle. Active people have a lower risk of premature death. People who are inactive visit their GP more often and they spend 38% more time in hospital.

What we are learning in LAC:		C.	Recommended action to meet health and wellbeing improvement goals	
A. What is a person-centred approach B. Health improvement plan C. Recommended action to meet health and wellbeing improvement goals D. SMART targets for health improvement plan E. Sources of support		To lower blood pressure: <ul style="list-style-type: none"> • Eat five or more portions of fruit and veg a day • Cut out salt • Use relaxation techniques to reduce stress • Join a gym • Drink water alongside alcohol to reduce consumption 	To reduce BMI: <ul style="list-style-type: none"> • Reduce fat and sugar intake • Do not exceed the recommended daily calories intake • Get off the bus a stop early and walk the rest of the way • Drink water instead of sugary drinks. 	
A.	What is a person-centred approach.		To increase peak flow reading: <ul style="list-style-type: none"> • Half the number of cigarettes smoked each day • Use nicotine replacement therapies • Join an exercise or dance class. 	To reduce pulse rate and improve recovery time after exercise: <ul style="list-style-type: none"> • Walk for half an hour at lunchtime • Drink decaffeinated drinks • Take up a physically active hobby • Join a yoga group.
Person-centred approach	A holistic approach that puts the individual at the heart of health care planning, so that the whole range of physical, intellectual, emotional and social health needs are met.			
When planning for health improvements include:	<ul style="list-style-type: none"> • The needs: physical, intellectual, emotional and social. • The wishes: likes, dislikes, choices and desired health goals. • Circumstances: illness or disability, access to facilities, previous experiences, family and relationships, responsibilities. 			
Benefits of person-centred approach:	<ul style="list-style-type: none"> • Will feel involved • Is more likely to trust a health professional who listen to them • Will feel more secure • Is more likely to follow the plan and achieve the targets • Will take responsibility for their own health. 			
B.	Health improvement plan	D. SMART targets for health improvement plan		
What is it?	Health and wellbeing improvement plans are often based on an individual's physiological and lifestyle indicators. Plans should be person-centred and include goals, actions and targets and possible sources of support.	Specific	The target must be clearly stated. It should say exactly what you mean, such as to 'lose 2 kg in weight in a week'. The target should be clear and not open to any misunderstanding.	
The plan will identify:	<ul style="list-style-type: none"> • The health issues and goal • The recommended actions to take • A set of targets for health improvement • The supports that are needed • Possible obstacles to progress and way to overcome them. 	Measurable	A target of to 'lose weight' is too vague. A specific amount must be stated so you can prove you have met your target.	
Positive effects of a health improvement plan	<ul style="list-style-type: none"> • Be fitter • Loose weight • Have improved self-concept • Lower blood pressure, healthier heart • Reduced risk of cancer • Taking control of their health outcomes and reaching health goals 	Achievable/attainable	If you are following a health and wellbeing improvement plan you must feel it is possible to achieve it. If you do not, you will probably give up before you have even started. An achievable target is to 'lose 1kg this week'. An unachievable target would be to 'lose 20kg this week'.	
		Realistic	The target set must be realistic in that you must be able to physically do it. It is not realistic to expect a person who is older and not very fit to run for 30 minutes a day to help weight loss, but it is realistic to ask the same of a fitter, younger person.	
		Time-related	The target must have a deadline, so that you know when you need to achieve the target by, and progress can be assessed.	
		E.	Sources of support	
		Informal support	Informal support is the support an individual receives from partners, family and friends. It is usually the first form of support an individual experiences after and expected or unexpected life event. Informal support can provide reassurance, encouragement, advice, a sense of security, someone to talk through options with and practical help.	
		Professions (formal) support	Formal support may be provided by statutory care services (the state), private care services and charitable organizations. Professional support may include counsellors, teachers, careers advisers, occupational therapists, social workers and health specialists. Professional support may be needed to help people with a health condition, regain mobility, deal with life changes and emotions, get advice and information or change their lifestyle.	
		Voluntary support	Organizations offering voluntary support are charities, community groups and religious groups. At voluntary support services, many staff are volunteers (they work for free), but they also employ qualified people who are paid by donations. Community groups work at a local level to meet the needs of people living in a specific neighbourhood i.e. foodbanks. Religious groups are formed by people who share the same religious or spiritual beliefs but they help all people in need regardless of their beliefs and background i.e. a church run soup kitchen for the homeless.	

F.	What are the potential obstacle to implementing plans?	G.	What are the possible obstacles to accessing services?	
Emotional/psychological-Lack of motivation	<ul style="list-style-type: none"> A conflict between choices such as worrying that giving up smoking could result in weight gain Other priorities in a person's life- such as getting married or bereavement. Having negative attitude- believing change will be too difficult Lack of progress for example losing eight quickly in the first weeks but then slowing down. Having a blip- thinking there is no point in continuing the plan after briefly returning to an old lifestyle. 	Type of obstacle	Possible obstacles	Suggestions to overcome obstacles
Emotional/psychological-Low Self-concept	<ul style="list-style-type: none"> People with low self-concept don't value themselves, Feel powerless to change their lifestyle or that there's no point in starting because the task seems too big. Some thin that because they were unsuccessful in other aspects of their life, they won't achieve their health goals. They may not feel they have support and approval from family and friends even if they really do. 	Geographical	<ul style="list-style-type: none"> Service is difficult to get to because of poor bus or train services. 	<ul style="list-style-type: none"> Arrange hospital transport Suggest telephone helplines or internet support groups.
Emotional/psychological-Acceptance of the current state	<ul style="list-style-type: none"> People may accept their present health problems or lifestyle choices, as it is easier to stay the same than to make changes. Have no incentive to make a change because they do not understand the health risks. Have no desire to change, for example, if they are happy with their weight or don't want to give up smoking. 	Financial	<ul style="list-style-type: none"> Charges to use the services Time off from work would mean loss of pay 	<ul style="list-style-type: none"> Check for entitlements, such as medicines and treatments Direct the person to advice on benefits and employee rights.
Time constraints	<p>People find that they do not have the time to achieve their health improvements targets because of:</p> <ul style="list-style-type: none"> Care of young children, family members that are not well. Regular and additional work and study commitments Domestic chores Medical appointments 	Psychological	<ul style="list-style-type: none"> Fear of being judged because there is stigma around a health problem (mental health, obesity) 	<ul style="list-style-type: none"> Talk about concerns and reassure Direct the person to a charity that supports people with a particular health problem.
Availability of resources	<p>Financial obstacles:</p> <ul style="list-style-type: none"> Gym memberships, entry fee for a swimming pool Cost of attending exercise classes Cost of travel to the gym. pool or to attend health appointments Higher costs of some healthy foods. Lack of and the cost of exercise equipment 	Physical	<ul style="list-style-type: none"> Difficulty getting into the buildings where the service is provided (no wheelchair access). No where to park near the service 	<ul style="list-style-type: none"> Be aware of services that are adapted for easy access Ask a friend or family member to drop the person off at the service
Unachievable targets	<ul style="list-style-type: none"> Expectations too high Targets are not clear There are too many targets Timing is wrong/poor Targets are not suitable for the individual Fear of not being able to meet targets Not being in the right frame of mind to commit to the plan, e.g. due to depression. 	Personal needs	<ul style="list-style-type: none"> Communication difficulties because of poor language skills, sensory or learning disability . Concern that cultural needs are not understood 	<ul style="list-style-type: none"> Provide support services that meet the person's needs, such as a BSL signer, interpreter, advocate Use anti-discriminatory practice and encourage others to do so
Lack of support	<ul style="list-style-type: none"> Diet- find it difficult if a person on a healthy eating plan is surrounded by others that eat junk food or tempted by the chocolate and biscuits in the cupboard, Family and friends go out for meals instead of doing other activities. Smoking- friends and family smoking and offering them cigarettes. Lacking will power to quit. Alcohol consumption- someone that is used to drinking with family and friends will find it difficult to stop without their support. It would be hard to quit if the family and friends drink wine with their meals, friends centre a night out around heavy drinking at pubs and clubs. 	Resources	<ul style="list-style-type: none"> Limits on services, such as support aids and equipment Staff shortages, leading to long waits for appointments and support. 	<ul style="list-style-type: none"> Suggest sources of second-hand equipment Look for alternative strategies, for example an exercise DVD if there are no places at an exercise class.
Ability, disability and addiction	<ul style="list-style-type: none"> Understand what they need to do Learn how to make the required changes in their lives. Any places the person uses are wheelchair accessible Any exercise advised is wheelchair friendly. If stop smoking, then can put on weight- put people off. Like the way alcohol makes them feel but cant admit that they have a problem 			