Wadham School

A Church of England Community School

KNOWLEDGE ORGANISERS

YEAR 10

Term 1 & 2 | 2026-2027

Name: .....

Tutor group: .....

F

Friendship

Building positive, trusting relationships at the heart of everything we do.

A

Aspiration

Enabling everyone to see and become the best version of themselves.

I

Inclusion

Everyone is invited, and everyone is expected to be part of our community.

T

Trust

Without trust there is no growth. Trust enables everyone to thrive.

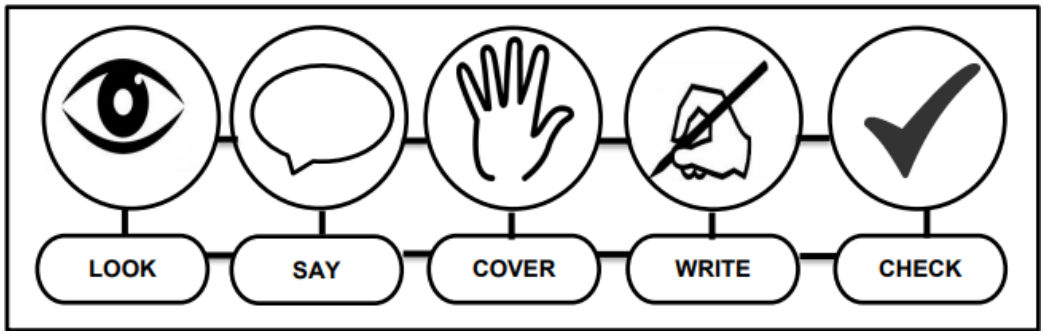
H

Hard Work

Never give up doing what is right, rather than what is easy.

"Life in all its fullness" John 10:10

Using Your Knowledge Organiser



Look-Say-Cover-Write-Check

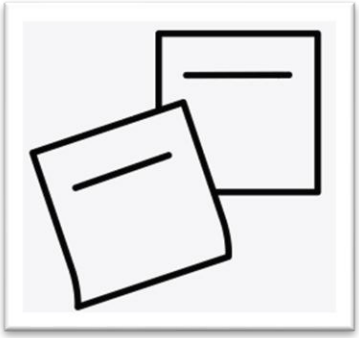
Retrieval practice using the look-say-cover-write-check technique, when done in regular small chunks, is one of the best ways you can learn relevant knowledge over time.

Working in Independent mode:

- Look at the first bullet point or sentence
- Read through it three to five times
- Cover
- Write it out exactly
- Remove and check what you wrote and tick if correct
- Repeat
- When you get it 100% right, move on to the next chunk of information

Flash Cards

Make flash cards with the definition on one side and key word on the other.



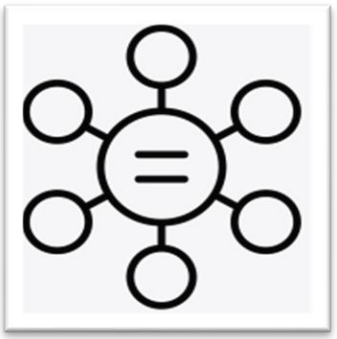
Self Quizzing

Write quizzes with answers to test yourself in the future.



Mind maps

Create mind maps linking key information you need to remember.



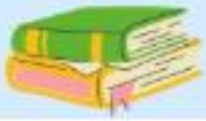
LIBRARY INFORMATION

Library Days

MON - MINDFULNESS & COLOURING

WED-YEAR 7 ONLY BOOK CLUB

FRI - PUZZLE CLUB & LEGO



BORROWING A BOOK

- YOU MAY BORROW ONE BOOK AT A TIME
- YOUR BOOK CAN BE RETURNED DURING SOCIAL TIME OR LIBRARY TUTOR TIME
- BOOKS CAN BE LEFT IN THE YELLOW BOX IF THERE ARE NO STAFF
- PLEASE MAKE SURE YOU RENEW YOUR BOOK EVERY TWO WEEKS IF YOU'RE NOT FINISHED YET!
- PLEASE LET MRS GEORGE KNOW IF A BOOK GETS LOST OF DAMAGED

IF YOU LOSE A BOOK, DONT PANIC! IT CAN BE REPLACED WITH ANOTHER BOOK OR WITH A SMALL CHARGE



ACCESSIT

DID YOU KNOW THE LIBRARY CATALOGUE CAN BE FOUND ONLINE? THERE IS A LINK ON THE DESKTOP OF ALL THE COMPUTERS AND ON TEAMS.
(THE LOG IN IS THE SAME AS YOUR SCHOOL EMAIL AND PASSWORD)







THE LIBRARY IS OPEN TO ALL.
IT IS A SPACE WHERE YOU WILL ALWAYS FIND AN ADULT AT BREAK OR LUNCH.
THERE ARE TABLETS IN THE LIBRARY THAT CAN BE USED FOR COMPLETION OF HOMEWORK, PLEASE ASK MRS GEORGE FOR ACCESS

ART & DESIGN LITERACY MAT

Fine Art

KEY WORDS

ABSTRACT
ANGLE
AESTHETIC
ANGULAR
ANGLE
ARCHITECTURE
ASSEMBLAGE
BACKGROUND
BATIK
BRUSH
BRUSHWORK
CALLIGRAPHY
CANVAS
CERAMICS
CITYSCAPE
COLLAGE
COLOUR
COMPLEMENTARY COLOURS
COMBINE
COMPOSITION
CONCEPTUAL ART
CONSTRUCTION
CONTENT
CONTRAST
CULTURE
CURATOR
DESIGN
DIPTYCH
DRAWING
EMULSION
ENLARGEMENT
ETCHING
EXPRESSION
FIGURATIVE
FIGURE
FONT
FOREGROUND
FORM
FORMAL ELEMENTS
FOUND OBJECTS
FRAMING
FROTTAGE
GENRE
GEOMETRIC
GOUACHE
GRAPHIC
HORIZON LINE
HUE
ICONIC
IMAGE
ILLUSTRATION
IMPASTO
INSTALLATION
JUXTAPOSITION
LANDSCAPE
LINE
MATERIAL
MEDIA/MEDIUM
MIDDLE GROUND
MIXED MEDIA
MOOD
MONOCHROME
MONTAGE
MOTIF
NEGATIVE SPACE
MURAL
NARRATIVE
OIL PAINT
OLD MASTER
OPAQUE
ORGANIC
PALETTE
PANEL
PAPIER-MACHE
PASTEL
PATTERN
PERSPECTIVE
PICTURE PLANE
PIGMENT
POINTILLISM
PORTRAIT
POSE
POSITIVE SHAPE
PRIMARY COLOUR
PROPORTION
READYMADE
REPRESENTATION
SCALE
SCENE
SCREENPRINT
SCULPTOR
SCULPTURE
SECONDARY COLOUR
SHADE
SHAPE
SKETCH
STENCIL
STILL LIFE
STYLE
SUBJECT MATTER
SYMBOL
TACTILE
TECHNIQUE
TINT
TONE
TYPOGRAPHY
VIEWPOINT
WATERCOLOUR

SENTENCE STARTERS

MEANWHILE...
FIRSTLY...
THEN...
IN ADDITION...
ALTHOUGH...
NEXT...
FINALLY...
IN MY OPINION...
SOMETIMES...
HOWEVER...
EVENTUALLY...

COMMAND WORDS

Consider
Create
Demonstrate
Develop
Discuss
Evidence
Identify
Organise
Refine
Response
Select

PUNCTUATION

. **Full stop**
At the end of a sentence

, **comma**
separates clauses in a sentence

! **exclamation point**
Emphasises a point

? **question mark**
Shows a question has been asked

( ) **brackets**
Shows additional information

: **colon**
Introduces a list or quote

; **semi-colon**
Separates two closely linked clauses in a sentence

" " **speech marks**
Shows that someone is speaking

' **apostrophe**
Shows ommission of parts of a word & possession

HOMOPHONES

MAIL/MALE
SAW/SORE
WHETHER/WEATHER
EFFECT/AFFECT
KNEW/NEW
MEET/MEAT
WHERE/WEAR/WERE
THERE/THEIR/THEY'RE
SEE/SEA
TWO/TOO/TO
WITCH/WHICH
HEAR/HERE

CONNECTIVES

Developing points

Furthermore
Equally
Additionally
Likewise
Also

Contrasting Points

However
On the other hand
Although

Providing Examples

For example
Such as
This can be proven

Summing up

In conclusion
Overall
To summarise
To conclude

Temporal

Firstly
Secondly
Thirdly
To begin with
To conclude

To emphasise

In particular
Specifically
Mostly
Unfortunately

'Life in all its fullness' John 10:10

Drawing from Observation



1. **Don't trace.** This shows minimal skill and teaches you very little.

2. **Draw from real objects rather than photographs.** You cannot simulate the changing light conditions, rich textures views from different angles as well as information from other senses. It results in more authentic drawings.

3. **Use grids, guidelines or rough forms** to get the proportions right before you add details.

4. **Look at what you are drawing.** The only way to record shape, proportion and detail accurately is to look at the source of information. Human memory does not suffice!

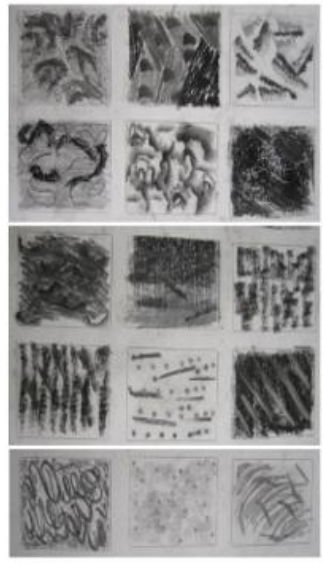
5. **Understand perspective.** Objects get smaller as they get further away.







6. **Use mark-making to convey surface quality and texture.** Strike the paper in different ways to create a variety of effects.



7. **Include a range of tones.** Observe where the light and dark areas are.

8. **Include/omit detail as necessary.** It can be disheartening when drawing very complex subjects like trees but it is not necessary to replicate every leaf or stick. Sometimes a certain area of a drawing is rendered in full, with other parts trailing away.



9. **Be wary of ellipses** (the oval shapes that are visible at the top of cylindrical objects. Frequently a 'trip up' point.

10. **Keep the outlines light.** Real objects do not have dark lines running around every edge.

Beliefs and Worldviews – Year 10 Term 1& 2

Topic 1: Ethical Issues in Relationships

1	1	**Purpose of Family**	Love, support and care for one another, Provide values and morals for society
	2	**Patriarchal**	Man is head of household- *"Man is the head of women"*
	3	**Traditional Roles**	Male: Breadwinner: Lead household & earn income at work Female: Homemaker: Raise children and do housework
	4	**Modern Roles**	Roles & responsibilities are shared. *"We are neither male or female, we are all one in Christ"*
2	5	**Vows**	Promises said before God and to each other
	6	**Round Ring**	Committed relationships are the best environment for children
	7	**Cohabitation**	Couple living together while unmarried
	8	**Arranged Marriage**	Parents choose partner for children
3	9	**Divorce:**	To legally end a marriage.
	10	**Adultery**	Sex between a married person & someone other than their spouse.
	11	**Separation**	Living separately while still married
4	12	**Contraception**	Methods used to prevent Pregnancy
	13	**Purpose of Sex**	Unitive & bonding—a sacred act of union *"Song of Solomon"*
	14	**Monogamy**	Traditional Christians & Muslim only allow sex inside Marriage
5	15	**Celibacy**	Choosing not to engage in sexual relationships
	16	**Procreation**	Catholic church teaches Sex is for the purpose of creating children
6	17	**Gender Equality**	People of all genders enjoying the same rights & opportunities
	18	**Traditional View**	No female leaders (Priests or Pope) in Catholic church Can become sisters and support the church in other ways
	19	**Modern View**	Women can perform all leadership roles 1994—Church of England first female church leaders (vicars)

Topic 2: Ethical Issues in War and Conflict

1	1	**Just War**	Criteria to determine if war is the right course of action
	2	**Just Cause**	War can only be fought if there are good reasons e.g. protect against invaders, or defend the weak and oppressed
	3	**Legitimate Targets**	Non civilian targets cannot be impacted by war
	4	**Reasonable Force**	Only use enough force to win – not to destroy in excess
2	5	**Territorial Disputes**	War fought over land and resources
	6	**Ideological Conflict**	Wars fought to prove the strength of an ideology
	7	**Holy War**	War fought over religion or belief (Only 7% of all wars have been Holy)
3	8	**Conventional Warfare**	Warfare fought with traditional weapons – Expensive and high casualties
	9	**Apocalyptic Warfare**	Warfare fought with Weapons of Mass destruction – Very high casualties
	10	**Technological Warfare**	Warfare fought with modern technologies – Can minimize casualties
4	11	**Pacifism**	Belief that war is not the right course of action
	12	**Desmond Doss**	Famous Pacifist who received the Medal of Honour
5	13	**Liberation**	Freedom
	14	**Theology**	Belief about God and Gods Will
	15	**Liberation Theology**	Belief it is God's will to free the captive and the oppressed
6	16	**Extremism**	Extreme political or religious views
	17	**Terrorism**	Illegal use of violence to cause fear. (Attempt to force political change)

1:1 Role of Business Enterprise and Entrepreneurship

Enterprise is: Seeing an opportunity to provide a product or service that people are willing to buy



Risk	Reward
▪ **Financial** Possibility of losing money ▪ **Health** The strain of being in charge can affect health ▪ **Strained relationships** Starting a business is time consuming	▪ **Financial** Some successful entrepreneurs can make a lot of money ▪ **Independence** Some people like to be their own boss ▪ **Self-satisfaction** Some people like to see and idea work

Entrepreneur
A person who takes the risk of starting and running a business

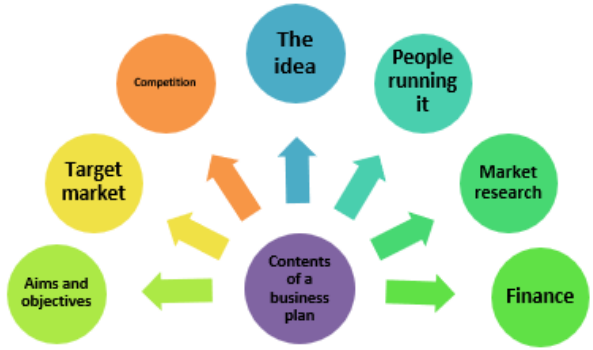
Enterprising characteristics
Features of an entrepreneur

1:2 Business Planning

Purpose of a business plan:

- To reduce the risk of starting a business
- To help a business succeed

A business plan: details how a business aims to achieve its objectives



Role of a business plan:

- Identify markets
- Helping with finance
- Identifying resources needed
- Achieving aims and objectives

Business plan
A simple plan which sets out the details of the business

Finance
The money needed to start the business

1:3 Business Ownership

Sole trader

Advantages	Disadvantages
▪ Easy to set up ▪ Little finance required ▪ Full control ▪ Keep all the profits ▪ Financial information is private	▪ Unlimited liability ▪ Business stops if ill or on holiday ▪ Long working hours ▪ Shortage of capital ▪ Skills shortage ▪ No continuity

Partnership

Advantages	Disadvantages
▪ More capital available ▪ Easy to set up ▪ More skills available ▪ Shared workload ▪ Financial information is private	▪ Shared profit ▪ Unlimited liability ▪ Shortage of capital ▪ Slower decision making ▪ No continuity

Private Limited Company (LTD)

Advantages	Disadvantages
▪ Limited liability ▪ Continuity ▪ Can raise capital more easily ▪ Control over share sale	▪ Financial information available to the public ▪ Complex and expensive to set up ▪ Sale of shares is restricted ▪ Dividends to be paid

Public Limited Company (PLC)

Advantages	Disadvantages
▪ Can raise large amounts of capital ▪ Easier to borrow money ▪ Limited liability for shareholders	▪ Possibility of a takeover ▪ Complex and expensive to set up ▪ Hard to manage as so large ▪ Financial information available to the public

Unlimited liability
Responsibility for the debts of the business rests with the owners

Capital
Money raised to start or develop a business

Deed of partnership
A document setting out the operations of the partnership

Sleeping partner
Someone who only invests in a partnership

Limited liability
Responsibility for the debts of the business is limited to the amount invested

Shareholders
Owners of a limited company

Dividend
Money paid to shareholders from business profits

	Keywords	Key information
1	Child Development	Children are unique. They may develop at different rates. Development is split into 4 areas: physical; cognitive; communication and language; and social and emotional development. If there is a problem in one area of development, it is likely to affect the other areas of development.
2	Physical Development	Means the way in which the body increases in skill and becomes more complex. This is important because it helps children to move and balance and also use their hands. Examples of physical development are sitting, running, throwing, drawing and shaking a rattle.
3	Cognitive Development	Is about the ability to think, recognise and remember. This is important because it helps children to remember things and solve problems. Examples of cognitive development are playing peek-a-boo, matching pictures, recognising faces, naming colours and counting.
4	Communication and Language	The ability to make sounds, talk, understand and interact with others. This is important as it means that children can understand others and also talk to them. Examples of communication and language are babbling, smiling, asking questions, following instructions and telling jokes.
5	Social and Emotional Development	Is about the ability to interact with others, develop, manage and express feelings, and become more independent. This is important because it helps children play with each other and control their feelings. Examples of social and emotional development are interested in faces, comforting another child, wanting to play with others, taking turns and coping with losing a game.
6	Holistic development	Used to explain the way that the different areas of development are interconnected. Children's overall development.
7	Milestones	Skills that are expected at different ages.
8	Fine Motor Skills	Co-ordination of small muscles, precise movements and hand-eye co-ordination. They are important as they help children to: feed and dress themselves; paint, draw and write; do activities such as cooking, collage and modelling; explore and so learn, for example playing with sand, dough and water; learn through play, for example, with train sets, play people or building blocks.
9	Gross Motor Skills	Skills that involve the large muscles of the arms, legs and torso. They allow children to be independent as they help children to: go and get things by themselves; develop spatial awareness; develop strength and stamina; play together; give children confidence.
10	Spatial Awareness	Knowing where your body is in relation to things around you.

Design & Technology

Keyword	Core Knowledge
Mechanism	A system of moving parts that changes input motion into output motion.
CAM	A rotating shaped disc that changes rotary motion into reciprocating or oscillating motion.
Follower	The part that follows the shape of a cam to create movement.
Rotary Motion	Movement that turns in a circle.
Reciprocating Motion	Movement backwards and forwards in a straight line.
Oscillating Motion	Movement that swings from side to side around a pivot.
Linear Motion	Movement in a straight line.
Eccentric Cam	A circular cam with an off-centre axle.
Pear-shaped Cam	A cam that gives a slow rise and quick drop movement.
Snail Cam	A cam that provides a gradual rise and sudden drop.
Heart Cam	A cam that produces an even rise and fall motion.
Follower	Component moved by a cam.
Input Motion	The movement put into a mechanism.
Output Motion	The movement produced by a mechanism.
Gear	Toothed wheel used to transfer rotary motion and force.
Pulley	A wheel and belt system used to transfer movement.
Lever	A rigid bar that pivots around a fulcrum.
Linkage	A system of connected rods used to transfer motion.
Softwood	Timber from coniferous trees that usually keep their needles all year and are often referred to as evergreen.
Pine	Common softwood that is lightweight and easy to work with.
Cedar	Durable softwood that resists decay.
Spruce	Softwood commonly used in construction and furniture.
Hardwood	Timber from deciduous trees that lose their leaves each year.
Deciduous Tree	Tree that sheds its leaves annually.
Oak	Strong, durable hardwood often used in furniture.
Beech	Hardwearing hardwood with a smooth finish.
Mahogany	Attractive hardwood valued for furniture making.
Timber	Wood prepared for use in products and construction.
Manufactured Board	Engineered wood made from wood fibres, veneers or chips.

AQA English Language – Paper 1

Question Guidance (do the paper backwards):

Q5 – use the 'Here > There > Then > Now' frame. Old Person Attic story example:

Here I am in our creaky old attic watching the motes of dust spark through the shivering light. It is evening outside and I can hear the birds prattling on with their warbling lullabies. Golden arcs of the aging sun lance through our small grimy window illuminating the detritus of our lives. The musty scent of aged photo albums almost breathe out their last willing themselves to be witnessed. It is stuffy here but comforting, like being held by you.

There is a painting, one of yours, I never really understood your work but the light falls on it now and...

Then, memories rush back of our time together and it slams into me like a dark ocean cascading upon my head. When we met, the idiotic beautiful accident as we both got on the wrong bus. Our first dance under melting moonlight. The long walks over misty moors. Your laugh that spread through any room like a song. Our wedding day with the fierce rain and your drunken collapsing uncle. The kids filling this old house with young life and love. They flew the nest, you always felt that loss harder than I. Holding your soft frail hand whilst you fiddled with my wedding ring. That glint of amusement in your eye that I was the one crying.

Now I sit here in this attic, alone. I can still see the tubes tangling from your skin feeding into machines monitoring your fragile heart. The endless trips back and forth to hospital. The not knowing and then the horrible certainty. Every second was everything yet it slips away like the tide and all I am left with are dry sobs. The light is fading and falls away from your painting but outside I can still hear evening birdsong and the last embers of the dying sun ripple across the sky. You filled this world with so much beauty.

I miss you my love.

Q4 (20 marks, 25m) – identify the key bits of the statement, agree then add and analyse (use quotations and analyse language and structure repeatedly):

Your evaluation – consider the statement and other interpretations (although, whilst, despite, etc.)
Neat evidence – use precise quotations
Additional – use more precise quotations (at least 6)
Language – analyse word choice, imagery and other methods
Structure and form – analyse perspective, pace, tone and other methods
Intentions of writer – consider WHY the writer wrote it and the impact upon readers

Q3 (8 marks, 10m) – structural methods (start-middle-end):

Start-middle-end
Neat evidence – use precise quotations
Structure and form – analyse perspective, pace, tone and other methods such as repetition, motif, cliffhanger, contrast, development, syntax, etc.

Q2 (8 marks, 10m) – language methods (imagery, word choice and other methods):

Imagery – always analyse this.
Neat evidence – as precise as possible – focus on word choices etc.
Additional – get a wide range of quotations
Language – analyse word choices, imagery and other methods such as metaphor, simile, personification, oxymoron, emotive language and syntax.

Q1 (4 marks, 5m) - multiple choice questions.

AQA English Literature – A Christmas Carol

Prepared Introduction (learn this):

Dickens presents _____ to criticise misanthropy in Victorian London. As a philanthropist, Dickens uses his didactic allegorical novella to demonstrate the importance of kindness. Dickens crafts this through Scrooge's redemption arc as he progresses from a 'covetous old sinner' to being 'quite a baby' symbolising his rebirth.

Make sure that you replace _____ with the focus of the question.

Key quotations to learn – prioritise the first 3 pairs.

1	**'solitary as an <u>oyster</u>'**	**'his own <u>heart</u> laughed'**
2	**'I wear the <u>chain</u> I forged in life'**	**'light as a <u>feather</u>'**
3	**'decrease the surplus <u>population</u>'**	**'are there no <u>prisons</u>?'**
4	**'biting** weather' 'freezing fog'	**'Golden** sunlight; Heavenly sky'
5	'gruff old **bell** was always peeping slily down at Scrooge'	'merry **bells**'
6	**'Want** is keenly felt, and **Abundance** rejoices.'	**'Ignorance'** & **'Want'** 'Beware … on his brow … **Doom'**
7	'Another idol has displaced me … a **golden** one'	'as good as **gold'**
8	**'tight-fisted** hand at the grindstone'	'apoplectic **opulence'**
9	'If these **shadows** remain unaltered by the Future, the child will die.'	'to Tiny Tim, who did not die, he was a **second father.**'

10	'a strange figure—like a **<u>child</u>**: yet not so like a child as like an **<u>old</u>** man'	'a **<u>jolly</u>** Giant, glorious to see; who bore a glowing torch…Girded round its middle was an antique scabbard; but no sword was in it'	'a solemn **<u>Phantom</u>**, draped and hooded, coming, like a **<u>mist</u>** along the ground, towards him.'

Name: Date:

The Eatwell Guide

- When choosing food and drinks, current healthy eating guidelines should be followed.



Fruit and vegetables
- This group should make up just over a third of the food eaten each day.
- Aim to eat at least five portions of a variety each day.
- Choose from fresh, frozen, canned, dried or juiced.
- A portion is around 80g (3 heaped tbs).
- 30g of dried fruit or 150ml glass of fruit juice or smoothie count as a max of 1 portion each day.

Potatoes, bread, rice, pasta or other starchy carbohydrates
- Base meals around starchy carbohydrate food.
- This group should make up just over a third of the diet.
- Choose higher-fibre, wholegrain varieties.

Dairy and alternatives
- Good sources of protein and vitamins.
- An important source of calcium, which helps to keep bones strong.
- Should go for lower fat and lower sugar products where possible.

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

The Eatwell Guide
- Comprises 5 main food groups.
- Is suitable for most people over 2 years of age.
- Shows the proportions in which different groups of foods are needed in order to have a well-balanced and healthy diet.
- Shows proportions representative of food eaten over a day or more.

Beans, pulses, fish, eggs, meat and other protein
- Sources of protein, vitamins and minerals.
- Recommendations include to aim for at least two portions of fish a week, one oily, and; people who eat more than 90g/day of red or processed meat, should cut down to no more than 70g/day.

Oil and spreads
- Unsaturated fats are healthier fats that are usually from plant sources and in liquid form as oil, e.g. olive oil.
- Generally, people are eating too much saturated fat and need to reduce consumption.

Foods high fat, salt and sugar
- Includes products such as chocolate, cakes, biscuits, full-sugar soft drinks, butter and ice cream.
- Are high in fat, sugar and energy and are not needed in the diet.
- If included, should be had infrequently and in small amounts.

8 tips for healthier eating
These eight practical tips cover the basics of healthy eating, and can help you make healthier choices.
1. Base your meals on starchy carbohydrates.
2. Eat lots of fruit and veg.
3. Eat more fish – including a portion of oily fish.
4. Cut down on saturated fat and sugar.
5. Eat less salt (max. 6g a day for adults).
6. Get active and be a healthy weight.
7. Don't get thirsty.
8. Don't skip breakfast.

Hydration
- Aim to drink 6-8 glasses of fluid every day.
- Water, lower fat milk and sugar-free drinks including tea and coffee all count.
- Fruit juice and smoothies also count but should be limited to no more than a combined total of 150ml per day.

Fibre
- Dietary fibre is a type of carbohydrate found in plant foods.
- Food examples include wholegrain cereals and cereal products; oats; beans; lentils; fruit; vegetables; nuts; and, seeds.
- Dietary fibre helps to: reduce the risk of heart disease, diabetes and some cancers; help weight control; bulk up stools; prevent constipation; improve gut health.
- The recommended average intake for dietary fibre is 30g per day for adults.

Composite/combination food
Much of the food people eat is in the form of dishes or meals with more than one kind of food component in them. For example, pizzas, casseroles, spaghetti bolognese and sandwiches are all made with ingredients from more than one food group. These are often called 'combination' or 'composite' foods.



Key terms
The Eatwell Guide: A healthy eating model showing the types and proportions of foods needed in the diet.
Hydration: The process of replacing water in the body.
Dietary fibre: A type of carbohydrate found in plant foods.
Composite/combination food: Food made with ingredients from more than one food group.

Meals and snacks can be sorted into The Eatwell Guide food groups.

Composite/combination food - Lasagne





Pasta (lasagne sheets): **Potatoes, bread, rice, pasta or other starchy carbohydrates**
Onions, garlic and chopped tomatoes: **Fruit and vegetables**
Lean minced meat (or meat substitute): **Beans, pulses, fish, eggs, meat and other protein**
Cheese sauce made with milk and cheese**: Dairy and alternatives**
Olive/vegetable oil used to cook onions and mince**: Oil and spreads**

Task
Plan a menu for a day that applies the principles of The Eatwell Guide and the 8 tips for healthier eating. Make one of the dishes, complete a sensory evaluation and calculate the energy and nutrients provided using nutritional analysis.

"Life in all its fullness" John 10:10

Micronutrients

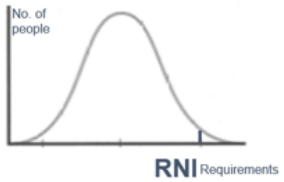
Micronutrients are needed in the body in tiny amounts. They do not provide energy, but are required for a number of important processes in the body.

There are two main groups of micronutrients:
- vitamins;
- minerals and trace elements.

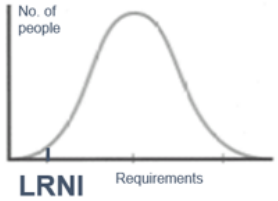
Micronutrients are measured in milligrams (mg) and micrograms (µg) with 1mg = 0.001g and 1µg = 0.001mg.

Micronutrient recommendations

The recommendations for vitamins and minerals are based on the **Reference Nutrient Intake (RNI).**



When looking at low intakes of micronutrients, the Lower Reference Nutrient Intake (LRNI) is used.



For more information, go to: https://bit.ly/36KUnji

Micronutrient recommendations

People have different requirements for each micronutrient, according to their:
- age;
- gender;
- physiological state (e.g. pregnancy).



Vitamins

Vitamins are nutrients required by the body in small amounts, for a variety of essential processes.

Most vitamins cannot be made by the body, so need to be provided in the diet.

Vitamins are grouped into:
- fat-soluble vitamins (vitamins A, D, E and K);
- water-soluble vitamins (B vitamins and vitamin C).

Minerals

Minerals are inorganic substances required by the body in small amounts for a variety of different functions.

The body requires different amounts for each mineral.

Some minerals are required in larger amounts, while others are needed in very small amounts and are called 'trace elements'.

Vitamins

Nutrient	Function	Sources
Vitamin A	Helps the immune system to work as it should and with vision.	Liver, cheese, eggs, dark green leafy vegetables and orange-coloured fruits and vegetables.
B vitamins	Thiamin, riboflavin, niacin, folate, and vitamin B12 have a range of functions within the body.	Different for each B Vitamin.
Vitamin C	Helps to protect cells from damage and with the formation of collagen.	Fruit (especially citrus fruits), green vegetables, peppers and tomatoes.
Vitamin D	Helps the body to absorb calcium & helps to keep bones strong.	Oily fish, eggs, fortified breakfast cereals and fat spreads.
Vitamin E	Helps to protect the cells in our bodies against damage.	Vegetable and seed oils, nuts and seeds, avocados and olives.
Vitamin K	Needed for the normal clotting of blood and is required for normal bone structure.	Green vegetables and some oils (rapeseed, olive and soya oil).

Minerals

Nutrient	Function	Sources
Calcium	Helps to build and maintain strong bones and teeth.	Dairy, calcium-fortified dairy-alternatives, canned fish (where soft bones are eaten) and bread.
Iron	Helps to make red blood cells, which carry oxygen around the body.	Offal, red meat, beans, pulses, nuts and seeds, fish, quinoa, wholemeal bread and dried fruit.
Phosphorus	Helps to build strong bones and teeth and helps to release energy from food.	Red meat, poultry, fish, milk, cheese, yogurt, eggs, bread and wholegrains.
Sodium	Helps regulate the water content in the body.	Very small amounts found in foods. Often added as salt.
Fluoride	Helps with the formation of strong teeth and reduce the risk of tooth decay.	Tap water, tea (and toothpaste).
Potassium	Helps regulate the water content in the body and maintain a normal blood pressure.	Some fruit and vegetables, dried fruit, poultry, red meat, fish, milk and wholegrain breakfast cereals.
Iodine	Helps to make thyroid hormones. It also helps the brain to function normally.	Milk, yogurt, cheese, fish, shellfish and eggs.

Key terms

Micronutrients: Nutrients needed in the diet in very small amounts.
Lower Reference Nutrient Intake (LRNI): Is the amount of a nutrient that is enough for only the small number of people who have low requirements (2.5%). The majority of people need more.
Reference Nutrient Intake (RNI): The amount of a nutrient that is enough to ensure that the needs of nearly all the group (97.5%) are being met. The RNI is used for recommendations on protein, vitamins and minerals.

Vitamin D

Vitamin D is a pro-hormone in the body. It can be obtained in two forms:
- ergocalciferol (vitamin D_2);
- cholecalciferol (vitamin D_3).

Vitamin D_3 is also formed by the action of sunlight. Different to most vitamins, the main source of vitamin D is synthesis in the skin following exposure to sunlight. The wavelength of UVB during the winter months in the UK does not support vitamin D synthesis.



Tasks

1. Create an infographic on micronutrients. Focus on the definition of each micronutrient, daily recommendations and source.
2. Keep a food diary for four days and calculate the micronutrients provided per day. http://explorefood.foodafactoflife.org.uk

Macronutrients, fibre and water

Macronutrients
Macronutrients provide energy. The macronutrients are:
- carbohydrate;
- protein;
- fat.

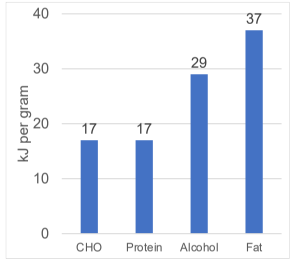
Macronutrients are measured in grams (g).

Alcohol
Alcohol is not considered a nutrient, but is a source of energy in the diet.

The government recommends no more than 14 units of alcohol per week for both men and women.

Energy from food
- Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).
- Different macronutrients, and alcohol, provide different amounts of energy.

	Energy per gram
Carbohydrate	16kJ (3.75 kcals)
Protein	17kJ (4 kcals)
Alcohol	29kJ (7kcals)
Fat	37kJ (9 kcals)



Protein
- Made up of building blocks called amino acids.
- There are 20 amino acids found in protein.
- Eight amino acids have to be provided by the diet (called essential amino acids).

The essential amino acids (EAAs) are isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine.
In young children, additional amino acids, e.g. histidine and tyrosine, are sometimes considered to be essential (or 'conditionally essential') because they may be unable to make enough to meet their needs.

Recommendations
- 0.75g/kg bodyweight/day in adults.

Sources:
Animal sources: meat; poultry; fish; eggs; milk; dairy food.

Plant sources: soya; nuts; seeds; pulses, e.g. beans, lentils; mycoprotein.

Protein complementation
Different food contains different amounts and combinations of amino acids.

Vegans and vegetarians can get all the amino acids they need by combining different protein types at the same meal. This is known as protein complementation.

Examples are:
- rice and peas;
- beans on toast;
- hummus and pitta bread;
- bean chilli served with rice.

Carbohydrate
All types of carbohydrate are compounds of carbon, hydrogen and oxygen. They can be divided into three main groups according to the size of the molecule.

These three types are:
- monosaccharides (e.g. glucose);
- disaccharides (e.g. lactose);
- polysaccharide (e.g. sucrose).

The two types main of carbohydrate that provide dietary energy are starch and sugars. Dietary fibre is also a type of carbohydrate.

Starchy carbohydrate is an important source of energy.

Starchy foods - we should be choosing wholegrain versions of starchy foods where possible.

Recommendations
- Total carbohydrate - around 50% of daily food energy.
- Free sugars include all sugars added to foods plus sugars naturally present in honey, syrups and unsweetened fruit juice (<5% daily food energy).
- Fibre is a term used for plant-based carbohydrates that are not digested in the small intestine (30g/day for adults).

Fibre
- Dietary fibre is a type of carbohydrate found in plant foods.
- Food examples include wholegrain cereals and cereal products; oats; beans; lentils; fruit; vegetables; nuts; and, seeds.

Dietary fibre helps to:
- reduce the risk of heart disease, diabetes and some cancers;
- help weight control;
- bulk up stools;
- prevent constipation;
- improve gut health.

Fat
Sources of fat include:
- saturated fat;
- monounsaturated fat;
- polyunsaturated fat.

Fats can be saturated, when they have no double bonds, monounsaturated, when they have one double bond, or polyunsaturated, when they have more than one double bond.

Recommendations
- <35% energy, Saturated fat <11% energy.

A high saturated fat intake is linked with high blood cholesterol levels.

Sources:
Saturated fat: fatty cuts of meat; skin of poultry; butter; hard cheese; biscuits, cakes and pastries; chocolate.
Monounsaturated fat: edible oils especially olive oil; avocados; nuts.
Polyunsaturated fatty acids: edible oils especially sunflower oil; seeds; margarine; spreadable fats made from vegetable oils and oily fish.

Dietary reference values (DRVs) are a series of estimates of the energy and nutritional requirements of different groups of healthy people in the UK population. They are not recommendations or goals for individuals.

Reference Intakes are guidelines for the maximum amount of energy (calories), fat, saturated fat, sugars and salt consumed in a day (based on a healthy adult female).

Key terms
Dietary reference values: Estimated dietary requirements for particular groups of the population.
Essential amino acids: 8 of the different amino acids found in proteins from plants and animals that have to be provided by the diet.
Macronutrients: Nutrients needed to provide energy and as the building blocks for growth and maintenance of the body.
Protein complementation: Combining different protein types at the same meal to ensure all EAAs are ingested.
Reference Intakes: Guidelines for the maximum amount of nutrients consumed.

Hydration
- Aim to drink 6-8 glasses of fluid every day.
- Water, lower fat milk and sugar-free drinks including tea and coffee all count.
- Fruit juice and smoothies also count but should be limited to no more than a combined total of 150ml per day.

20% of water is provided by food such as soups, yogurts, fruit and vegetables.

The other 80% is provided by drinks such as water, milk and juice.

Drinking too much water can lead to 'water intoxication' with potentially life threatening hyponatraemia.

This is caused when the concentration of sodium in the blood gets too low.

Tasks
1. Create an infographic on macronutrients. Focus on the definition of each nutrient, daily recommendations and source.
2. Keep a food diary for four days and calculate the macronutrients provided per day. http://explorefood.foodafactoflife.org.uk

For more information, go to: https://bit.ly/36KUnji

'Life in all its fullness' John 10:10

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This resource meets the *Guidelines for producers and users of school education resources about food*.

Name: Date:

Energy and activity

Energy is the power to do work. Energy is essential for life, and is required to fuel many different body processes, growth and activities.

These include:

- keeping the heart beating;
- keeping the organs functioning;
- maintenance of body temperature;
- muscle contraction.

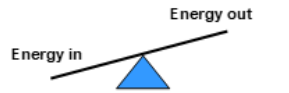
Different people need different amounts of dietary energy depending on their:



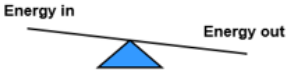
- age;
- gender;
- body size;
- level of activity;
- genes.

The figures determined are known as Estimated Average Requirements (EAR) for energy.

Energy balance
To maintain body weight it is necessary to balance energy intake (from food and drink) with energy expenditure (from activity).



Energy in > Energy out = Weight gain



Energy out > Energy in = Weight loss

Body Mass Index (BMI) can be used to identify if an adult is a correct weight for height.

$$BMI = \frac{\text{weight (kg)}}{(\text{height in m})^2}$$

Recommended BMI range (adults)	
Less than 18.5	Underweight
18.5 to 25	**Desirable**
25-30	Overweight
30-35	Obese (Class I)
35-40	Obese (Class II)
Over 40	Morbidly obese

Energy from food

- Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).
- Different macronutrients, and alcohol, provide different amounts of energy.

	Energy per 100g
Carbohydrate	16kJ (3.75 kcals)
Protein	17kJ (4 kcals)
Alcohol	29kJ (7kcals)
Fat	37kJ (9 kcals)

Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).

1 kilojoule (kJ) = 1,000 joules
1 megajoule (MJ) = 1,000,000 joules
1 kilocalorie (kcal) = 1,000 calories

To convert from one unit to another: 1 kcal = 4.184 kJ

For more information, go to:
https://bit.ly/36KUnji

Basal metabolic rate (BMR)
Basal metabolic rate (BMR) is the rate at which a person uses energy to maintain the basic functions of the body when it is at complete rest, such as:

- breathing;
- keeping warm;
- keeping the heart beating

Physical activity level (PAL)
In addition to their BMR, people also use energy for movement of all types, expressed as PAL.
The amount of energy a person uses to perform daily tasks varies.

Energy requirements vary from person to person, depending on BMR and PAL.

Total energy expenditure
= BMR x PAL

Undernutrition and obesity
Managing energy intake and expenditure, and maintaining energy balance can help reduce the risk of overweight/obesity and being underweight.

People who are obese are more likely to suffer from coronary heart disease, type 2 diabetes, gall stones, arthritis, high blood pressure and some types of cancers, i.e. colon, breast, kidney and stomach.

Being underweight is also linked with health problems, such as osteoporosis (low bone mass), infertility (difficulty to conceive) and even heart failure.

Benefits of physical activity
Physical activity is beneficial because it can:

- help to manage the balance between energy in and energy out, to maintain a healthy weight;
- improve heart health and strengthen muscles and bones;
- improve sleep, relieve stress and lift mood

Moderate activity



Vigorous activity



Muscle strengthening activities



Activity recommendations
We are all advised to minimise inactivity. In addition, there are specific age-related recommendations.

Pre-schoolers (3 to 4 years): 180 minutes (3 hours) spread throughout the day, including at least 60 minutes of moderate-to-vigorous intensity physical activity.

Children and young people (5-18 years): At least 60 minutes of physical activity every day and engage in a variety of types and intensities of physical activity across the week.

Adults (19-64 years): At least 150 minutes each week (moderate intensity), or have 75 minutes of vigorous activity a week and do muscle strengthening activities on two days or more each week.

Key terms
Basal metabolic rate (BMR): The rate at which a person uses energy to maintain the basic functions of the body when it is at complete rest.
Body Mass Index (BMI): An equation that can be used to identify if an adult is a correct weight for their height.
Dietary reference values: Estimated dietary requirements for particular groups of the population.
Energy: The power the body requires to stay alive and function.
Physical activity level (PAL): The amount of energy a person uses to perform daily tasks varies.
Estimated Average Requirements (EAR): An estimate of the average requirement of energy or a nutrient needed by a group of people.

Physical activity
Physical activity should be an important part of our daily energy expenditure.

Many different types of activity contribute to our total physical activity, all of which form part of everyday life.

Inactivity
It is also important that the amount of time being sedentary is reduced.

Over time, sedentary behaviour can lead to weight gain and obesity, which can increase the risk of developing chronic diseases in adulthood.

1 in 4 women and 1 in 5 men are classified as inactive (<30 mins per week).

Tasks

1. Create an infographic on either energy or physical activity.
2. Keep a food diary for four days and calculate the energy provided per day.
   http://explorefood.foodafactoflife.org.uk

Life in all its fullness John 10:10





CHALLENGE OF NATURAL HAZARDS

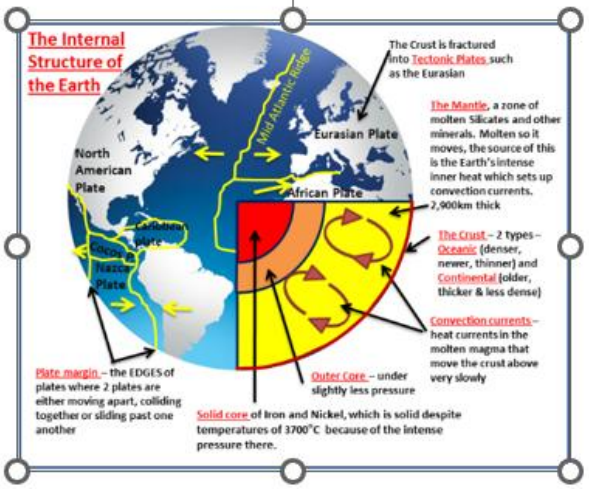
©Rob Gamesby

http://www.coolgeography.co.uk



Types of Natural hazard.

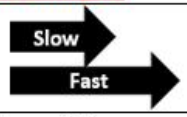
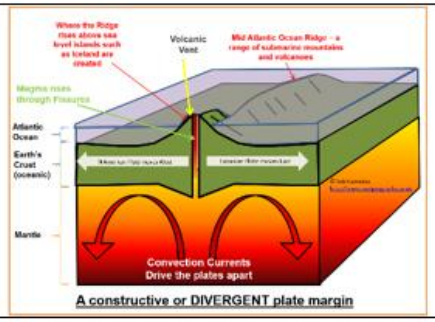
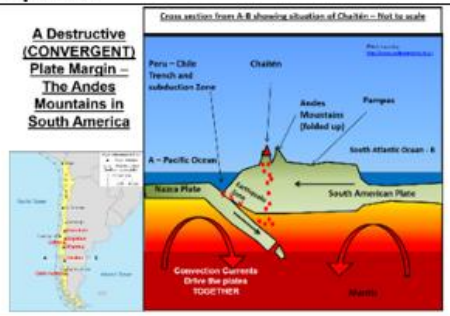
A natural event (for example earthquake, volcanic eruption, tropical storm, flood) that threatens people or has the potential to cause damage, destruction and death." Can be atmospheric (hurricane), Geomorphological (landslide) or Geological (earthquake).



Factors affecting hazard risk - Not all hazards cause extreme death and destruction. Affected by Natural factors (e.g. rock type), magnitude (size of event) such as how high up on the Richter scale, population density (how many people in area affected), Level of development and capacity to cope, management via Prediction, Preparation and Prevention (life safe buildings, storm shelters), Education.

Global distribution (where they are) of earthquakes and volcanic eruptions – vast majority of both earthquakes and volcanoes occur on the plate boundaries. Most destructive and damaging around the Pacific Ring of Fire, on destructive plate margins. Shield volcanoes less destructive on constructive plate margins. Earthquakes on all 3 plate margin types. Some volcanoes not on plate margins – explained by hot spots (e.g. Hawaii)

Processes taking place at different types of plate margin

Conservative plate margins	Constructive plate margins	Destructive plate margins
		
Move side by side at different speeds, this creates earthquakes along fault lines	**the plates move apaert and create volcanoes, ridges, Islands and minor earthquakes**	**the plates move together destroying crust - Creates Fold mountains, trenches, volcanoes, earthquakes**
	 A constructive or DIVERGENT plate margin	

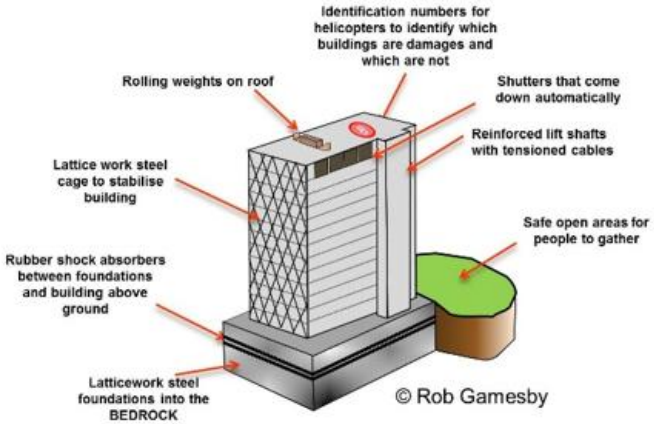
Contrasting tectonic hazard case studies

Haïti	Japan	Reasons for differences
316,000 deaths Millions homeless Textiles industry lost 280,000 buildings destroyed Response SLOW and external	5,894 people died, Tsunami up to 40 m high Damage - 332,395 buildings, 2,126 roads, 56 bridges and 26 railways were destroyed or damaged.	1. Secondary effects like fire and landslides 2. Building design and quality 3. Capacity to cope of country 4. Internal immediate response 5. Starting point of country i.e. Haiti already poor



Reasons why people continue to live in areas at risk from tectonic hazards.

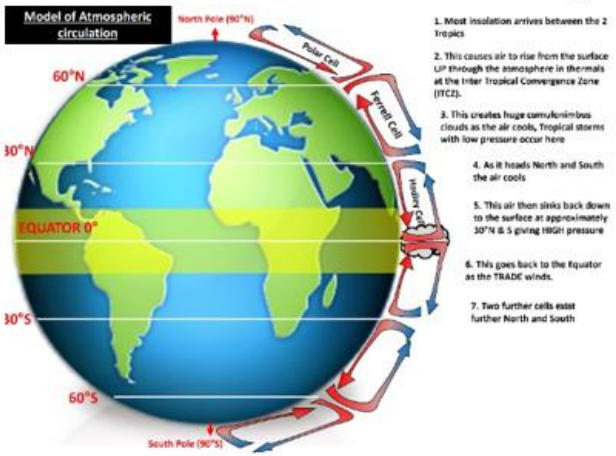
Preparation makes people feel safe – difficult to move – Good job or high standard of living – Sulphur can be mined – Fertile volcanic soils – Tourism is possible, especially adventure tourism – minerals such as gold can be found – culture and religion – coffee is often grown on volcanic soils – Geothermal power can be generated – poverty traps people in hazard zones – **Basalt** is available for use in construction - -engineering makes the hazard zones safer – volcanic and earthquake events are infrequent



How monitoring, prediction, protection and planning can reduce the risks from a tectonic hazard.

Humans can use lots of ways to try to reduce volcanic & earthquake risks such as –

1. Seismic waves shown on a seismograph
2. Monitoring gas emissions like Sulphur Dioxide
3. Ground deformation
4. Satellite Images and Remote Sensing - Remote sensing is the use of satellites to detect things about the Earth's surface. This is useful for monitoring any changes in volcanoes at the surface such as heat build up of deformation.
5. Laser beams - Laser beams can be used to detect plate movement by directing the beam across the fault line.
6. Protection - Buildings can be designed to withstand the shaking of the earth and to limit the loss of life and damage caused.
7. Planning - Prior to events we can plan where we will or will not allow building.



Global atmospheric circulation – set up by uneven distribution of heat over Earth's surface. Results in hurricanes around Equator, Depressions in UK, Deserts at 30°N and S, Trade winds and Westerlies that affect the UK. Model describes how air moves in 3 cells as shown on diagram.

Tropical storms – what? - Tropical storms are an area of **low pressure** with winds moving in a spiral around the calm central point called the **eye of the storm**. Winds are powerful and rainfall is heavy. They can last for days to weeks within the Tropical regions of our planet.

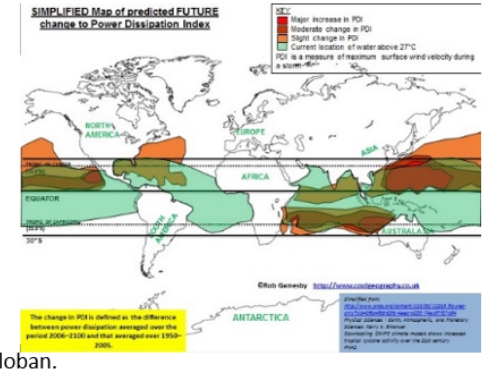
Where? - 5°N and S of Equator to just outside the tropics – here air is warm, seas above 27°C and Earth's rotation is enough to spin

Why?

- Step 1: The sun sends incoming solar radiation to Earth which warms our oceans
- Step 2: This warms the oceans to a critical 27°C
- Step 3: This causes warm MOIST air to rise through the air in THERMALS. This gives LOW PRESSURE at the centre of the storm
- Step 4: This air cools as it rises, at 1°C per 100m, this causes condensation to occur, clouds to form and rain to occur
- Step 5: Some cooled air sinks back down helping to create the EYE
- Step 6: Air rushes in from higher pressure areas outside of the storm to lower pressure areas at the centre of the storm creating winds
- Step 7: The whole storm rotates because of the Earth's spin

How climate change might affect the distribution, frequency and intensity of tropical storms.

Climate change is a long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature. Total number of storms not changed much in Atlantic over time BUT INTENSITY if greater, so storms causing more damage. More places around the world will experience storms too, outside of the Tropics and at greater intensity;



A case study of a tropical storm Haiyan

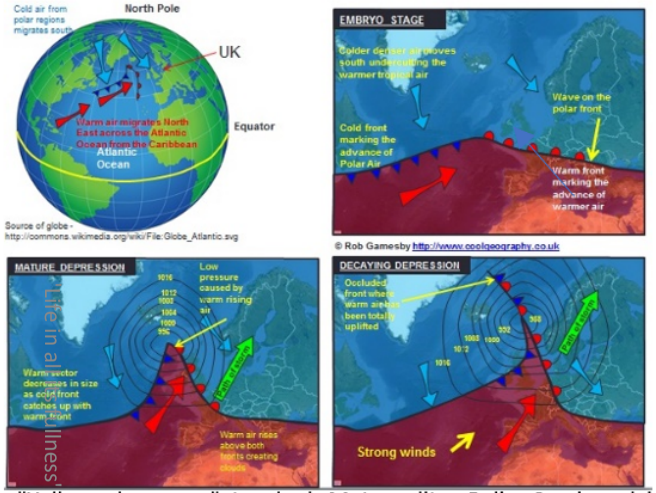
Hit the Philippines – poor country (GDP only $4700 per person per year). Lasted from 2nd to 11th November, hit Philippines 8th November. Worst affected place Tacloban.

	Social	Economic	Environmental
Short term	Over 14 million people were affected across 46 provinces. Killed approximately **7400 people**	**Estimated losses at $2.9billion** with much of this in agriculture. The major rice and sugar producing areas for the Philippines were destroyed.	Storm surge 25 feet high in some areas, including in the town of Tacloban Loss of forests, trees and widespread flooding
Long term	6 Months later, many people still had limited access to shelter and water	5.9 million Workers lost income sources. Tacloban airport terminal building was also completely destroyed	5 million homes destroyed Salt water on farmland limits production

Life in all its fullness John 10:10

Management & responses

Slow response to this event. Philippines formally declared "A State of National Calamity" and asked for international help; one day after the Haiyan hit the country. In Tacloban, just 70 workers available compared to 2,500 normally. Many were killed, injured, lost family or were simply too traumatised to work. By December, water tanks had been installed by charities like Oxfam but not in all areas. NGOs like the International Red cross were trying to provide adequate settlements, fresh water access and access to jobs/livelihood. The Philippines authorities have invested in disaster risk reduction (DRR) and climate change adaptation (CCA). They spent $624m on this in 2011 – two per cent of the national budget and 0.28 per cent of GDP



Types of weather hazard experienced in the UK – Depressions

UK has lots of weather hazards – small tornadoes, blizzards, torrential rain leading to flooding, heatwaves from anticyclones. Depressions are STORM events with 2 lots of rain and very strong winds. Most common in West from Atlantic and move across to East. Warm air is uplifted by cold air along fronts, creating rainfall. Uplifting air creates low pressure, which is filled by in rushing air – wind.

Extreme weather event in the UK – St Jude storm of 27th and 28th of October 2013

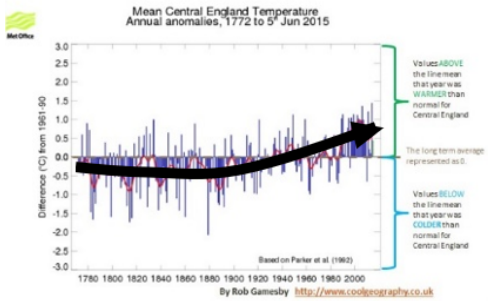


LOW PRESSURE DEPRESSION caused 17 deaths across Europe and was also known as **Cyclone Christian.** Caused by end of ex-tropical storm and strong Jet Stream dragging the storm across the Atlantic Ocean. Pressures were very low. The Met Office predicted the passage of the storm with a **good degree of accuracy.** Used a supercomputer Weather warnings Issued "Yellow – be aware". London's Metropolitan Police Service advised people to only use the 999 emergency telephone number in an emergency.

Impacts - fast winds, **a gust of 99 miles per hour** at The Needles Battery, Isle of Wight. Trees **brought down**. These trees fell onto buildings, cars and power lines. Structural damage to residential and commercial buildings with most damage to roofs, cladding and glazing. 5 deaths. Double-decker bus and wind turbine blown over. **850,000 homes lost power**. Nuclear power reactors at Dungeness B had to be shut down. Transport chaos, with 130 flights from Heathrow Airport were cancelled in total, trains services massively scaled down, slowed down for safety reasons or cancelled in the south of England with knock on effects on services further north.

Responses & Management - The Met Office's supercomputer worked with a good level of accuracy. Insurance companies took on extra staff and estimates of costs of the storm **between £300 million and £500 million**. Electricity companies had most power up and running by the first of November. Government agencies and Transport agencies and companies (road, rail, air and sea) well prepared.

Evidence that weather is becoming more extreme in the UK.



- UK's weather is getting more extreme. Temperatures continually and slowly rising.
- Ten hottest years on record have all within the last 20 years.
- 6 of 10 wettest years on record have come in the last 20 years.
- Major weather events over the past 2 decades - such as 2003 heat wave killed 2,000, 2007 floods which hit many areas, 2009 to 10 big freeze, storm Desmond.

Evidence for climate change

Instruments - Over the last 100 years **Earth's average surface temperature increased by about 0.8 °C** (1.4 °F). **Retreating glaciers and shrinking ice sheets - glaciers are shrinking significantly,** The Arctic ice sheet has also thinned to half its thickness (past 30 years), and we have seen the breakup of huge Ice Shelves in Antarctica. **Ice cores in** Antarctica. The air trapped in bubbles in the ice can be analysed and this has shown that the Earth is normally cooler than it is now and that Ice ages are common. It also shows a very strong link between CO_2 concentrations and temperature. **Season shifting – such as spring arriving earlier**

Natural and human causes of climate change

Natural – Volcanoes (cause cold spells), Orbital variations, Sunspot activity

Human – Deforestation, Burning Fossil Fuels, Agriculture

Managing the impacts of climate change:

Mitigate	Adapt
Alternative energy production switch from fossil fuels to Renewables such as wind and solar **Carbon Capture** – capture carbon before release and turn into a liquid then put under ground **Planting trees** – this would catch more carbon **International agreements** – such as the Paris protocol 2015 – countries have agreed to cut carbon emissions	**Agriculture** – change the species we farm, where we farm them and using Genetically Modified species **Manage water supply** – transfer water in dry regions, dig more wells and use more dams **Reduce risk from rising sea levels** – APE – Abandon, Plan, Engineer

'Life Mastery' Lessons 2020

Year 10 German Term 1: Endlich mal Freizeit! (Module 2)

Musik	*Music*
1. Band (f)	*band*
2. Fan (m)	*fan*
3. Gruppe (f)	*group*
4. Instrument (nt)	*instrument*
5. Konzert (nt)	*concert*
6. Lied (nt)	*song*
7. Musik (f)	*music*
8. Popmusik (f)	*pop music*
9. Rockmusik (f)	*rock music*
10. Sänger (m)	*singer*
11. Stimme (f)	*voice*
12. Stück (nt)	*piece*
13. Tanz (m)	*dance*
14. berühmt	*famous*
15. klassisch	*classical*
16. hören	*to listen (to)*
17. lernen	*to learn*
18. singen	*to sing*
19. spielen	*to play*
20. üben	*to practise*

Sport	*Sport*
21. Club / Klub (m)	*club*
22. Fahrrad / Rad (nt)	*bicycle / bike*
23. Fußball (m)	*football*
24. Handball (m)	*handball*
25. Leichtathletik (f)	*athletics / track and field*
26. Radfahren (m)	*cycling*
27. Schwimmen (nt)	*swimming*
28. Spiel (nt)	*game / match*
29. Sport (m)	*sport*
30. Team (nt)/Mannschaft	*team*
31. Tennis (m)	*tennis*
32. Trainer (m)	*coach*
33. schwach	*weak*
34. sportlich	*sporty / athletic*
35. stark	*strong*
36. laufen	*to run*
37. schwimmen	*to swim*
38. spielen	*to play*
39. üben	*to practise*
40. wandern	*to hike*

Soziale Netzwerke und Spiele	*Social media and gaming*
41. App (f)	*app*
42. Computer (m)	*computer*
43. Gaming (nt)	*gaming*
44. Handy (nt)	*mobile phone*
45. Internet (nt)	*internet*
46. Laptop (m) or (nt)	*laptop*
47. Medien (pl)	*media*
48. Netzwerk (nt)	*network*
49. Passwort (nt)	*password*
50. Smartphone (nt)	*smartphone*
51. Spiel / Spieler (m)	*game / player*
52. Spielkonsole (f)	*games console*
53. Virus (m)	*virus (computer)*
54. Webseite (f)	*website*
55. WLAN (nt)	*wifi*
56. online	*online*
57. chatten	*to chat (online)*
58. herunterladen	*to download*
59. schicken	*to send*
60. streamen	*to stream*

Film und Fernsehen	*Film and TV*
61. (am) Fernsehen (nt)	*(on) TV / television*
62. Charakter (m)	*character*
63. Dokumentarfilm (m)	*documentary*
64. Film (m)	*film*
65. Geschichte (f)	*story*
66. Horror (m)	*horror*
67. Kino (nt)	*cinema*
68. Komödie (f)	*comedy*
69. Krimi (m)	*detective story / thriller*
70. Nachricht (f)	*news*
71. Rolle (f)	*role*
72. Sendung (f)	*programme*
73. Serie (f)	*series*
74. Star (m)	*star / celebrity*
75. Tablet (nt)	*tablet*
76. Theater (nt)	*theatre / drama*
77. Video (nt)	*video*
78. spannend	*exciting*
79. (sich) ansehen	*to watch (a film)*
80. fernsehen	*to watch TV*

spielen (to play)					
Past		***Present***		***Future***	
Ich habe…gespielt.	*I played*	**Ich spiele**	*I play/am playing*	**Ich werde…spielen.**	*I will play*
Du hast…gespielt.	*You played*	**Du spielst**	*You play/are playing*	**Du wirst…spielen.**	*You will play*
Er/sie hat…gespielt.	*He/she played*	**Er/sie spielt**	*He/she/plays / is playing*	**Er/sie wird…spielen.**	*He/she will play*
Wir haben…gespielt.	*We played*	**Wir spielen**	*We play/are playing*	**Wir werden…spielen.**	*We will play*
Sie haben…gespielt.	*They played*	**Sie spielen**	*They play/are playing*	**Sie werden…spielen.**	*They will play*

Year 10 German Term 2: Meine Welt, deine Welt (Module 3)

Familie	*Family*
1. Bruder (m) / Brüder (pl)	*brother / brothers*
2. Einzelkind (nt)	*only child*
3. Eltern (pl)	*parents*
4. Familie (f)	*family*
5. Geschwister (pl)	*siblings*
6. Groß-(mutter (f) / vater (m) / eltern (pl))	*grand-(mother / father / parents)*
7. Halb- (prefix)	*half-*
8. Hund (m)	*dog*
9. Katze (f)	*cat*
10. Mutter (f)	*mother*
11. Onkel (m)	*uncle*
12. Schwester (f)	*sister*
13. Sohn (m)	*son*
14. Stief- (prefix)	*step-*
15. Tante (f)	*aunt*
16. Tochter (f)/Töchter (pl)	*daughter / daughters*
17. Vater (m)	*father*
18....jährig	*...year(s) old*
19. jung / jünger	*young / younger*
20. wohnen	*to live*

Freunde	*Friends*
21. Charakter (m)	*character*
22. Freund(m)/ Freundin(f)	*friend / boy/girlfriend*
23. Geburtstag (m)	*birthday*
24. Gruppe (f)	*group / gang*
25. Haar (nt)	*hair*
26. Kontakt (m)	*contact*
27. Nachbar (m)	*neighbour*
28. Name (m)	*name*
29. Typ (m)	*type / guy*
30. fleißig	*hard-working*
31. Freundlich	*friendly / nice / kind*
32. Leise	*quiet*
33. Stark	*strong*
34. anrufen	*to call / to phone*
35. aussehen	*to look / appear*
36. feiern	*to celebrate*
37. kennenlernen	*to get to know*
38. stammen aus	*to come from*
39. teilen	*to share*
40. verstehen / sich verstehen mit	*to understand / to get on with*

Beziehungen	*Relationships*
41. Alter (m)	*age*
42. Generation (f)	*generation*
43. Kollege (m)/Kollegin(f)	*colleague*
44. Kommunikation (f)	*communication*
45. Konflikt (m)	*conflict*
46. Liebe (f)	*love*
47. Netz (nt)	*network*
48. Paar (nt)	*couple*
49. Partner (m)	*partner*
50. Teil (m)	*part*
51. Transgender-	*transgender*
52. bisexuell	*bisexual*
53. hetero(sexuell)	*straight*
54. lesbisch	*lesbian*
55. nicht binär	*non-binary*
56. schwul	*gay*
57. heiraten	*to marry / get married*
58. respektieren	*to respect*
59. (sich) treffen (mit)	*to meet*
60. sich verstehen (mit)	*to get on with*

Gleichwertigkeit	*Equality*
61. Behinderung (f)	*disability*
62. Diskriminierung (f)	*discrimination*
63. Einkommen (m)	*income / pay*
64. Freiheit (f)	*freedom*
65. Qualität (f)	*quality*
66. Rassismus (m)	*racism*
67. Recht (nt)	*right*
68. Religion (f)	*religion*
69. Rollstuhl (m)	*wheelchair*
70. Sexismus (m)	*Sexism*
71. Tradition (f)	*tradition*
72. arm	*poor / poorly*
73. ärmer	*poorer*
74. multikulturell	*multicultural*
75. reich	*rich*
76. religiös	*religious*
77. schwierig	*hard / difficult*
78. traditionell	*traditional*
79. ändern	*to change / alter*
80. steigen	*to rise / increase*

sein (to be)					
Past		***Present***		***Future***	
Ich war	*I was*	Ich bin	*I am*	Ich werde…sein.	*I will be*
Du warst	*You were*	Du bist	*You are*	Du wirst…sein.	*You will be*
Er/sie war Es war	*He/she was* *It was*	Er/sie ist Es ist	*He/she is* *It is*	Er/sie wird…sein. Es wird…sein.	*He/she will be* *It will be*
Wir waren	*We were*	Wir sind	*We are*	Wir werden…sein.	*We will be*
Sie waren	*They were*	Sie sind	*They are*	Sie werden…sein.	*They will be*

Knowledge Organiser – Topic One: Medieval Medicine 1250-1500

History

Medieval Britain	
1	Medieval Britain is the period between **1250-1500** also known as the 13th-16th century or the Middle Ages.
Key events	
2	**1123** Britain's first hospital, St Bartholomew's was set up in London
3	**1350** Average life expectancy is 35 years of age
4	**1348-49** The Black Death kills 1/3 of England's population
5	**1388** Parliament passes the first law requiring streets and rivers to be kept clean by the people
Key Concepts	
6	**The Medieval Church** –The official religion of medieval Britain was Roman Catholic. Daily life and power was dominated by the Church, they controlled education and many people feared God.
7	**The Four Humours.** First suggested by Greek doctor Hippocrates. **Black Bile, Yellow Bile, Blood and Phlegm.** These humours linked to elements and seasons. Hippocrates believed that if these humours became unbalanced you would get ill. To get better, you needed to balance them. Galen, a Greek doctor working in Rome continued the theory and added his own ideas. His '**Theory of Opposites**' to heal illness suggested using hot to cure cold.
8	**Medieval Power** The emphasis in Medieval Britain was on authority. The King had total power, but the Church had considerable control. People followed authority and would not question the views of King/Church as it would mean risking their lives.

Key Words		
9	**Superstition**	A belief, not based on knowledge, but on the supernatural. For example witchcraft or astrology
10	**Purging**	To rid the body of an 'excess' like blood or vomit
11	**Leeching**	The use of leeches for bloodletting
12	**Cupping**	Using glass cups to draw blood to the surface
13	**Fasting**	To avoid eating or drinking
14	**Pilgrimage**	A journey to a religious shrine and relics to show your love of God and to cure an illness
15	**Mass**	Public worship in the Roman Catholic Church
16	**Astrology**	Study of the planets and their effect on humans
17	**Miasma**	Bad air which was blamed for spreading disease
18	**Apothecary**	A medieval pharmacist or chemist
19	**Wise Woman**	A female healer, who used folk medicine and herbal remedies to cure illnesses.
20	**Vademecum**	A medieval medical book carried by doctors
21	**Urine Chart**	Used to examine urine to define an illness
22	**Physician**	A male medically trained doctor
23	**Barber Surgeon**	Untrained surgeon, who practiced basic surgery
24	**Dissection**	To cut open a human and examine the insides
25	**Epidemic**	A widespread outbreak of a disease
26	**Trepanning**	Cutting a hole in the skull
27	**Amulet**	A charm that bought protection from disease
28	**Black Death**	A term to describe the bubonic plague
29	**Monastery**	A building where monks live, eat and pray

Knowledge Organiser – Topic Three: Medicine in 18th and 19th century Britain

History

18th and 19th century Britain	
1	This was a time of breakthroughs in medicine in England. There were many scientific discoveries but also many Public Health problems.
Key events	
2	**1798** – Edward Jenner developed the first vaccine for Smallpox
3	**1847** – James Simpson developed chloroform as an anaesthetic
4	**1854** – John Snow's maps proved the source of cholera
5	**1861** – Louis Pasteur's germ theory was published
6	**1867-** Lister used antiseptic to prevent infection
7	**1875 –** The Public Health Act. Local councils had to provide sewers, drainage and fresh water as well as medical officers
8	**1882** Robert Koch identified bacteria that caused specific diseases
Key Concepts	
9	**Nursing** – Nurses are responsible for the care of patients in hospital. Before 1800, hospitals were dangerous places where death was very likely. The development of nursing changed that.
10	**Breakthrough –** a scientific discovery that dramatically alters the way people understood disease – e.g. the discovery of bacteria. This then helps the problem to be solved.
11	**Public Health –** when the government takes measures to prevent diseases spreading and to help the population become healthier. The government increasingly took on this role after the development of germ theory

Key Words		
12	**Vaccine**	The injection into the body of killed or weakened organisms to give the body resistance against disease
13	**Smallpox**	A dangerous disease causing fever that was beaten by vaccination
14	**Anaesthetic**	Drugs given to make someone unconscious before or after surgery
15	**Infection**	The formation of disease causing germs
16	**Cholera**	A bacterial infection caused by drinking water
17	**Germ Theory**	The theory that germs cause disease
18	**Antiseptic**	Chemicals used to destroy bacteria and prevent infection
19	**Medical Officer**	A person appointed to look after the public health of an area
20	**Contagion**	The passing of disease from one person to another
21	**Epidemic**	A widespread outbreak of a disease
22	**Sanitation**	Providing disposal of human waste and dispensing clean water to improve public health
23	**Workhouses**	Accommodation for poor people who could not afford to pay for rent and food.
24	**Dispensary**	A place where medicines are given out
25	**Voluntary hospital**	Hospitals supported by charitable donations
26	**Chloroform**	A liquid whose vapour acts as an anaesthetic and produces unconsciousness
27	**Industrial Revolution**	A period of British history when industries (e.g. coal, steel) transformed society

Knowledge Organiser – Topic Four: Medicine in modern Britain, 1900-Present

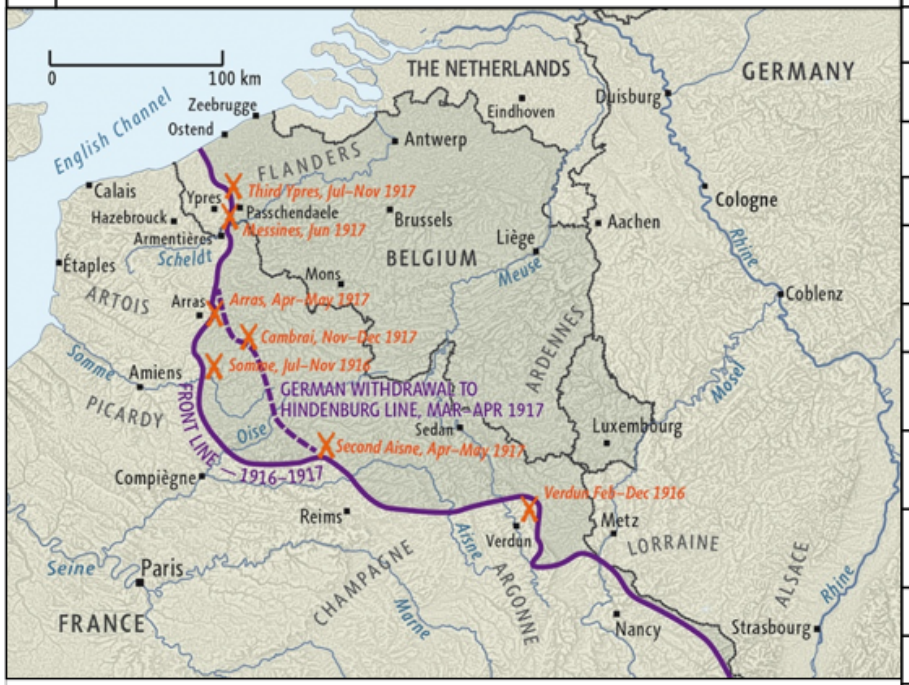
Modern Britain	
1	From 1900-Present, there have been massive changes in medicine and treatment
Key events	
2	**1900 –** life expectancy was still below 50 years of age
3	**1911 –** National Insurance Bill introduced – gave help if workers were sick or unemployed
4	**1914-1918** World War One leads to developments in surgery and treatment
5	**1928** – Fleming discovered penicillin
6	**1938 –** Florey and Chain developed use of penicillin
7	**1948 –** The NHS begins following the Beveridge report (1942)
8	**1953** – Crick and Watson discovered the structure of DNA
Key Concepts	
9	**War** – World War One and World War Two forced developments in treatment and surgery – e.g. plastic surgery and the use of antibiotics in WW2.
10	**Technology** – huge improvements in technology greatly improved the understanding and treatment of disease – e.g. X-ray, DNA, Pacemakers, dialysis and keyhole surgery
11	**National Health Service** - After WW2, the government introduced the NHS in 1948. This offered free healthcare at the point of delivery. The expansion of who could vote and the shared experience of suffering in WW2 bought about this development.

Key Words		
12	**X-Ray**	Technology using particular light rays . Used in WW1 to locate bullets in the body.
13	**Transplant**	When a faulty or damaged organ (e.g. liver) is swapped with a healthy one through surgery
14	**Radiotherapy /Chemotherapy**	Treatment of a disease, such as cancer, by the use of chemicals
15	**Superbugs**	Bacteria that are not affected/destroyed by antibiotics or cleaning
16	**Gene therapy**	Medical treatment using normal genes to replace defective ones.
17	**Dialysis**	Technology that replicates the function of the kidneys
18	**Polio**	A contagious disease that can cause paralysis and death
19	**Penicillin**	The first antibiotic drug produced from the mould of penicillin to treat infections
20	**Pacemaker**	Implanted technology that regulates heartbeat
21	**Antibiotics**	A drug made from bacteria that kill other bacteria and so cure an infection or illness
22	**Magic bullets**	A chemical that kills a particular bacteria and nothing else
23	**Electron microscope**	Developed 1931. Allows doctors to see cells in fine detail.
24	**DNA**	Deoxyribonucleic acid, the molecule that genes are made of
25	**Cancer**	A group of related diseases. Cells divide and spread into the surrounding tissue.

Knowledge Organiser - The historic environment: The British sector of the Western Front 1914-18: injuries, treatment and the trenches

The Western Front

1	**The Western Front** is a stretch of land through France and Belgium where most of the fighting took pace during WW1. It is where most of the main battles occurred.



Key Events

2	**August 1914** The war begins
3	**August-September 1914** The first trenches are built on both sides of the war
4	**October-November 1914** First Battle of Ypres
5	**April-May 1915** Second Battle of Ypres
6	**February-December 1916** Battle of Verdun
7	**July-November 1916** The Battle of the Somme
8	**July-November 1917** Third Battle of Ypres
9	**November-December 1917** Battle of Cambrai
10	**Summer and autumn 1918** The final months of the war

Key Words

11	**Battalion**	A large body of troops, forming part of a brigade
12	**Trench**	Long, narrow ditches dug into the ground where soldiers lived all day and night
13	**Artillery**	Large-caliber guns used in warfare on land
14	**Shrapnel**	Fragments of a bomb, shell or other object thrown out by an explosion
15	**Triage**	The system of splitting the wounded into groups according to who needed the most urgent attention
16	**Evacuation**	In this context, meaning the clearing of a body (dead or alive) from the battle ground to seek medical attention
17	**Antiseptic**	A type of surgery that kills germs in wounds
18	**Aseptic**	A type of surgery that prevents germs reaching wounds
19	**Blood transfusion**	An injection of a volume of blood, previously taken from a healthy person, into a patient
20	**Chlorine gas**	A biological weapon first used by the Germans at the Second Battle of Ypres
21	**Trench foot**	A painful condition of the feet caused by the cold, deep water and mud of the trench
22	**Infection**	The process of infecting or state of being infected
24	**Terrain**	The type of ground (hilly, muddy, flat, easy to walk on)

1.1.1 Functionality of different hardware devices (a)

Computing devices

A computing device is any piece of equipment that can be connected to a computer's motherboard. These include input, output, and storage devices.

Input devices

Input devices are used to enter data into a computer.

- **Mouse:** Controls the pointer on screen for selecting items, dragging, scrolling or controlling tools. Variations include gaming mice (ergonomic designs with custom buttons) and trackball mice (stationary devices that use a rolling ball).
- **Touchpad:** Built into laptops; used for pointer control when space is limited or for portability.
- **Keyboard:**
  - **QWERTY:** Quick way to enter data, especially for those who can touch-type.
  - **Dvorak/Colemak:** Keyboards designed to decrease wrist strain.
  - **Braille:** Raised patterns for visually impaired users.
  - **Concept:** Keys with symbols for specific tasks (for example fast food orders).
- **Scanner:**
  - **Flatbed:** Captures images of hard copy documents, transferring them to the computer.
  - **Handheld:** Portable, useful for items in shops that are too large for a flatbed scanner or located in awkward spaces.
- **Digital camera/webcam:** Capture images and video for transfer to a computer, communication (such as video calls) or security (such as iris recognition).
- **Graphics tablet:** Allows drawing or tracing with a stylus to transfer illustrations to the computer. Useful for precise drawing or entering complex symbols.
- **Joystick:** Hand-held device for controlling movement in computer games and simulation software.
- **Microphone:** Inputs sound for gaming, online meetings or voice commands/text input.
- **MIDI keyboard:** Sends signals via USB or MIDI cable. You can use it like a piano keyboard and transfer sound to a computer for editing and storage.
- **QR code reader:** Scans QR codes – often via mobile phone – to retrieve information such as text or website links, or for authentication.
- **Barcode reader:** Transfers information from barcodes to the computer, commonly used in retail for pricing and stock control.
- **Optical mark reader (OMR):** Reads marked positions on documents. OMR is used for surveys, registers, multiple-choice exams and scanning lottery tickets.
- **Magnetic ink character recognition (MICR):** Reads magnetic ink characters on cheques, primarily used by banks for fast and secure processing.
- **Magnetic stripe readers:** Read data from magnetic stripes on cards (credit, debit, library, hotel keys).
- **Radio-frequency identification (RFID) readers:** RFID tags allow item tracking via radio waves without line-of-sight, useful for supply chains and tracing livestock.
- **Near-field communication (NFC)**: Derived from RFID, NFC enables short-range, secure data transfer for applications like contactless smartphone payments.
- **Sensors:** Record and input data on environmental conditions like temperature, light, pressure or pH levels. Useful for continuous monitoring in various environments.
- **Biometric devices:** Input unique physical characteristics, such as fingerprints, facial features or iris scans, for identification and security.

Output devices

Output devices allow users to receive data from the computer in audio, visual or hard copy forms.

- **Screen/monitor:** Displays visual output, allowing users to view and edit documents, images and videos. Higher resolution provides sharper images.
- **Projector:** Displays computer output onto a large screen, ideal for presentations to large audiences.
- **Speakers:** Produce sound output, essential for music, videos, game audio and alerts. Important for visually impaired users with screen readers.
- **Headphones:** Deliver sound privately to an individual, useful in shared environments or for privacy.

Printers and plotters: There are several different types of printers. They all produce hard copy output, but each has a slightly different functionality.

- **Ink-jet printer:** A common choice for home use; affordable and provides good print quality at moderate speeds.
- **Laser printer:** Faster, higher-quality and more economical per page for high-volume printing (such as in businesses). Uses toner instead of ink.
- **Dot matrix printer:** Uses pins to strike an inked ribbon; robust and capable of printing multiple carbon copies. Lower print quality, but durable in harsh environments.
- **Thermal printer:** Uses heat on coated paper to create black-and-white images, with some models supporting two-colour printing.
- **Dye-sublimation printer:** Uses heat to print on non-paper materials such as plastic, fabric or card (for example ID badges and banners).
- **Plotter:** Creates large-scale vector graphics drawings – such as maps or architectural plans – or cuts shapes into materials.
- **3D printer:** Creates 3D objects using additive manufacturing, building layer by layer. Uses CAD software and materials such as plastic or resin.

Computing devices

A computing device is any piece of equipment that can be connected to a computer's central processing unit (CPU). These include input, output and storage devices.

Storage devices

Storage devices are used to store data. These devices can be internal or external (to a computer system) and can be magnetic, solid-state or optical. The choice depends on capacity, portability, speed and cost.

- **Hard disk drive (HDD):** A magnetic storage device, internal or external, offering large, cost-effective storage for files, media, software and the operating system with fast access.
- **Solid-state drive (SSD):** Uses integrated circuits and flash memory to store data; has no moving parts, is durable, silent and very fast. More expensive per GB than HDDs.
- **Magnetic tape drive:** Magnetic storage with large capacity, but access speeds are slow.
- **USB Pen/stick:** Portable solid-state device with USB connection; robust, light and compatible with many devices.
- **Memory card:** Small, portable solid-state device for mobile phones and other devices, offering large storage at a reasonable cost.
- **CDs/DVDs:** Optical storage; CDs for moderate capacity (music), DVDs for larger capacity (films).
  - **CD-ROM/DVD-ROM:** Read-only.
  - **CD-R/DVD-R:** Write once.
  - **CD-RW/DVD-RW:** Rewritable multiple times.
- **Blu-ray:** Optical storage with a larger capacity and faster access than DVDs, useful for high-definition media.
- **Cloud storage:** Data stored remotely on servers, accessible via the Internet. Users pay monthly for rented capacity.

Basic internal components

These are inside the computer device and allow the system to function.

- **Motherboard:** The main circuit board, connecting and allowing communication between all internal components and distributing power.
- **Network interface card (NIC):** Allows the computer to connect to a network and controls data flow.
- **Sound card:** Generates and processes audio, converting between analogue and digital data for recording and playback.
- **Graphics/video card:** Outputs images to a display device, controlling screen pixels. Essential for high-quality visuals, especially in gaming.
- **Central processing unit (CPU):** The CPU has three parts:
  - **Control unit (CU):** Manages instructions and data transfer, facilitating communication between components.
  - **RAM/Immediate access store (IAS):** Temporarily holds data and currently running programs.
  - **Arithmetic-logic unit (ALU):** Performs calculations (for example addition, subtraction, multiplication and division) and logical operations (for example AND, OR and NOT).

Ports

A **port** is a physical socket on the computer acting as an interface for connecting input and output devices.

- **Serial port:** Widely used by sensors when collecting data that transfers sequentially (in order, one bit at a time).
- **Parallel port:** Transfers multiple bits of data at a time in parallel; used by printers, hard drives and modems.
- **VGA port:** Sends analogue video signals to connect monitors, projectors or TVs. This port is currently being phased out of computers.
- **HDMI port:** Digital port for high-definition audio and video; now standard for connecting modern audio-visual devices.
- **DVI port:** Supports both analogue and digital video signals for display devices. Used to send high-quality digital video and audio to a display device, such as a screen.
- **USB port:** Universal Serial Bus; industry standard for short-distance digital data transfer and charging. Replaced many other data ports.
- **DisplayPort:** Connects video sources to monitors; can also transfer audio and other data.
- **Ethernet port (802.3):** Allows wired network hardware to connect to a network or provides an Internet connection via Ethernet cables.

1.1.2 Functionality of different software

System software

A computer cannot run without system software which includes the computer's operating system and device drivers. It runs in the background to manage hardware and applications.

- **Operating systems (OS):** The interface between the user and the machine. An OS manages computer resources (for example CPU, memory and peripherals), executes application software, provides security (user accounts and passwords) and organises files. Multi-tasking allows several processes to run simultaneously.
  - **Graphical user interface (GUI):** Uses graphics, like icons, for user interaction (for example Microsoft Windows).
  - **Command line interface (CLI):** Requires users to type instructions (for example MS-DOS).
- **Device drivers:** Software files that enable communication between hardware devices and the operating system. They translate generic software instructions into specific commands for a particular device. Regular updates are important.

Applications software

Applications software is designed to perform specific tasks for an end user, often available in related 'suites'.

- **Word processing:** Creates text-based documents (letters/reports). Features include page layout, text styles, formatting, spell/grammar check and track changes.
- **Desktop publishing (DTP):** Used for creating documents like posters, calendars, brochures and newsletters using templates, frames and colour schemes.
- **Presentation:** Creates slide shows – for informing or engaging audiences – with features such as animations, transitions, sound and video.
- **Spreadsheet:** Organises data in cells (rows and columns) for financial analysis. Uses formulae for calculations, allows 'what if' investigations and presents data visually with charts and data validation.
- **Database:** A collection of organised data (fields, records, tables). Tables can be linked and specific information can be searched/sorted quickly using queries. Reports can be produced and forms simplify data entry.

Graphics packages

Graphics software gives the user the ability to create and manipulate graphics for artwork.

- **Photo editing:** Enhances and manipulates digital images using features like airbrushing, cropping and red-eye removal.
- **Video editing:** Cuts, rearranges and adds effects (subtitles, slow motion, fading) to video footage for better flow.
- **Webpage editor:** Provides a visual interface for creating and maintaining web pages, with features such as HTML/CSS autocomplete and split-screen views.
- **Computer-aided design (CAD):** Used for design work (for example in manufacturing and architecture). Allows viewing designs from any angle, with powerful scaling, rotation and reflection options.
- **Computer-aided manufacturing (CAM):** Implements designs created in CAD packages. The process is controlled by the computer to produce items quickly and efficiently.

Utility software

Utility software enables the user to analyse, configure, optimise or maintain a computer. A basic set is often included with the operating system.

- **Anti-virus:** Detects, blocks, deletes or quarantines computer viruses. Requires regular updates to protect against new viruses.
- **Firewall:** Monitors incoming and outgoing network traffic, allowing or blocking it according to security rules and acting as a digital barrier.
- **System cleaner:** Frees up disk space by removing unnecessary files (for example temporary files and system logs) and managing background processes.
- **Package installer:** Installs software – such as applications and drivers – onto the computer.
- **File explorer:** A graphical user interface (GUI) for accessing and managing file systems.
- **Encryption:** Scrambles sensitive data using complex algorithms, making it unreadable without a decryption key. Can be applied to emails, files, folders or entire drives.
- **Disk defragmentation:** Rearranges file fragments on hard disks for faster access by grouping them together. (Not beneficial for solid-state drives (SSDs)).
- **Data compression:** Reduces the number of bits needed to represent data, allowing quicker transfer.
  - **Lossy compression:** Reduces a file's size, but data is lost from the file and cannot be recovered.
  - **Lossless compression:** Reduces a file's size, but the data in the file can be restored entirely to its original form.
- **Backup:** Copies data from a hard drive to another location (for example flash drive or cloud storage) to prevent data loss. Features include scheduling and incremental backups.

Specialist software

Specialist software is designed for one specific task, for example payroll packages and stock control.

Information handling software

Includes standard application software and specific tools like customer relationship management (CRM) for managing customer interactions across departments.

Open source software

Software that is free and available for anyone to use, modify and distribute its source code. Mozilla Firefox and Open Office are both examples of open source software.

Communication software

Transfers information from one system to another. Examples are file transfer protocol (FTP), voice over Internet protocol (VoIP), messaging software and email.

Mathematics

10.1 Congruency, Similarity and Enlargement

Key words	
Enlarge	To make a shape bigger or smaller by a given multiplier (scale factor)
Scale Factor	The Multiplier of enlargement
Centre of Enlargement	The point the shape is enlarged from
Similar	When one shape can become another with an enlargement
Congruent	The same size and shape
Corresponding	Items that appear in the same place in two similar situations
Parallel	Straight lines that never meet

Solve equations: M902, U738

Form & solve inequalities: U759, U337, U738

Inequalities on a number line: U509

Plotting straight line graphs: U741

Find solutions graphically: U836

Sparx

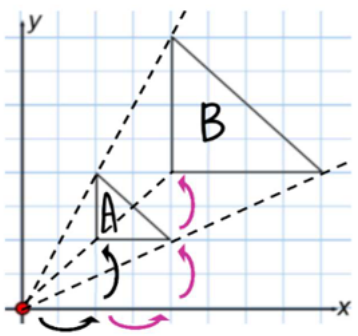
Positive scale factors R

Enlargement from a point

Enlarge shape A by SF 2 from (0,0)

The shape is enlarged by 2

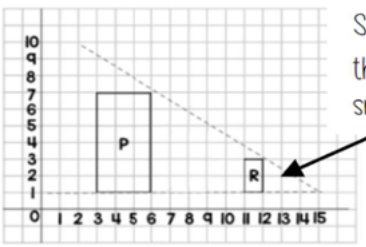
The distance from the point enlarges by 2



Fractional scale factors R

Fractions less than 1 make a shape SMALLER

R is an enlargement of P by a scale factor $\frac{1}{3}$ from centre of enlargement (15, 1)



SF $\frac{1}{3}$ - R is three times smaller than P

Mathematics

10.2 Pythagoras and Trigonometry

Key words	
Enlarge	To make a shape bigger or smaller by a given multiplier (scale factor)
Scale Factor	The Multiplier of enlargement
Constant	A value that remains the same
Sine Ratio	The ratio of the opposite side to the hypotenuse
Cosine Ratio	The ratio of the adjacent side to the hypotenuse
Tangent Ratio	The ratio of the opposite side to the adjacent.
Inverse	Function that has the **opposite** effect
Hypotenuse	Longest side of a right-angled triangle. It is opposite the right-angle

Understanding Sin, Cos & Tan: U605

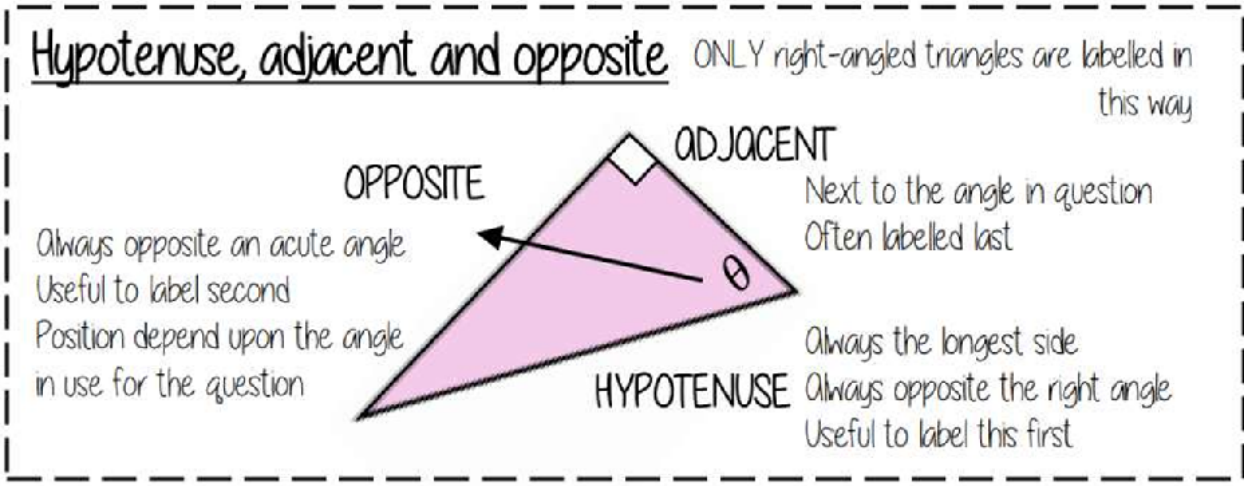
Finding unknown sides and angles: U283, U545

Trigonometry in 3D: U170

Use the area rule: U592

Use the sine and cosine rule: U952, U591

Sparx



Mathematics

10.3 Representing solutions of equations & inequalities

Key words	
Solution	A value we can put in place of a variable that makes the equation true
Variable	A symbol for a number we don't know yet
Equation	An equation says that two things are equal $=$
Expression	Numbers, symbols and operations grouped together to show the value of something
Identity	An equation where both sides have variable that cause the same answer – always equal $\equiv$
Linear	An equation of a straight line
Intersection	The point that two lines meet
Inequality	Compares two values showing if one is greater than, less than or equal to another $< > \leq \geq$

Solve equations: M902, U738

Form & solve inequalities: U759, U337, U738

Inequalities on a number line: U509

Plotting straight line graphs: U741

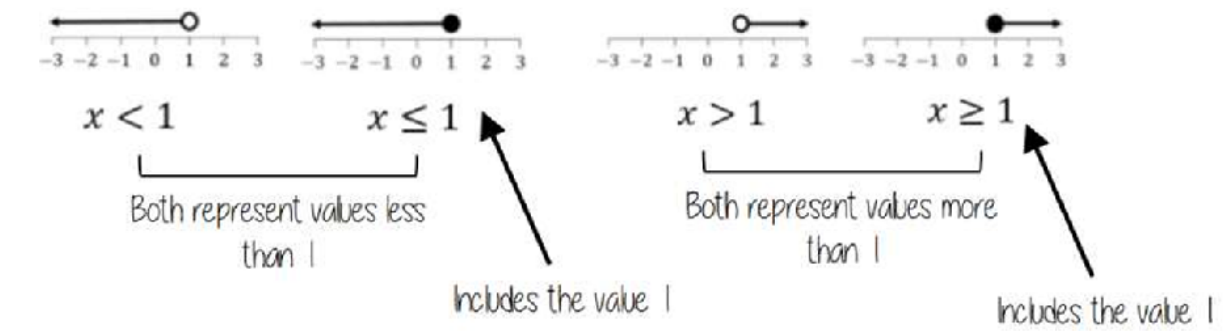
Find solutions graphically: U836

Sparx

● Includes the value it sits above

○ Does NOT include the value it sits above

Solutions on a number line



Mathematics

10.4 Simultaneous equations

Key words	
Solution	A value we can put in place of a variable that makes the equation true
Variable	A symbol for a number we don't know yet
Equation	An equation says that two things are equal $=$
Substitute	Replace a variable with a number
LCM	Lowest Common Multiple
Eliminate	To remove or get rid of
Expression	A maths sentence with at least one operation with no equals sign
Coordinate	A set of values that show an exact point (x, y)
Intersection	The point that two lines meet

Solving simultaneous equations graphically: U836

Substituting into expressions: U201

Solving simultaneous equations using elimination: U760

Solving simultaneous equations using substitution: U757

Sparx

<u>Higher only</u>

Solving simultaneous equations involving quadratics: U547

Solving simultaneous equations involving quadratics graphically: U875

Constructing and solving linear simultaneous equations: U137

Constructing and solving linear and quadratic simultaneous equations: U269

Solving simultaneous equations, means find the values of x and y that satisfies BOTH equations at the same time.

If $x + y = 12$ and $x - y = 6$ Then $x = 9$ *and* $y = 3$

Mathematics

10.5 Angles and Bearings

Key words	
Cardinal Directions	The directions on a compass North, East, South and West
Angle	The amount of turn between two lines around a common point
Bearing	The angle in degrees measure clockwise from North
Perpendicular	Where two lines meet at 90°
Parallel	Straight lines the same distance apart. They have the same gradient
Clockwise	Move in the direction of the hands on a clock
Construct	To draw accurately using compass, protractor, ruler and pencil
Scale	The ratio of the length of a drawing to the length in real life
Protractor	Equipment used to measure and draw angles

Angles in Parallel Lines: U826, U329

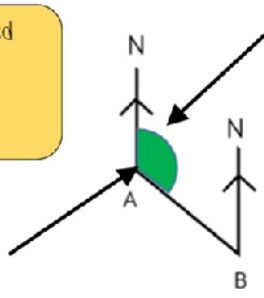
Bearings: U525, U107

Scale Diagrams: U257

Sparx

Understand and represent bearings

- A bearing is always measured from NORTH
- It is always given as three figures



The angle indicated starts from the North line at A and joins the path connecting A to B.

This angle shows the bearing of **B from A**

The bearing of B from A is calculated by measuring the highlighted angle.

The sentence... "Bearing of ____ from _____" is really important in identifying the bearing being represented.

Using estimation it is clear this angle is between 090° and 180°

Personal Development

Year 10 Mental Health	
Term	**Definition**
Mental Health	A person's emotional, psychological, and social well-being.
Wellbeing	The state of being comfortable, healthy, or happy.
Stress	The body's reaction to pressure or challenging situations.
Anxiety	A feeling of worry or fear, often about what might happen.
Depression	A long-lasting low mood that affects daily life.
Stigma	Negative attitudes or discrimination towards people with mental illness.
Resilience	The ability to recover from difficulties or setbacks.
Self-care	Activities that support mental, physical, and emotional health.
Support Network	People who offer help and emotional support (e.g., friends, family).
Therapy	Treatment of mental health issues by talking to a trained professional.

Types of Mental Health Issues

Anxiety Disorders	Include panic attacks, phobias, social anxiety.
Depression	Ongoing sadness, loss of interest in life, fatigue.
Eating Disorders	Such as anorexia or bulimia, where food and weight control dominate life.
OCD	Obsessive Compulsive Disorder: unwanted thoughts and repetitive behaviours.
PTSD	Post-Traumatic Stress Disorder: caused by traumatic experiences.

Causes and triggers

- Genetics/family history
- Trauma or abuse
- Academic pressure
- Social media/online bullying
- Loneliness or isolation
- Substance misuse
- Major life changes (e.g. divorce, loss)

Strategies for Good Mental Health

- Talk about your feelings
- Stay physically active
- Eat well
- Get enough sleep
- Practice mindfulness
- Stay connected with others
- Ask for help when needed

Support services

CAHMS	Child and Adolescent Mental Health Service – NHS support for under 18s
Kooth	Free, anonymous online support and counselling
YoungMinds	Mental health charity for young people – advice and resources
Samaritans	24/7 support for anyone in distress (Call 116 123)
Mind (in Somerset)	A charity that provides free online support and a phoneline (call 01823 276892 or email info@mindinsomerset.org.uk
School	Talk to any member of staff
GP	Book a doctors appointment

Personal Development

Year 10 Financial Decision Making	
Budget	A plan for managing income and expenses
Income	Money received (e.g. wages, benefits, pocket money)
Expenditure	Money spent on goods and services
Needs	Essential items (e.g. food, shelter, clothing)
Wants	Non-essential items (e.g. games)
Savings	Money set aside for future use
Debt	Money owed to others, usually with interest
Interest	A cost of borrowing money or the reward for saving
Credit	Borrowed money that must be paid back
Loan	Money borrowed that must be repaid, often with interest
Overdraft	Spending more money than is in a bank account
Credit score	A number showing a reliable someone is at repaying borrowed money

Making a budget

1. Calculate your income
2. List your expenses
3. Separate needs from wants
4. Set savings goals
5. Review and adjust regularly

Financial products

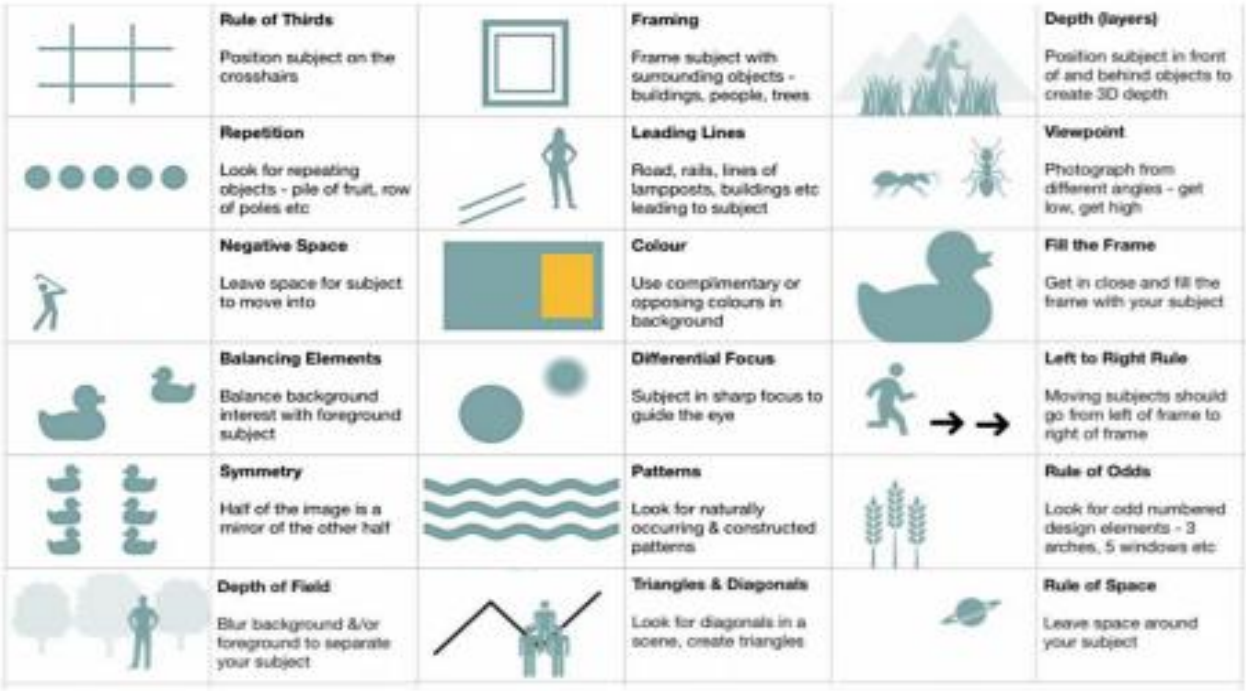
Bank account	A place to store money safely; can include savings and current accounts
Debit card	Directly linked to your bank account – spend your own money
Credit card	Borrow money to spend – must be paid back, often with interest
Loan	Money borrowed from a bank or lender – repaid over time with interest
Buy now, pay later	Delays payment – but can lead to debt if not managed carefully

Common financial pitfalls	Smart financial habits
Spending more than you earn	Save a small amount regularly
Not budgeting	Compare prices before buying
Impulse buying	Use budgeting apps or trackers
Ignoring debt	Understand the terms of any credit or loans
Not saving for emergencies	Set short- and long-term financial goals
Falling for scams	

Photography

Creating a great photograph

Composition needs to be considered when setting up a photograph. There are different compositional elements which can be used; use one or more elements to create a composition that works for the image.



	Rule of Thirds Position subject on the crosshairs		**Framing** Frame subject with surrounding objects - buildings, people, trees		**Depth (layers)** Position subject in front of and behind objects to create 3D depth
	Repetition Look for repeating objects - pile of fruit, row of poles etc		**Leading Lines** Road, rails, lines of lampposts, buildings etc leading to subject		**Viewpoint** Photograph from different angles - get low, get high
	Negative Space Leave space for subject to move into		**Colour** Use complimentary or opposing colours in background		**Fill the Frame** Get in close and fill the frame with your subject
	Balancing Elements Balance background interest with foreground subject		**Differential Focus** Subject in sharp focus to guide the eye		**Left to Right Rule** Moving subjects should go from left of frame to right of frame
	Symmetry Half of the image is a mirror of the other half		**Patterns** Look for naturally occurring & constructed patterns		**Rule of Odds** Look for odd numbered design elements - 3 arches, 5 windows etc
	Depth of Field Blur background &/or foreground to separate your subject		**Triangles & Diagonals** Look for diagonals in a scene, create triangles		**Rule of Space** Leave space around your subject

Viewpoint/Perspective

- Birds-eye view: From above facing downward
- Worm's eye view: From below facing upward
- Eye-line: At standing height

These perspectives can have an impact on how viewers feel about the photograph and how it is perceived.

Depth of Field

The aperture setting you choose will dramatically impact the composition of an image. It can isolate a subject from its background and foreground (when using a shallow DofF) or it can put the same subject in context by revealing it's surroundings with a larger DofF.

A Great Photographic Composition

RULE OF THIRDS



FIBONACCI SPIRAL



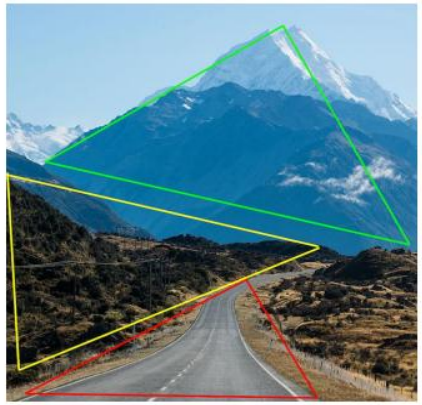


FRAMING DEPTH



SYMMETRY

GOLDEN TRIANGLES





VANISHING POINT

LANDSCAPE DEPTH

LEADING LINES

PHI GRID





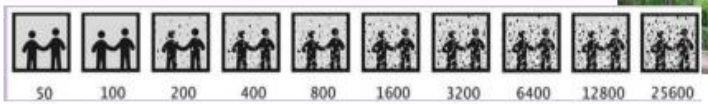


LINES AND PATTERNS

Camera Settings Knowledge Organiser

ISO is how much light is let into the camera and controls how light or dark an image is. The higher the number, the brighter the image. ISO does affect the image by making it grainier or creating 'noise' so photographers try to use as low an ISO as is possible.





ISO 100-200 Daylight

ISO 200-400 Shade/ Indoors

ISO 400-800 Flash Indoors

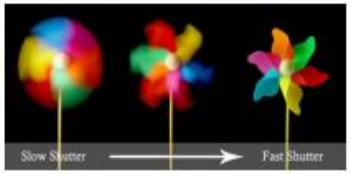
ISO 800-1600 Darker Indoors

ISO 1600-3200 Indoors at Night

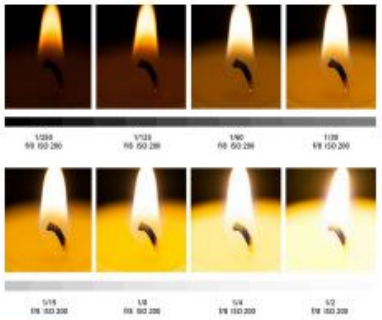
ISO 3200+ Extra Low Light



SHUTTER SPEED is how quickly the shutter of the lens opens and closes. The measurement used to measure shutter speed is a fraction and shows how long the shutter is open. For example 1/4 is a quarter of a second; 3" indicates three seconds. Shutter speed is also used to control exposure; too bright is 'overexposed' and too dark is 'underexposed.' Shutter speed is very important for capturing movement and action.

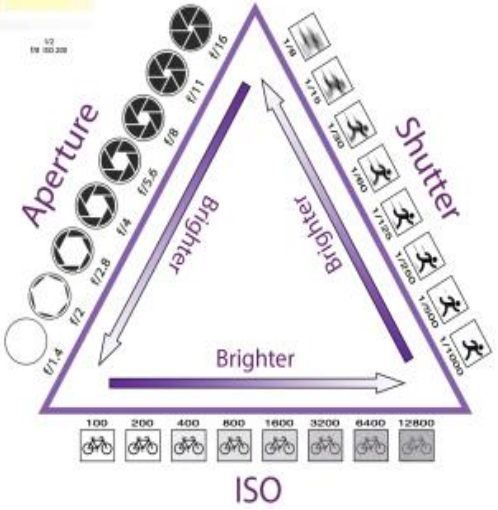




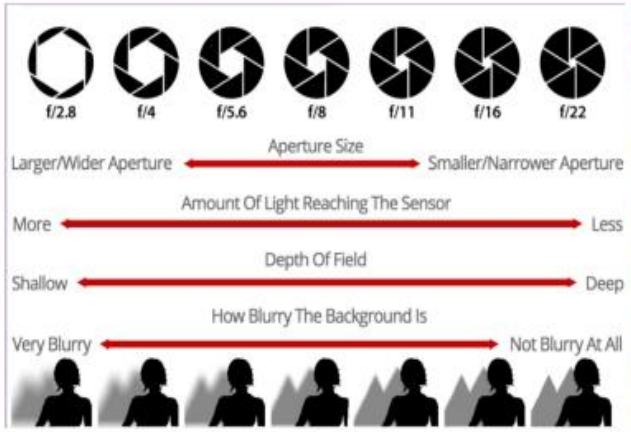


EXPOSURE TRIANGLE

The exposure triangle shows how to balance the ISO, Shutter Speed or Aperture in order to create well exposed and creative photographs...



APERTURE is how open or closed the lens is, which allows light to pass through. It is often abbreviated as A or AV on a camera mode. Importantly, aperture controls Depth of Field. To capture detailed shapes close up, used a low (wide) aperture such as f/2.8. To capture lots of shapes in the distance use a high (shallow) aperture such as f/22.



MANUAL MODE

Use M mode on your DSLR camera for full control of these camera settings. This shows more skill, knowledge and understanding = more marks!

GCSE PE

Cardiac Output -The volume of blood pumped per minute by each ventricle of the heart. Cardiac output = stroke volume x heart rate. Measured in litres/min.

Cardio-respiratory system The combination of the cardiovascular and respiratory systems working together to deliver O2 and remove CO2 from the body.

Double circulatory system The body has 2 systems which circulate blood. The systemic system delivers oxygen to working muscles and the pulmonary system collects oxygen from the lungs.

Haemoglobin is found if red blood cells and binds with oxygen to carry it to wear it is needed

Heart rate The number of times the heart beats per minute (bpm)

Pulmonary Artery A blood vessel which transports deoxygenated blood from the heart to the lungs

Pulmonary Circulatory System A network of blood vessels which transport blood to and from the lungs to collect oxygen and remove carbon dioxide.

Pulmonary Vein A blood vessel which transports oxygenated blood from the lungs to the heart

Red blood cells Produced in bone marrow and contain haemoglobin. They carry and deliver oxygen around the body

Septum the wall which separates the sides of the heart

Stroke Volume The amount of blood pumped out of the left ventricle during each contraction, measured in ml

Systemic Circulatory System A network of blood vessels which transport blood to and from the body to deliver oxygen and collect carbon dioxide

Veins Blood vessels which carry blood towards the heart. Carrying blood at low pressure, they have valves, thin walls, large lumens and normally carry deoxygenated blood

Vena Cava the largest vein which carries deoxygenated blood back to the heart

Ventricles The two large, lower chambers of the heart

1.1.b. Muscular System Key Terms

Agonist The muscle that works to create the movement

Antagonist The muscle that relaxes & lengthens to allow movement to occur

Antagonistic muscle action - A pair of muscles that work together to produce movement, with one muscle contracting whilst the other muscle relaxes

Fixator A muscle that assists movement by supporting or stabilising joints and the rest of the body

Insertion where the contracting muscle attaches to the bone it moves

Origin The end of the muscle which is attached to a bone that is stable and doesn't during muscular contraction

Tendon Tough, flexible bands of fibrous tissue which join muscle to bone (or other muscles) allowing bones to move when muscles contract

1.1.d. Cardiovascular System Key Terms

Atrium The 2 small, upper chambers of the heart

Arteries Blood vessels which carry blood away from the heart. Carrying blood at high pressure, they have thick walls, smaller lumens and normally carry oxygenated blood.

Aorta The largest artery in the body which carries oxygenated blood away from the heart

Blood Pressure How strongly the blood pushes against the walls of the blood vessels

Blood Pressure How strongly the blood pushes against the walls of the blood vessels

Blood vessels - Tubular structures that carry blood around our bodies

Capillaries Small blood vessels with very thin walls very small lumen for diffusion to take place

Capillarisation The development of blood capillaries in the body which increases through long term effects of exercise

1.1.c Movement Analysis Key Terms

Frontal axis of rotation An axis which runs from the front to the back of the body (gymnast performing a cartwheel)

Lever system Where the body's muscles pull on the bones to create movement. They can be either 1st, 2nd or 3rd class levers. 1, 2, 3= F, L, E!

Longitudinal axis of rotation Passes vertically from the top to the bottom of your body. A discus throw uses this axis

Mechanical advantage 1st and 2nd class levers provide a mechanical advantage. This means a large load can me moved with a smaller amount of effort from the muscles

Planes of movement Imaginary flat surfaces which run through the body. There are 3, sagittal, transverse & frontal

Rotation Movement of body or body part in a clockwise or anti clockwise direction

Sagittal plane An imaginary flat surface which divides the body vertically into left and right sides

Second class lever A lever where the load and the effort are on the same side as the fulcrum, with the load near the fulcrum

Third class lever A level where the effort is placed between the load and the fulcrum. The effort must travel a shorter distance and be greater than the load

Transverse axis of rotation An imaginary line which runs through the body from left to right. A somersault uses this axis

Transverse plane -An imaginary flat surface which divides the body into top and bottom

1.1.d. Respiratory System Key Terms

Aerobic capacity The maximum amount of oxygen your body can take in and use, measured with the V02 max test

Aerobic Exercise/Activity When oxygen is used for the duration of exercise to make energy, usually at moderate intensity at a continuous rate.

Alveoli Small air sacks in the lungs which are the site of gas exchange.

Anaerobic Exercise/Activity 'Without oxygen'. High intensity exercise for short periods of time where oxygen is not predominantly used to produce energy

Breathing rate number of breaths taken per minute

Gas exchange The movement of O2 and CO2 between the alveoli and capillaries and the working muscles and capillaries.

Minute ventilation (minute volume) Then volume of gas inhaled OR exhaled from the lungs in 1 minute

Mitochondria the place in each muscle cell where energy is produced

Respiratory Muscles Muscles which help air move in and out of the lungs (diaphragm and intercostals)

Respiration system gets oxygen into the body and removes carbon dioxide. Its made up of the mouth/nose – bronchi- bronchioles and alveoli

Tidal volume The amount of air breathed in or out in one breath. Measured in ml

Trachea (windpipe) The pipe which connects the nose/mouth to the bronc

WADHAM KS3 PE KNOWLEDGE ORGANISER: Basketball

Physical Education

Skills and Techniques:

Dribbling Used to keeppossession of the ball and travel around the court.The ball should be kept close to the body at all times (under control). Use your finger tips to 'push' the ball into the floor. Keep your eyes up.

Shooting Focus eyes on the target. Point feet towards 11 o'clock, elbow under the ball. Use your knees to generate power, Roll the ball off the fingertips to create back spin. 'Hand in the cookie jar' follow through.

Passing Used to move the ball up the court quickly. Anotherway for the team to maintain possession. Can be used to find a better scoring or dribbling opportunity. There are four types; chest, bounce, shoulder and javelin.

Rules:

- A game consists of four, 10-minute quarters.
- There are 2 or 3 referees.
- The game is started with a tip-off. The referee throws the ball in the air. Opposing players must try and win the ball by hitting it back to their teammates.
- The ball can move up the court by passing or dribbling.
- A player can only use one hand at a time to dribble the ball. A player can no longer dribble when they put two hands on the ball.

Positions:

5 players in a team

Point guard directs play going forward.

Shooting guard is the main shooter in the team but it is usually from long distance.

Small forward is normally the tallest player, shooting is a keypart of their game.

Centre will look to score from close to the basket and also block shots and deal withrebounds.

Power Forward specialises on the rebounds and defence.

Scoring System:

Inside three-pt line
Baskets scored within the 3-point lines are worth two points

Outside the three-pt line. These baskets will be rewarded with 3 points.

Free throw line A free throw is worth one point. It is an unchallenged shot at the basket. This is awarded after a technical foul, or a personal foul on a player in the act of shooting.

Tactics:

Defending tactics- Full courtand half court press

Attacking tactics -rebounding and manipulating the speed of play.

Key Words:

Chest pass
Bounce pass
Overhead pass
Javelin pass
Dribbling
Triple threat
Double dribble

Key Words:

- Basket
- Backboard
- Key
- Free throw
- Lay-up
- Tip-off
- Travelling
- Hand in the cookie jar

'Life in all its fullness' John 10:10

WADHAM KS3 PE KNOWLEDGE ORGANISER: NETBALL

Physical Education

Skills and Techniques:

Chest pass: Most accurate pass. Hands form W shape behind ball. Step forward into pass, keep elbows close to body. Push through with ball.

Shoulder Pass: Used to cover bigger distances. Place throwing hand behind ball, move opposite foot in front of body. Fully extend arm when passing, following through with pass.

Bounce Pass: Used when space is restricted.Standing with one foot forward. Push ball into floor.

Overhead Pass: Used for distance or height. Place the ball over your head, hands in the W position. Push through the ball and step forward.

Shooting: Ball on fingertips, use non-throwing hand to steady ball. Bend knees and elbows, liftingball up to net.

Rules:

- Matches last for 1 hour and are split into 15-minute quarters.
- The game is started by one 'centre' stepping into the centre circle and then passing the ball.
- Two umpires officiate the game.
- Players are not allowed to travel (run) with the ball
- Players must remain within their designated zones
- A defending player must defend from at least 1m away from the opposition player with the ball.
- It is a non-contact sport
- A player can only hold the ball for 3 seconds

Positions:

7 players on a team

GK - Goalkeeper
GD - Goal Defense
WD - Wing Defense
C - Centre
WA - Wing Attack
GA - Goal Attack
GS - Goal Shooter

Scoring System:

To score a goal, a player must shoot within the goal area (D) and the ball must fall through the opposition's goal ring.

The team with the most points at the end of the game wins.

Tactics:

Quick Passing

Dodging and changing speed to receive ball.

Key Words:

Chest Pass
Bounce Pass
Shoulder Pass
Overhead Pass
Centre Pass
Defensive Third
Centre Third
Attacking Third
Goal
Goal Area

Key Words:

Pivot
Footwork
Contact
Held ball
Obstruction
Intercept
Marking
Penalty

'Life in all its fullness' John 10:10

WADHAM KS3 PE KNOWLEDGE ORGANISER: Football

Skills and Techniques:

Passing / receiving: Play the ball to your team using different types of passes and then control the ball with different parts of your body.

Dribbling / moving with the ball: You can use different parts of your foot to dribble with the ball.

Shooting & Attacking play: You can take aim at the goal, you can cross the ball towards the attackers or you can play a through ball forward to the attackers.

Heading: This can be attacking to score a goal or defending to clear the ball away from the goal.

Defensive play: You can tackle, jockey, close down and mark a player.

Rules:

- A game consists of two 45-minute halves.
- The game is started with a centre kick, from the centre spot. The opposition can then come into the center circle.
- One referee officiates the game with the help of two assistant referees.
- Players are not allowed to use their hands or arms to control the ball unless they are the goalkeeper.
- Players are prevented from 'goal hanging' by the off-side rule.
- If a team kicks the ball off the pitch, the opposition will receive a throw in or a corner

Positions:

11 players on a team (9 in year 7)

Goalkeeper
Right Back
Left Back
Centre Backs (2)
Centre Midfield (2)
Right Wing
Left Wing
Forwards/Striker (2)

Scoring System:

A player can shoot from anywhere to score a goal.

The ball must completely cross the goal line to count.

The team with the most goals at the end of the game wins.

Tactics:

Changing formations depending on the opposition/ score/ time remaining

Key Words:

Penalty
6-yard box
18-yard box
Indirect Free kick
Top bins
Corner
Pass Back
Kick off
Corner

Key Words:

Jockey
Dribble
Laces
Throw in
Keepy ups
Toe taps
Happy feet
Cruyff turn
Off-side

Physical Education

Religion & Philosophy GCSE 10. 1 Christian Beliefs

Topic 1: Nature of God	
Omnipotent	All-powerful—almighty
Omni benevolent	All-loving and infinitely good
Trinity	1 God in 3 Persons: Father, Son & Holy Spirit
Monotheism	Belief in One God
Eternal	Lasting for ever—always is and was
Creator	God made all things
The Fall	Sin, evil & suffering are a result of turning away from God.
Test of faith	Life is a test of faith (Story of **Job**)
Free-will	Ability to make your own decisions— Leads to suffering

Topic 2: Creation	
Word in Creation	Jesus is the word and is present in creation
Literal Interpretation	Believe Genesis is word for word true
Liberal Interpretation	Believe Genesis is a metaphor
Role of Humans:	To multiply and fill the earth To rule creation To care for Creation To be creative To worship God
Soul	Spiritual part of a person
Bible	God's law and The Story of Jesus.
Sin	Prevents humans form being with God

Topic 3: Jesus Christ	
Incarnation	God made flesh in Jesus (becoming man)
Gospels	Bible record of Jesus life
Virgin Mary	Miraculous birth, conceived by the Holy Spir-
Disciples	12 followers of Jesus
Incarnation	God made flesh in Jesus
Crucifixion	Jesus arrested in the Jerusalem, sentenced by Pontius Pilate. Crucified on Good Friday. He was buried in the tomb of Joseph
Resurrection	Jesus rose from the dead defeating death
Ascension	Jesus ascends to heaven 40 days later

Topic 4 & 5: Salvation and the Afterlife	
Salvation	Saved from sin and death
Atonement	Jesus death healed a rift between God & Man
Eschatological	Beliefs about he 'last things'
Judgement	God will judge if the immortal soul will go to heaven or hell—
Heaven/Hell	Literal—A real physical place Liberal—A Spiritual Dimension
Purgatory	Purification before heaven: Catholic only
Parousia	The second coming of Jesus
Grace	The favour of God

'Life in all its fullness' John 10:10

Religion & Philosophy GCSE 10. 2 Christian Practices—CORE

Topic 1: Worship & Prayer	
Worship	Celebration of love and thankfulness to God
Liturgical	Worship follows a set structure (Traditional)
Informal	Worship is free & improvised
Individual	Private worship
Prayer: with	Communicating with God
Set Prayers	Prayers that follow a set structure
Informal Prayer	Free and improvised prayer. More personal and less restrictive
Quaker Worship	Silent Meetings - Calming No Leader, anyone can minister
Evangelical Worship	Modern music, Intense Emotions Pastor Led, Attractive

Topic 2: Sacraments and Pilgrimage	
Sacrament	Outward sign of an inward blessing
Baptism	Ceremony of admission to the Church
Original Sin:	Stain of sin inherited by all from Adam and
Eucharist	Sacrament commemorating the Last Supper, With consecrated bread & wine.
Transubstantiation	The bread and wine literally become the body and blood of Christ (Catholic)
Pilgrimage	Journey to place of religious interest
Taize	Ecumenical. For the healing of divisions in the church. Young People.
Walsingham	Shrine dedicated to Mary in Norfolk England

Topic 3: Festivals	
Christmas Celebrated by	Midnight Mass, Nativity Plays, Religious Cards, Carols, Presents
Advent	Four Sundays leading to Christmas. Advent Candles—Hope, peace, Joy & love
Holy Week	Remembers the week before the Resurrection
Palm Sunday	Wave Palm crosses to remember Jesus as King
Maundy Thursday	Priest washes congregations feet. Share the Eucharist
Good Friday	Solemn day of reflection & confession
Easter Sunday	Celebration Songs. Sunrise service

Topic 5: The Church—Uk & Global	
Secular	Not defined by religious values e.g Modern UK law, culture and '*religious*' festivals
UK Census 2001	Christianity 72 % Non-Religious 15%
UK Census 2011	Christianity 59 % Non-Religious 26%
UK Census 2021	Christianity 46 % Non-Religious 37%
House of Lords	26 bishops influence UK law making
Evangelism	Telling others about Christianity with intention of converting.
Tearfund	Christian charity, aid relief and education
Persecution	Hostile and ill-treatment based on religion
Reconciliation	Restoring of friendly relations
World Wide Council	Ecumenical group working for peace & reconciliation

Religion and Philosophy - GCSE

Science - Biology

B2 – Cells and Control

Mitosis

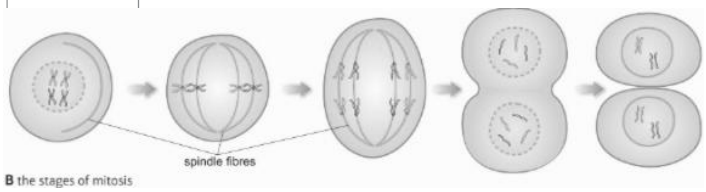
Mitosis is part of the cell cycle which includes interphase, **prophase, metaphase, anaphase, telophase** and cytokinesis.

Mitosis is important in growth and repair of body cells and asexual reproduction.

It produces two genetically identical, diploid, daughter cells.

Cancer is the result of uncontrolled cell division.

Stage	What happens
Interphase	The cell spends most of its life in this phase. The DNA in chromosomes is copied.
Prophase	Chromosomes condense and the membrane around the nucleus disappears.
Metaphase	Chromosomes line up in the middle of the cell.
Anaphase	Chromosomes are pulled to different ends of the cell.
Telophase	New (nuclear) membranes form.
Cytokinesis	The cell divides into two daughter cells.



B the stages of mitosis

Growth in animals

Growth involves **cell division and differentiation**

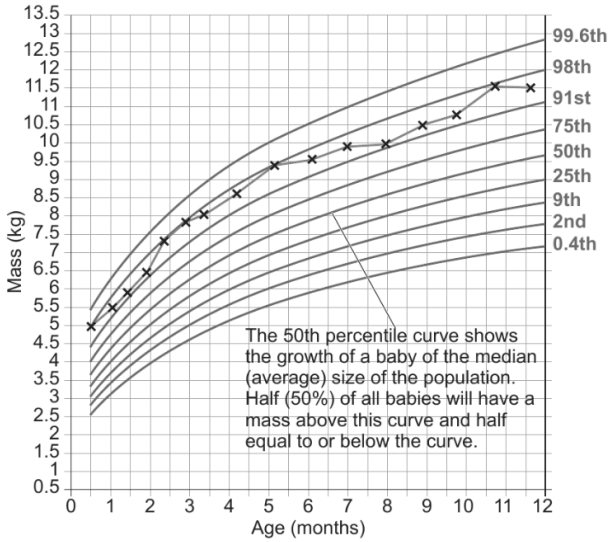
Cell differentiation is important in the development of **specialised cells.**

Percentile charts can be used to monitor growth.

Growth in plants

Growth in plants involves cell division, **elongation** and differentiation.

Cell differentiation is important in the development of specialised cells.



B Percentile growth curves for UK baby boys from 2 weeks to 1 year, for mass. The red line that has been plotted on the curves shows the growth of one baby.

Stem cells

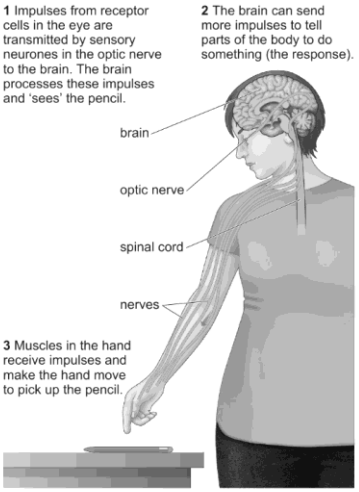
A stem cell is an unspecialised cell that continues to divide by mitosis to produce more stem cells and other cells that differentiate into specialised cells.

In **plants** stem cells are found in **meristems** and can form any type of cell.

In **animals**, **adult stem cells** are found in specialised tissue and can produce more of the cells in that tissue.

Embryonic stem cells come from an early embryo and can produce specialised cells of many different types.

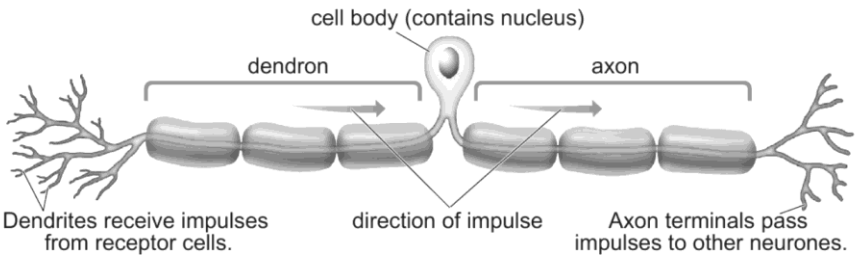
Science - Biology



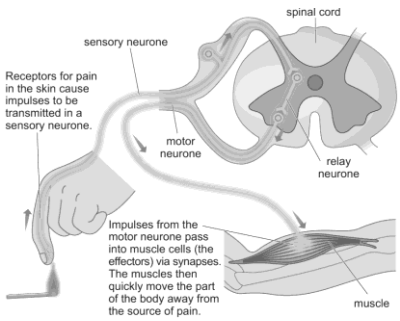
C This is what happens in the nervous system when someone picks up a pencil.

The nervous system

Sensory neurones are important in the transmission of electrical impulses. They are made up of the axon, dendrons and a myelin sheath.



D a sensory neurone



E a reflex arc

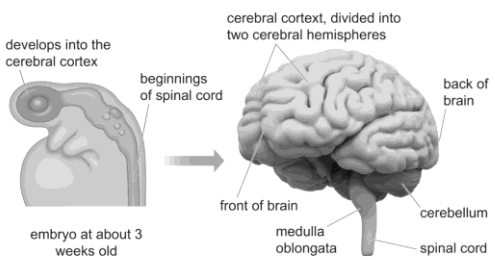
Neurotransmission speeds

When two neurones meet there is a tiny gap called a **synapse.**
Neurotransmitters diffuse across synapses.
The **reflex arc** helps to protect us from harm it includes sensory, relay and motor neurones.
The pathway in the **reflex arc** is:
Stimulus → sensory neurone → relay neurone → motor neurone → effector (muscle)

Separate science

The brain

Key structure in the brain include the **cerebellum** (controls balance, posture and fine muscle movements.), **cerebral cortex** - made up of two hemispheres (main part of the brain, used for most of our senses, language, memory, behaviour and consciousness) **and medulla oblongata** (controls breathing and heart rate).



A brain development and some of the major structures of the brain

Brain and spinal cord problems (higher only)

The difficulties of accessing brain tissue inside the skull can be overcome by **using CT scanning and PET scanning** to investigate brain function.
Problems with the brain and spinal cord can include **brain tumours and spinal cord injuries.**

The eye

The eye is a sensory receptor key parts include**: the cornea and lens** (focuses light), **the iris** (controls diameter of the pupil**), rod** (detects low levels of light) and **cone** (detects colours) cells in the retina.
Defects of the eye include **cataracts, long-sightedness, short-sightedness and colour blindness.**

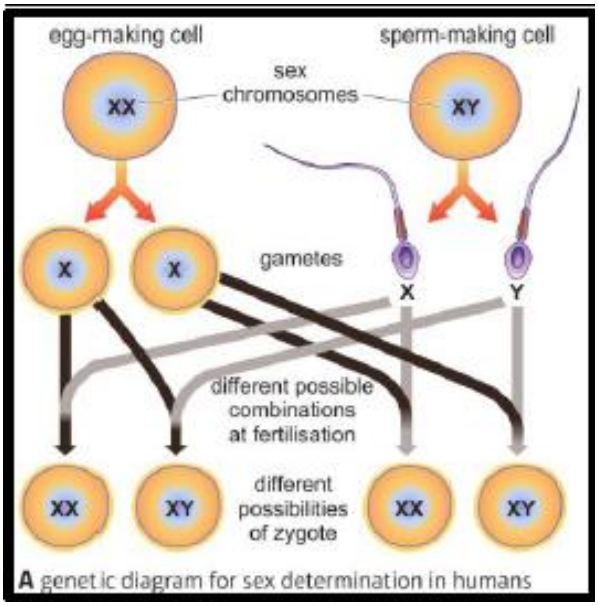
Science - Biology

B3 - Genetics

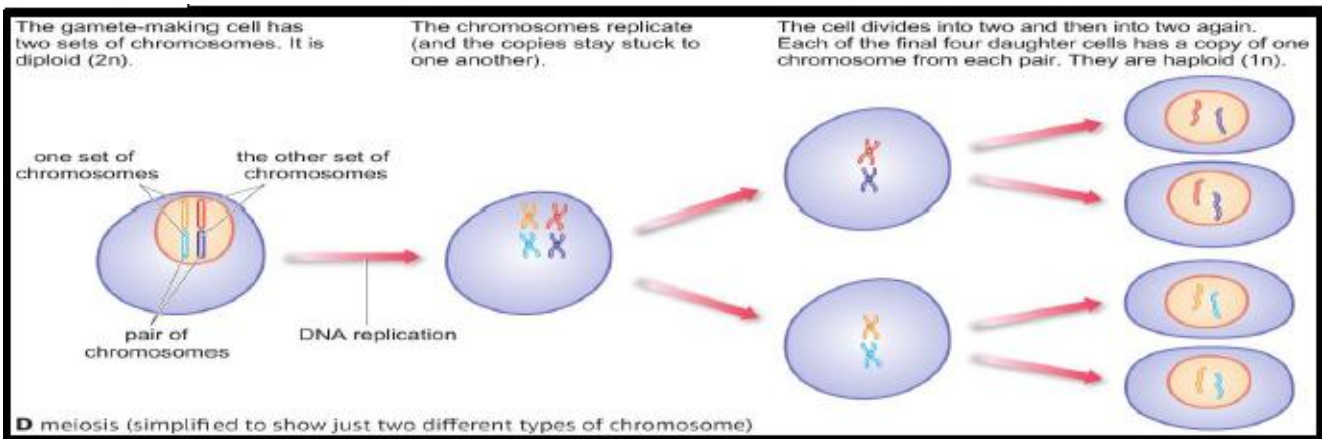
Meiosis

Meiosis is the production of the **gametes** (egg and sperm cells). **Meiosis** produces four daughter cells, each with half the number of chromosomes, this results in the formation of genetically different **haploid gametes**.

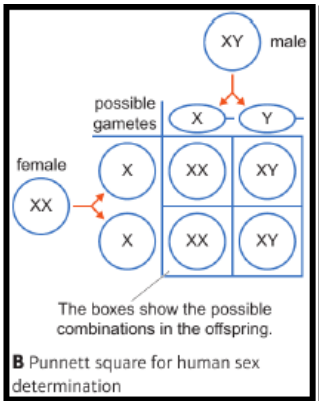
Haploid means half the number of chromosomes of a normal body cell, so 23 in total. This is important so that when the egg and sperm cells fertilise, the **zygote** is **diploid**, so has a full set of chromosomes.



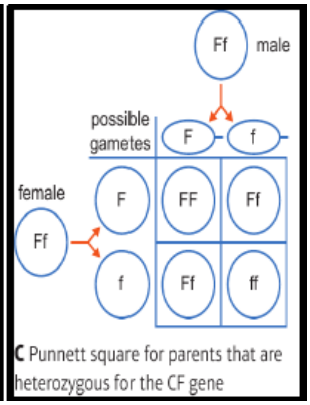
A genetic diagram for sex determination in humans



D meiosis (simplified to show just two different types of chromosome)



B Punnett square for human sex determination



C Punnett square for parents that are heterozygous for the CF gene

Genotype

The **alleles** for a certain characteristic that are found in an organism. Written in shorthand using letters to represent the alleles (with the **dominant** having a capital).

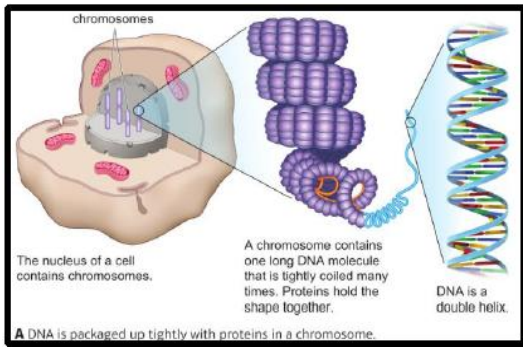
Alleles

Most genes come in different versions called **alleles**. So, a **gene** for eye colour may have one version (allele) that can cause dark eyes, and another allele that can cause pale eyes.

A **gene** is a section of the long strand of **DNA** found in a **chromosome**, which often contains instructions for a protein.

A **chromosome** is a structure found in the nuclei of cells. Each chromosome contains one enormously long **DNA** molecule packed up with proteins.

Science - Biology

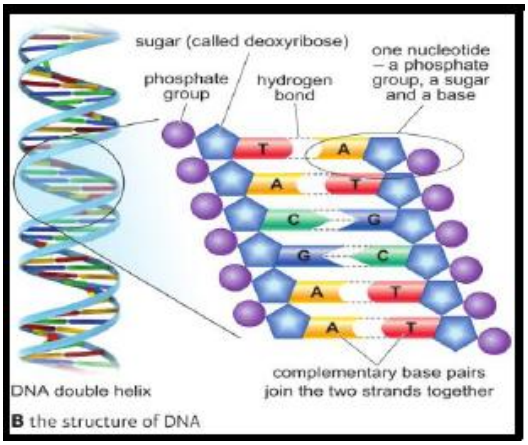


DNA

DNA is Deoxyribonucleic acid. A polymer made of sugar and phosphate groups joined to **bases.** One molecule of DNA is found in each chromosome.

Bases four substances that help make up DNA, often shown by the letters A, C, G and T. Pairs of bases form "links" between two "spines" formed of phosphate groups and a type of sugar.

Complementary base pairs are two DNA bases that fit into each other and link by hydrogen bonds. There are two types of complementary base pair: A linking with T, and C linking with G.



Genome

All of the DNA in an organism is called the genome. Each body cell contains a copy of the genome.

Separate science only

Transciption

This is where an **enzyme** called **RNA polymerase** attaches to the **DNA** in front of a **gene** in a non-coding region. The enzyme separates the two DNA strands. The enzyme then moves along the one DNA strand (the template strand) adding complementary **RNA nucleotides**. These contain the same bases as DNA except that **uracil** (U) is used instead of **thymine** (T). The **nucleotides** link to form a strand of **messenger RNA** (mRNA).

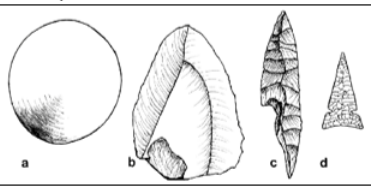
Translation

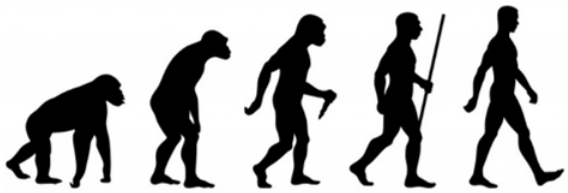
The mRNA strands travel out of the nucleus through small holes in its membrane, called nuclear pores. In the cytoplasm, the mRNA strands attach to ribosomes. A ribosome moves along an mRNA strand three bases at a time. Each triplet of bases is called a codon. At each mRNA codon, a molecule of transfer RNA (tRNA) with complementary bases lines up. Each tRNA molecule carries a specific amino acid. As the ribosome moves along, it joins the amino acids from the tRNA molecules together, forming a polypeptide.

The polypeptide chain then folds up to form a protein (such as an enzyme) with a specific shape. Some proteins contain more than one polypeptide chains.

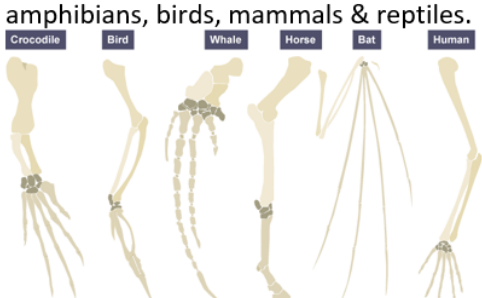
Science - Biology

B4 – Natural Selection and Genetic Modification

Age of tools • Younger rock layers towards the top; • Tools can be compared with other fossils from known time period; • Radiometric dating is used for rocks;	Describe evidence that suggests … inhabited the Earth earlier than … • Differences in the structural features of the fossil; • … would be deeper in the rock layer than …	Suggest an explanation for the extinction of … • Likely to be out-competed by …; • For resources essential to survival / selection pressure;
	Explain which tool is the most recent. • Stone … as it is more sophisticated; • … lived more recently than …	Skills & intelligence • Tools show evidence of greater manipulation; • Higher intelligence in most recent human species;
Describe how to date tools. • Compare with other tools; • From the rock in which they are found; • Radiometric dating;	Describe how to make stone tools. • By hitting it; • With another stone / rock; • To knock flakes / chips off;	Charles Darwin wrote 'On the Origin of Species' explaining the theory of evolution. Alfred Wallace had a similar idea.
Gaps in fossil record limit evidence.	Brain volume is measured by looking at fossils.	

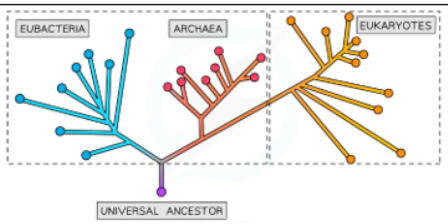
Describe the theory of evolution. • Overproduction of offspring; • Organisms in a species naturally have variation; • There is a struggle for existence; • The adapted organisms survive; • Offspring inherit {characteristics / gene}; • This is repeated over many generations;	**EVOLUTION:** gradual change in a **species** over time. Natural selection = "survival of the fittest". 
Darwin made observations of organisms to come up with his theory of evolution.	Lamarck said that acquired characteristics are inherited.
Modern genetics came out of Darwin's ideas.	

Explain how antibiotic resistant bacteria have evolved. • Bacteria reproduce rapidly making a large population; • There is variation among a bacterial population; • Some bacteria develop resistance to antibiotics through mutation; • Antibiotic treatment exerts a selection pressure; • People do not finish their course of antibiotics; • Bacterial resistant to antibiotics survive & divide; • Levels of antibiotic resistance in a population of bacteria increase; • Offspring inherit antibiotic resistance gene;	Explain how beak length has increased due to birds using feeders. • The population of birds shows variation; • Bird feeders provide a selection pressure; • Birds with longer beaks can get more food; • These birds more likely to survive & reproduce; • Pass on allele for long beaks to offspring; • Over many generations the beak length of the bird population increases;

Describe how these limbs provide evidence for evolution. • Pentadactyl limb with similar bone structure; • Evolved from a common ancestor with a pentadactyl limb; • Unlikely to have occurred more than once in evolution; • Description of adaptation for different functions;	**PENTADACTYL LIMB:** 5 digits shared by amphibians, birds, mammals & reptiles. 	Describe how genetic analysis provides evidence for evolution. • Compare genes from different organisms; • Closely related organisms have more similar sequences;

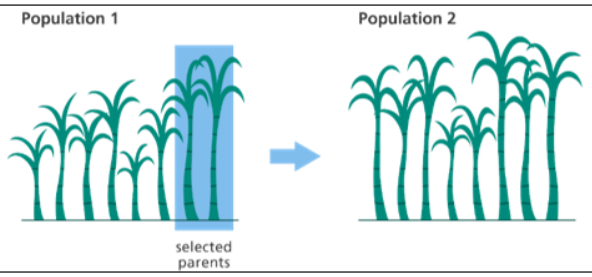
Science - Biology

Give a reason why the three domain classification system was proposed.
- Genetic analysis;



ARCHAEA – cells with no nucleus, genes with unused sections of DNA.
BACTERIA – cells with no nucleus, no unused sections of DNA.
EUKARYA – cells with a nucleus, unused sections in genes.

Describe the process of selective breeding.
- Genetic variation means some organisms have desirable characteristics;
- Cross those with best characteristics;
- Select the offspring with the desired characteristics & breed them;
- Repeat over many generations;



Benefits of selective breeding.		Risks of selective breeding.
• More food production; • Improve the quality of food; • Greater profit;	• Resistance to disease; • Crops grown in areas where they couldn't grow before;	• Less variation;

GENETIC ENGINEERING: changing DNA of an organism by inserting genes from another organism.

Describe how the genome of GM organisms is different.
- New gene;
- In DNA;

Genetic engineering & selective breeding differences.
- Selective breeding has to be carried out repeatedly but genetic engineering is carried out once;
- Offspring in selective breeding may not show desired characteristics but GM offspring will;

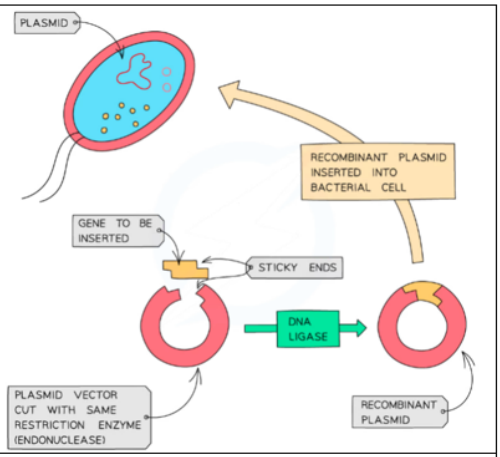
Genetic engineering & selective breeding similarities.
- Change characteristics of organisms;
- Produce useful characteristics in organisms;

Problems with GM crops.
- Seeds more expensive to buy;
- Requires more specialist equipment;
- Ethical objections to use of GM crops;

Benefits of genetic engineering.
- Increased yield;
- Make product in shorter time;
- Quicker, cheaper & easier production;
- Bacteria take up less space;
- Product is pure;

Risks of genetic engineering.
- Concerns over illegal use of GM organisms;
- Product may not be as effective;
- Concerns over GM organisms entering the environment;

Describe how to genetically modify bacteria.
- Isolate desired gene from organism and cut with restriction enzymes;
- Remove plasmid from bacteria cut using same restriction enzymes;
- Leaving complementary sticky ends;
- Gene inserted into plasmid using **ligase**;
- Insert recombinant plasmid back into bacteria;
- Bacterial cell multiplies;



Why are restriction enzymes used?
- Cut DNA at recognition sites;
- To create areas called sticky ends;

VECTOR: used to insert genes in GM.

P7-8: Energy and forces and their effects

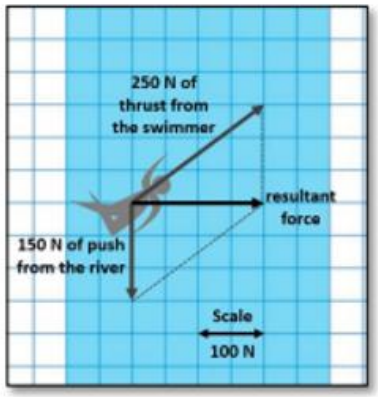
Lesson sequence

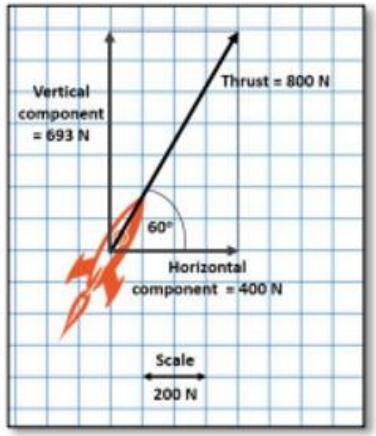
1. Work and power
2. Contact and non-contact forces
3. Vector diagrams (HT)

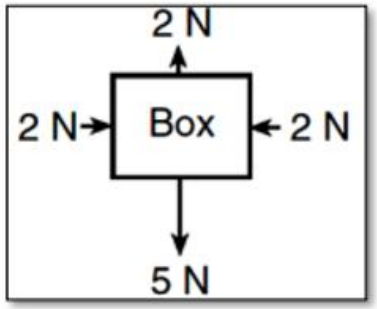
1. Work and power	
***Energy**	The capacity to do work.
***Joules**	The units of energy, symbol = J.
***Kilojoules**	1000 J, symbol = kJ.
***Work done**	The energy transferred by a force.
***Calculating work done**	Work done = force x distance E = F x d Work done = joules Force = newtons Distance = metres
***Power**	The rate of energy transfer.
***Watts, W**	The unit of power: 1 W = 1 joule per second
***Calculating power**	Power = work done / time P = E / t Power = watts Work done = joules Time = seconds

2. Contact and non-contact forces	
***Contact force**	A force that acts when two objects touch.
***Contact force examples**	Normal force, normal reaction force, friction, upthrust, air resistance.
***Non-contact force**	A force that acts at a distance.
***Non-contact force examples**	Gravity, magnetism, electrostatic force.
***Action-reaction forces**	If, A applies an action force to B, B applies a reaction force of same size and opposite direction to A.
****Force field**	The area around an object where its force can affect other objects.
****Magnetic field**	The area of magnetic force around a magnet.
****Electric field**	The area of electrostatic force around an object charged with static electricity.
***Vectors**	Arrows that show size and direction.

3. Vector diagrams (HT)	
*****Free body diagram**	A diagram showing all the forces on an object.
*****Vector diagram arrows**	Arrows showing the size and direction of a force – must be drawn to scale.
*****Scale diagram**	Diagram drawn on graph paper to find the size of forces.
****Resultant force**	The force left over when forces acting in opposite directions are cancelled out.
*****Resultant force diagram**	Draw correct arrows for two forces, add lines to make a parallelogram. Resultant force = the diagonal of the parallelogram.
*****Resolving forces**	Breaking a force up into its horizontal and vertical components.
*****Component forces**	The vertical and horizontal forces that a diagonal force is made from.
*****Resolving forces diagram**	Draw a correct force arrow, add arrows for vertical and horizontal component forces.







Start

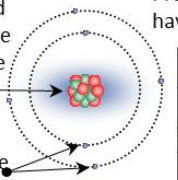
C3-C4: Atomic structure and the periodic table knowledge organiser

Lesson 1 Structure of the atom

- Everything in the world is made up of atoms.
- There are 92 different types of atom arranged in the Periodic Table.
- Atoms are made of sub-atomic particles: Protons, Neutrons and Electrons

Protons and neutrons are found in the nucleus

Electrons are found in shells



Protons neutrons and electrons have different mass and charge

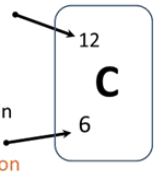
Particle	Mass	Charge
proton	1	+1
neutron	1	0
electron	almost 0	-1

Lesson 2 Atomic number and mass number

The number of protons, neutrons and electrons can be found from the numbers on the Periodic Table

The number of protons and neutrons in an atom's nucleus is the mass number.

The number of protons in an atom is known as its atomic number or proton number.



Lesson 3 Isotopes

- An isotope is the same element that has a different mass.
- Atoms of isotopes have the same number of protons and electrons but different numbers of neutrons
- The Relative Atomic Mass (RAM) is the mass of an atom of an element

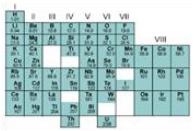
e.g. Chlorine has two isotopes ^{35}Cl and ^{37}Cl

$^{35}_{17}Cl$ $^{37}_{17}Cl$

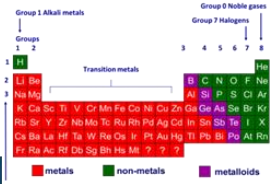
Lesson 4 Mendeleev and the early periodic table



- Mendeleev knew about 40 different elements
- They arranged these elements in order of **increasing mass**
- Mendeleev left gaps in his periodic table for elements which had not been discovered.



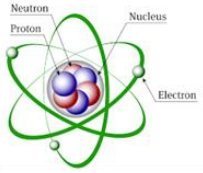
Lesson 5 The modern periodic table



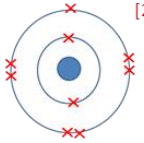
The modern periodic table is arranged according to increasing **atomic number**

- Columns of elements are called groups
- Groups of elements have similar properties
- Rows of elements are called periods

Lesson 6 Electron configuration



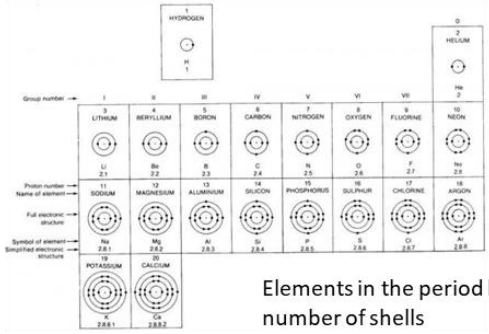
$^{19}_{9}F$ [2,7]



Fluorine has 9 electrons

- Electrons are found in 'shells' around the nucleus
- The first 3 shells can fit 2, 8, 18 electrons (best remembered 2,8,8)

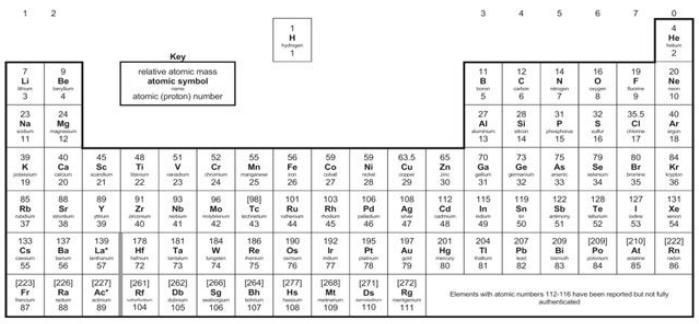
Lesson 7 Electron configuration and the periodic table



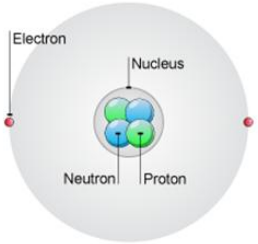
Elements in the same group have same number of electrons in the outer shell and have similar chemical properties

Elements in the period have the same number of shells

The Periodic Table of the Elements



The structure of an atom



'Life in all its fullness' John 10:10

C5-C7: Structure and bonding knowledge organiser

Start — Make sure you understand Topic 1 - Structure of the atom

1 Ions

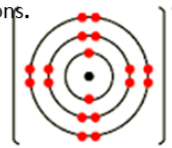
An ion is an atom with a charge

Atoms are more stable with a full outer shell of electrons



Metals atoms lose electrons and gain a positive charge to become positive ions.

Non-metal atoms gain electrons and gain a negative charge to become negative ions.

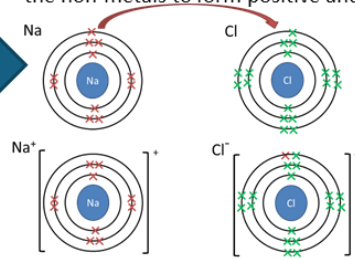


Ions will always have a full outer shell of electrons and the charge is shown outside of square brackets

2 Ionic bonds

Ionic bonds form between metals and non-metals.

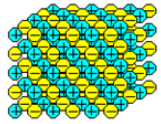
In an ionic bond the metal 'gives' its electrons to the non-metals to form positive and negative ions



An ionic bond forms between the positive and negative ions.

3 Ionic compounds

Ionic compounds consist positive and negative ions in an **ionic lattice**



Ionic lattice structure

The formula of an ionic compound tells you which ions and how many of them they contain

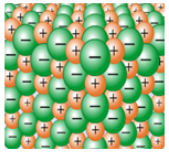
Mg^{2+} Br^{-}

$MgBr_2$

Sulphate	SO_4^{2-}
Carbonate	CO_3^{2-}
Nitrate	NO_3^{-}
Hydroxide	OH^{-}

Some ions consist of more than one atom and you should know them

4 Properties of ionic compounds



Ionic compounds-

1. Have strong bonds between positive cations and negative anions. They form crystals with high melting points
2. Dissolve in water to give solutions
3. Conduct electricity when dissolved in solution or molten because the ions move freely but not when solid when the ions are fixed in place

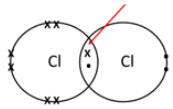
5 Covalent bonds

Covalent bonds form between two non-metals.

Non-metals **share** electrons so it is 'as if' both atoms have a full outer shell.

Cl — Cl

For dot cross diagrams you only need to draw the outer shell electrons



A covalent bond is a pair of electrons shared between the two atoms.

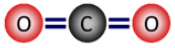
Covalent bonds are strong bonds

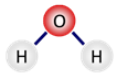
6 Simple molecular compounds

Most common gases are simple molecules.

A **molecule** is a small group of atoms that go around together.

Simple molecular compounds have strong covalent bonds between atoms, weak **intermolecular forces** between molecules





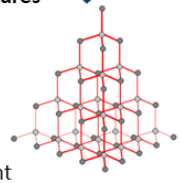
Properties

- Gases and liquids with low melting and boiling points
- Do not conduct electricity

7 Giant covalent structures

In giant covalent structures every atom is joined to other atoms with a strong covalent bond.

E.g. Diamond

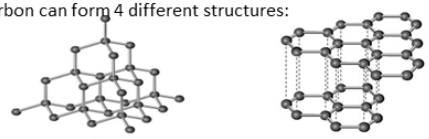


Properties

- Hard, strong, high melting point
- Do not conduct electricity as there are no freely moving electrons
- Do not dissolve

8 Allotropes of carbon

Carbon can form 4 different structures:



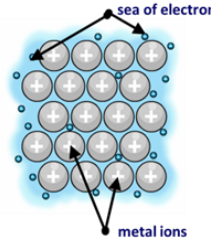
Diamond is hard and strong and doesn't conduct electricity but graphite is soft, forms layers and does conduct electricity as it has freely moving electrons



9 Metallic bonding and the properties of metals

Metallic bonds form between metal atoms and metals from giant metallic structures

The structure of a metal consists of metal **ions** surrounded by a sea of **delocalised electrons**



Properties

- High melting point
- Conduct electricity
- Do not dissolve

Academic Vocabulary

Sequencing	Comparing
First (ly) Second (ly) Third (ly) Subsequently Finally In conclusion	Similarly Likewise Like In the same way Equally Akin to
Contrasting	**Qualifying**
Alternatively Conversely On the other hand In contrast Instead Besides	However Although But Except Notwithstanding Nonetheless
Supporting	**Emphasising**
Moreover Furthermore Also Additionally	Significantly Indeed Notably Significantly
Exemplification	**Time**
For example Such as Illustrated by For instance	Meanwhile Since Before After

Oracy @ Wadham School

Projection



Project your voice so all that should hear can hear

Body Language

Use of gesture and position



Listen



Show you are actively listening

Good Talk



If you disagree, use respectful language

Eye Contact



Eye contact shows Belonging

SAYING OR STATING AN IDEA

I think ...

I strongly believe ...

It is my opinion that...

CLARIFYING OR CHECKING

Please could you clarify that?

Please could you explain what you mean?

SEEING THINGS FROM A DIFFERENT PERSPECTIVE OR VIEWPOINT

What if ...

Some people think ...

SUPPORTING OR AGREEING

I agree ...

I agree with Sarah because ...

CHALLENGING OR DISAGREEING

I have a different idea ...

I disagree ...

I would like to challenge something that Samia said ...

I would like to respectfully challenge ...

EXPANDING OR BUILDING ON

Adding to what Zack said ...

Building on what Ella said ...

I have been listening carefully, and I would like to add a new point ...

PARAPHRASING OR REWORDING

I think Mo is saying that ...

In other words, Matt is saying ...

THINKING ALOUD OR SHARING PARTIAL THINKING

Why is it that ...?

I am wondering if ...

I'm not certain but ...

I'm not completely sure but what I'm thinking is ...

JUSTIFYING OR GIVING REASONS

Because ...

If ... then ...

I know ... because ...

ASKING FOR THINKING TIME OR HELP

I'm not sure yet. Please can I have some time to think?

I'm a bit confused about ...

Please can I talk to a partner?

I'm stuck because ...

Please could you speak a bit louder?

Please could you repeat the question?

PASSING ON THE DIALOGUE

Ali, what do you think?

Ben, what do you think about what I said?

Jo, do you agree or disagree?

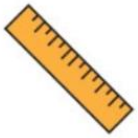
CONCLUDING OR END WORDS

My final thoughts are ...

There are lots of powerful arguments, but my own opinions is ...

For me, the strongest argument is ...

The Learning Eight

Pen (Blue or Black)		Ruler	
Pencil		Purple Pen	
Calculator		Knowledge Organiser	
Mini-Whiteboard		Whiteboard Pen	