



Wadham School



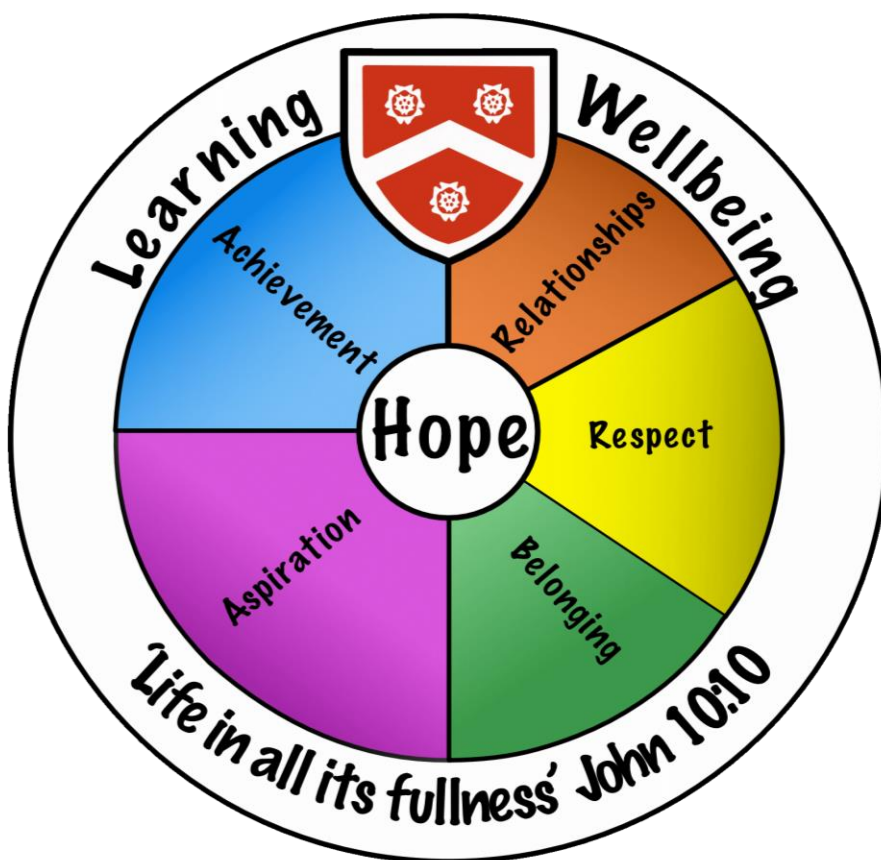
A Church of England Community School

Knowledge Organisers

Year 9

Term 3

2023-2024











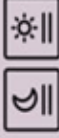









Name.....

Tutor group.....

“Life in all its fullness” John 10:10

How to use Knowledge Organisers?

How to use a knowledge organiser – step by step guide

	Look, Cover, Write, Check	Definitions of Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	<p>Look at and study a specific area of your KO.</p> 	<p>Write down the key words and definitions.</p> 	<p>Use your KO to condense and write down key facts or information onto flash cards.</p> 	<p>Use your KO to create a mini quiz. Write down your questions using your KO.</p> 	<p>Create a mind map with all the information you can remember from your KO.</p> 	<p>Ask a friend or family member to have the KO or flash cards in their hands.</p> 
Step 2	<p>Cover or flip the KO over and write down everything you can remember.</p> 	<p>Try not to use your KO to help you.</p> 	<p>Add pictures to help support. Then self-quiz using the flash cards. You could write questions on one side, and answers on the other!</p> 	<p>Answer the questions and remember to use full sentences.</p> 	<p>Check your KO to see if there are any mistakes on your mind map.</p> 	<p>They can test you by asking you questions on different sections of your KO.</p> 
Step 3	<p>Check what you have written down. Correct any mistakes in green pen and add anything you have missed. Repeat.</p> 	<p>Use your green pen to check your work.</p> 	<p>Ask a friend or family member to quiz you on the knowledge.</p> 	<p>Ask a friend or family member to quiz you using the questions.</p> 	<p>Try to make connections, linking the information together.</p> 	<p>Write down your answers,</p> 



HOW TO USE KNOWLEDGE ORGANISERS TO CHECK YOUR UNDERSTANDING

1 READ

CHOOSE A 'CHUNK' OF KNOWLEDGE ...
BUT DON'T CHOOSE TOO MUCH (2 - 9 FACTS)
WRITE DOWN YOUR LIST OF FACTS / DEFINITIONS
READ AND HIGHLIGHT KEYWORDS
RE-READ FOR A FEW MINUTES

Atoms and Elements	
Element	Contains one type of atom
Compound	Contains two or more types of atom, chemically bonded

2 COVER

NOW COVER THE DEFINITIONS - CAN YOU STILL REMEMBER THEM?

Atoms and Elements	
Element	
Compound	

3 WRITE

NOW WRITE THE DEFINITIONS/FACTS AS ACCURATELY AS YOU CAN

Atoms and Elements	
Element	Contains one type of atom
Compound	Contains two or more

4 CHECK

CHECK WHAT YOU GOT RIGHT AND WRONG

Atoms and Elements	
Element	Contains one type of atom
Compound	Contains two or more types of atom, chemically bonded

Contains one type of atom
Contains two or more types of atom bonded

5 CORRECT

IT IS REALLY IMPORTANT TO CORRECT ANY MISTAKES AND ADD ANYTHING YOU MISSED

Atoms and Elements	
Element	Contains one type of atom
Compound	Contains two or more types of atom, chemically bonded

Contains one type of atom
Contains two or more types of atom bonded
chemically

STREET ART

Creating Stencil Art 1

- Stencil art is one of humanity's oldest creative forms.
- Some of our species' first artists made stencils when they placed their hands on cave walls and blew minerals over them, coating the rock in red or black pigment and leaving behind their palmprints.
- Fast-forward some 30,000 years and stencil art techniques remain essentially unchanged.
- Using a sheet of cardboard, plastic, or metal with a pattern or letters cut out is surprisingly versatile, allowing craftspeople to colour cloth, print t-shirts, and create some fantastic street art.



Creating a stencil design

First, you'll need an image to work with. You can use something you've drawn, choose a photo or pre-existing artwork to adapt as stencil art, or combine elements of all three.

- Make sure your design can be rendered in two-tone black and white without losing too much detail.
- Typography, icons, bold, comic-style illustrations, and high-contrast photos all work well when you're first learning how to create stencil art.
- Make it pop with bold shadows and crisp lines.

Keep in mind that your stencil cannot be too detailed.



Shepard Fairey

(b.1970)

His style has been described as bold and iconic.

His most famous artwork is the iconic 'Hope' poster he made for Barack Obama's election campaign in 2008.

STREET ART

Creating Stencil Art 2

As you create your stencil pattern, be sure to plan for any necessary “bridges” in the artwork. You need to make sure there aren’t any lonely “islands” of blank stencil material, otherwise you may accidentally cut away important design elements.



Cutting & Spraying Your Stencil

You should cut out the most detailed parts of your stencil first, as your stencil will only get flimsier with each piece of paper that’s removed.

Now for the best part: spraying your stencil...

- Aim for steady movement and even coverage to avoid dripping (unless that’s an effect you’d like to try out).
- Position your nozzle about 30cm away from your stencil and spray in short strokes in a single direction, without “doubling back” over parts you’ve already coated.
- Leave to dry for at least 10 minutes.
- You may wish to add another layer of colour over the top.

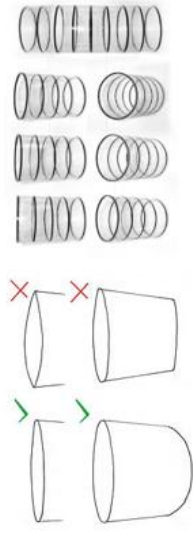
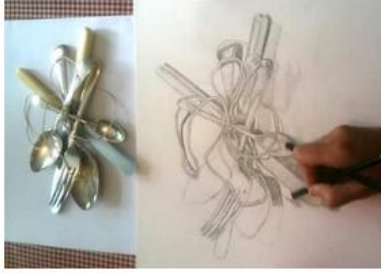


Keyword	Definition
Stencil	A thin sheet of card, plastic or metal with a pattern or leaves cut out of it, used to apply a design on the surface below by the application of ink or paint.
Typography	The art of arranging type and printing from it.
Scalpel	A knife with a small, sharp blade.
Graphics	The products of graphic art, especially design or illustration.
Graffiti	Writing or drawings scribbled, scratched or sprayed on a wall or other surface in a public space.
Distress	Making a piece of furniture, object or surface appear aged.
Collage	The technique in which pieces of paper, photographs, fabrics and other materials are arranged and stick down onto a surface.

Art

Drawing from Observation

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!

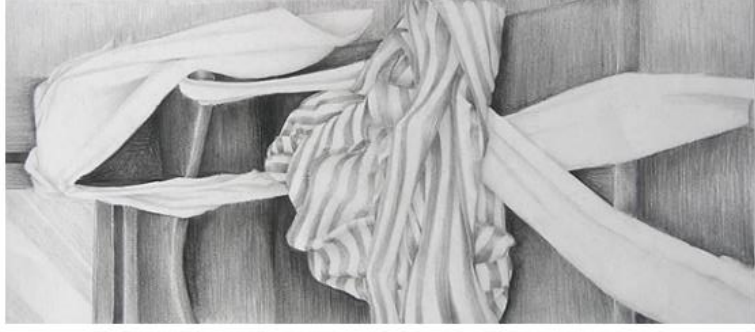


9. **Be wary of ellipses** (the oval shapes that are visible at the top of cylindrical objects. Frequently a 'trip up' point.

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

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

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.



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

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.



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



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.



Beliefs and World Views

Ethical terms

1	Ethics	Ideas that help us know what is right or wrong.
2	Moral	Something that is linked to right or wrong.
3	Immoral	Something that is wrong.
4	Deontological	Doing the right thing by following rules and your duty.
5	Teleological	Doing the right thing by trying to get the best outcome.

Divine Command Theory

6	Divine command theory	The idea things are right because God says they are right, and He is what decides right and wrong.
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Situation Ethics

7	Situation Ethics	Christian ethics that look at following Jesus example of doing the most loving thing.
8	Agape	A kind of love that is fair and not personal.
9	Joseph Fletcher	Philosopher behind situation ethics.

Utilitarianism

10	Utilitarianism	The idea things are right if they lead to the most happiness.
11	Hedonic Calculus	A way of working out how much happiness a choice will make.
12	Principle of utility	'The greatest happiness for the greatest number'
13	Jeremy Bentham	Philosopher behind the ethical theory utilitarianism.

Conscience

14	Conscience	Peoples built in sense of right and wrong.
15	Freud	Psychologist who studied peoples conscience.
16	Id	The part of a person that wants pleasure.
17	Super-ego	The part of a person made of what society tells them is right.
18	Biblical view on conscience	God wrote knowledge of right and wrong on peoples hearts during creation.

Emotivism

19	Logical positivists	Philosophers who believed only statements you can prove are meaningful.
20	Analytical	A statement which has to be true. E.G. The bald man had no hair.
21	Verifiable	A statement which we can prove with evidence. E.G. The chair is red.
22	Emotivism	Idea ethics is just saying if you like or dislike something.
23	AJ Ayer	Philosopher who came up with emotivism.

Computing

Data	Individual facts or statistics
Cyber Security	Protecting computer systems from cyber criminals
Profiling	Gathering information about a person in order to make predictions about them
Privacy policy	A document produced by an organisation which explains how they store and process user data.
Data protection act (2018)	UK law which controls how your personal information is stored and processed by organisations
Malware	Any software which is designed to do harm to a computer system
Social engineering	Tricking other people so that they give up confidential information
Phishing	Sending a message to a person which is designed to trick them into giving up confidential information
Shouldering	Stealing confidential information by watching someone enter it into a keypad or other device
Scam	A dishonest scheme carried out to gain access to some confidential information
Hacking	Gaining unauthorised access to or control of a computer system
Computer misuse act (1990)	UK law which introduced a range of offences relating to computer misuse including accessing computer material without permission, using and creating malware and accessing computer material with intent to commit further crime
Ransomware	Malware designed to stop a person or organisation accessing their data. The attacker who created the ransomware will demand the person or organisation pays a large amount of money to regain access to their data



	Keywords	Key information
1	Fibre	Fibres are hair like strands that are natural or synthetic.
2	Natural Fibres	Natural fibres come from plant, animal or insect sources.
3	Synthetic Fibres	Synthetic fibres are man-made.
4	Yarn	Fibres are spun to create long threads called yarns.
5	Fabric	Fabric is produced by yarns which are knitted or woven together.
6	Scales	Wool fibres have scales. Heat and agitation will cause these scales to shrink and interlock together to form a piece of fabric.
7	Shrink	Become smaller in size.
8	Felting needle	A tool with small barbs on the surface.
9	Barbs	A rough surface on a felting needle which pulls wool fibres downwards and encourages them to interlock. The more barbs a tool has, the quicker fibres should bond together.
10	Bonded Fabric	Are not woven or knitted. Made from fibres rather than yarns.
11	Surface Design	The art that is applied to surfaces, such as fabric, wallpaper, home décor and clothes.
12	Placement	The location of a design on an item.
13	Motif	A significant icon or recurring idea in a design.
14	Cool Colours	Blues, Greens and Purples.
15	Warm Colours	Pinks, Reds and Oranges
16	Complementary Colours	Colours which are opposite each other on the colour wheel. Orange and Blue; Green and Red; Yellow and Purple.
17	Analogues Colours	Colours that are next to each other on the colour wheel. Green, yellow and orange are an example of an analogues colour scheme.
18	Monochrome	A colour scheme that incorporates the main colour and only hues, tones, shades and tints of that one colour.
19	Embellishment	Decorative detail which is added for a more interesting aesthetic appeal. Sequins are an example of an embellishment.
20	Embroidery	Using stitches to form a decorative design.

English

ANALYSIS

Argument	The writer presents [topic] to...
Neat evidence	The phrase '...' shows...
Additional	Additionally, the phrase '...' adds to...
Language	The imagery suggests...
Your evaluation	A reader may also understand...
Structure and form	Structurally, the... tone emphasises...
Intentions of writer	The writer's intentions may have been to...
Society and context	Contextually, the writer may be reflecting...

POETIC POEMS

Definition

Personification	Giving something human characteristics
Oxymoron	Contradictory phrase
Enjambment	Continuing a line of poetry
Tone	Mood or atmosphere
Imagery	Descriptive language
Contrast	Very different things put together
Perspective	Viewpoint
Onomatopoeia	Words that sound like the thing
Extended	Carrying on
Metaphor	Saying something is something else
Simile	Saying something is like something else

A PERSUADER

Definition

Alliteration	Repeating same sound at starts of words
Points	Clear reasons to add to your argument
Exaggeration	Overstating
Repetition	Saying the same thing over and over
Statistics	Using numbers to represent facts
Unique ideas	Unusual or ways of approaching an issue
Anecdote	A short story used to make a point
Direct address	Talking to the audience
Emotive language	Appealing to people's feelings
Rhetorical questions	Questions not intended to be answered.

Identity Poetry

Key words

Definition

Logos

Appealing to logic

Ethos

Credibility and trust of speaker

Pathos

Appealing to emotion

Idolise

Worshiping something or someone

Objectify

Reducing someone to an object

Dissociation

Losing sense of self

Intersectionality

How different parts of identity overlap

Discrimination

Treating someone negatively

Patriarchy

Male dominated society

Stereotyping

Making assumptions based upon limited knowledge or experience





Prejudice

Treating someone differently often based on stereotypes

Year 9 Food

1	Food choice	People choose to eat different food for many different reasons: •personal choice / ethics - environmental, animal welfare, global dimensions; •health/medical - including intolerance and allergy •religion - review the different dietary rules for some religions																																																
2	Modifying a recipe	To change/ adapt a recipe due to: Costing, the needs of different groups of people e.g. vegetarian, an intolerance or allergy, reducing the energy content, improving the nutritional value/balance, e.g. reducing salt content, ingredients are unavailable, to cater for like and dislikes.																																																
3	Special dietary needs	Adverse reactions to food: Food intolerances (lactose intolerance, gluten intolerance) can make someone feel ill. Usually caused by the digestive system Food allergies (eggs; cow's milk and milk products; nuts; shellfish; fish) can make someone feel ill. Some can cause a life-threatening reaction (called anaphylaxis). Usually caused by the immune system . The presence of these Allergens must be displayed on packaging: Celery (and celeriac), cereals containing gluten, crustaceans, eggs, fish, lupin, Milk, Molluscs, Mustard, Nuts, Peanuts, Sesame, Soybeans, Sulphur dioxide																																																
4	Religious cultural, ethical beliefs	People choose to eat or avoid certain foods depending on their religious belief. Kosher animals - completely split hoof and chew cud, e.g. cows, goat and sheep Halal method - animals killed using a knife to the throat <table><tr><th>Religion</th><th>Pork</th><th>Beef</th><th>Lamb</th><th>Chicken</th><th>Fish</th></tr><tr><td>Islam</td><td>x</td><td>Halal only</td><td>Halal only</td><td>Halal only</td><td>✓</td></tr><tr><td>Hinduism</td><td>x</td><td>x</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Judaism</td><td>x</td><td>Kosher only</td><td>Kosher only</td><td>Kosher only</td><td>✓</td></tr><tr><td>Sikhism</td><td>x</td><td>x</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>Buddhism (strict)</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td></tr><tr><td>Seventh-day Adventist Church</td><td>x</td><td>x</td><td>x</td><td>✓</td><td>✓</td></tr><tr><td>Rastafarianism</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td></tr></table>	Religion	Pork	Beef	Lamb	Chicken	Fish	Islam	x	Halal only	Halal only	Halal only	✓	Hinduism	x	x	✓	✓	✓	Judaism	x	Kosher only	Kosher only	Kosher only	✓	Sikhism	x	x	✓	✓	✓	Buddhism (strict)	x	x	x	x	x	Seventh-day Adventist Church	x	x	x	✓	✓	Rastafarianism	x	x	x	x	x
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5	Vegetarian and Vegan	Vegetarians don't eat meat for a range of health, environmental, ethical, religious or economic reasons. A well-planned vegetarian diet can meet nutritional needs during all stages of life. Meat alternatives - a food product made from vegetarian or vegan ingredients, eaten as a replacement for meat; nuts; seeds; pulses, e.g. beans, lentils; mycoprotein; soya products <table><tr><th></th><th>Fruit</th><th>Veggies</th><th>dairy</th><th>eggs</th><th>Seafood</th></tr><tr><td>Vegetarian</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr><tr><td>Fruitarian</td><td>✓</td><td></td><td></td><td></td><td></td></tr><tr><td>Vegan</td><td>✓</td><td>✓</td><td></td><td></td><td></td></tr><tr><td>Lacto - vegetarian</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td></tr><tr><td>Ovo vegetarian</td><td>✓</td><td>✓</td><td></td><td>✓</td><td></td></tr><tr><td>Lacto - ovo vegetarian</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr><tr><td>Pescatarian</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr></table>		Fruit	Veggies	dairy	eggs	Seafood	Vegetarian	✓	✓	✓	✓		Fruitarian	✓					Vegan	✓	✓				Lacto - vegetarian	✓	✓	✓			Ovo vegetarian	✓	✓		✓		Lacto - ovo vegetarian	✓	✓	✓	✓		Pescatarian	✓	✓	✓	✓	✓
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Year 9 Food

6	Food waste	<p>Foods deteriorate when killed or harvested. Preservation techniques extend the shelf life of products: freezing, additives, processed foods (strawberries into jam), dehydration (reduces the water), pasteurisation (killing food spoilage organisms and pathogenic organisms), packaging</p> <p>Common foods wasted: Bread and bread products, fruit and vegetables, starchy foods, meat, chicken, fish, milk, Reasons for food waste: incorrect storage and packaging, buying large quantities, portion size too big; leftovers thrown away, impulse shopping/ offers, limited cooking skills</p>																															
7	Cost and availability	<p>Budgeting (save money). Ways to spend money wisely on food. Examples can include: eating the seasons; stocking up on food with a long shelf-life; plan meals and write a shopping list; cooking using one pot; making fake-aways rather than buying takeaways; using leftovers; replacing branded items with cheaper items; comparing prices and shop around to find the cheapest items; growing your own food.</p>																															
	Costing a recipe	<p>Using a costing chart can help to calculate the cost per portion</p> <table><tr><td>Ingredient name</td><td>Quantity purchased</td><td>Cost of quantity purchased (£)</td><td>Quantity needed in recipe</td><td>Cost of ingredient used in recipe (£)</td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>	Ingredient name	Quantity purchased	Cost of quantity purchased (£)	Quantity needed in recipe	Cost of ingredient used in recipe (£)																										
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8	Food labelling	<p>Information is provided on food and drink packaging to help consumers choose between different products, brands and flavours.</p>																															
	Legally required information (Mandatory)	<div><p>NUTRITION When heated according to instructions</p><table><tr><td>Typical values</td><td>Per 100g</td><td>Each pack (390g***)</td></tr><tr><td>Energy</td><td>457kJ 109kcal</td><td>1781kJ 424kcal</td></tr><tr><td>Fat</td><td>3.9g</td><td>15.2g</td></tr><tr><td>of which saturates</td><td>1.9g</td><td>7.5g</td></tr><tr><td>Carbohydrate</td><td>12.1g</td><td>47.1g</td></tr><tr><td>of which sugars</td><td>1.6g</td><td>6.2g</td></tr><tr><td>Fibre</td><td>1.1g</td><td>4.2g</td></tr><tr><td>Protein</td><td>5.8g</td><td>22.6g</td></tr><tr><td>Salt</td><td>0.6g</td><td>2.2g</td></tr></table></div> <div><ul style="list-style-type: none">• Name of food or drink.• List of ingredients (including additives and allergens)• Weight or volume.• Date mark (Best-before and use-by).• Storage and preparation conditions.• Name and address of the manufacturer, packer or seller.• Country of origin and place of provenance.• Nutrition information.</div> <div><table><tr><td>INGREDIENTS</td></tr><tr><td>Water, Carrots, Onions, Red Lentils (4.5%) Potatoes, Cauliflower, Leeks, Peas, Cornflower, Wheat flour, Cream (milk), Yeast Extract, Concentrated Tomato Paste, Garlic, Sugar, Celery Seed, Sunflower Oil, Herb and Spice, White Pepper, Parsley</td></tr><tr><td>ALLERGY ADVICE</td></tr><tr><td>For allergens, see ingredients in bold</td></tr></table><div><p>Use by</p><p>17 DEC</p></div></div>	Typical values	Per 100g	Each pack (390g***)	Energy	457kJ 109kcal	1781kJ 424kcal	Fat	3.9g	15.2g	of which saturates	1.9g	7.5g	Carbohydrate	12.1g	47.1g	of which sugars	1.6g	6.2g	Fibre	1.1g	4.2g	Protein	5.8g	22.6g	Salt	0.6g	2.2g	INGREDIENTS	Water, Carrots, Onions, Red Lentils (4.5%) Potatoes, Cauliflower, Leeks, Peas, Cornflower, Wheat flour, Cream (milk), Yeast Extract, Concentrated Tomato Paste, Garlic, Sugar, Celery Seed, Sunflower Oil, Herb and Spice, White Pepper, Parsley	ALLERGY ADVICE	For allergens, see ingredients in bold
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Voluntary information	<p>Cooking instructions, serving suggestions, price; customer guarantee; photograph or image of the food; bar code, environmental information (recycling), vegetarian, vegan, organic</p> <div></div>																																
Nutrition and health claims	<p>These are controlled by European regulations. Claims on a food or drink should have been authorised and listed on the European register of claims and have met certain conditions.</p>																																
9	Food availability and food provenance	<div><p>Food certification and assurance schemes- guarantee defined standards of food safety or animal welfare.</p><p>Traceability - identify the movement of a food product and its ingredients through all steps in the supply chain</p><p>Sustainability-avoid damaging or wasting natural resources.</p><p>Food security - access to sufficient safe and nutritious food</p><p>Fairtrade - help producers in developing countries achieve sustainable and equitable trade</p></div> <div><div><p>Red Tractor</p></div><div><p>The British Lion mark</p></div></div>																															



Les fêtes	Festivals
1. le premier avril	<i>April Fool's Day</i>
2. Noël	<i>Christmas</i>
3. la veille de Noël	<i>Christmas Eve</i>
4. Pâques	<i>Easter</i>
5. la Chandeleur	<i>Candlemas</i>
6. le Nouvel An	<i>New Year</i>
7. la Saint-Sylvestre	<i>New Year's Eve</i>
8. la Saint-Valentin	<i>Valentine's Day</i>
9. Aïd	<i>Eid</i>
10. mon anniversaire	<i>my birthday</i>
11. le 14 juillet	<i>Bastille Day</i>
12. manger du chocolat	<i>eating chocolate</i>
13. acheter des cadeaux	<i>buying presents</i>
14. aller chez mes cousins	<i>going to my cousins' house</i>

C'est carnaval!	It's carnival!
15. Ma fête préférée, c'est...	<i>My favourite festival is...</i>
16. le carnaval	<i>carnival</i>
17. Je retrouve mes copains.	<i>I meet my friends.</i>
18. Je porte un masque.	<i>I wear a mask.</i>
19. Je porte un déguisement.	<i>I wear a costume.</i>
19. Je regarde le parade.	<i>I watch the parade.</i>
20. Je partage des photos.	<i>I share photos.</i>
21. Je chante et je danse.	<i>I sing and I dance.</i>

Phonics Focus:	
silent final consonant <i>trois</i>	[ou] = /oo/ <i>écoute</i>
silent final 'e' <i>fête</i>	[em] [en] [an] = /on/ <i>serpent</i>
[on] = /on/ <i>bonbon</i>	[in] = /euhn/ <i>numéo un</i>

Je vais manger...	I am going to eat...
22. une salade niçoise	<i>a tuna salad</i>
23. une tarte flambée	<i>a pizza-like tart</i>
24. un couscous aux légumes	<i>a vegetable couscous</i>
25. une crêpe	<i>a pancake</i>
26. des moules-frites	<i>mussels and chips</i>
27. une quiche lorraine	<i>a bacon quiche</i>
28. C'est comment?	<i>What is it like?</i>
29. C'est délicieux.	<i>It's delicious.</i>
30. C'est savoureux.	<i>It's tasty.</i>
31. C'est un plat typique.	<i>It's a speciality.</i>

Le marché de Noël	Christmas market
32. Je vais...	<i>I am going...</i>
33. visiter le marché	<i>to visit the market</i>
34. acheter un cadeau	<i>to buy a present</i>
35. admirer les maisons illuminées	<i>to admire the illuminated houses</i>
36. écouter des chorales	<i>to listen to some choirs</i>
37. manger une tarte flambée	<i>to eat a pizza-like tart</i>
38. boire un jus de pomme chaud	<i>to drink a hot apple juice</i>

Les opinions	Opinions
39. J'aime/Je n'aime pas...	<i>I like/don't like...</i>
40. J'adore/Je déteste...	<i>I love/I hate...</i>
41. Je préfère...	<i>I prefer</i>

Vital verb: manger (to eat)	
Present:	Near future:
<i>Je mange</i>	<i>Je vais manger</i>
<i>Tu manges</i>	<i>Tu vas manger</i>
<i>Il/elle/on mange</i>	<i>Il/elle/on va manger</i>
<i>Nous mangeons</i>	<i>Nous allons manger</i>
<i>Vous mangez</i>	<i>Vous allez manger</i>
<i>Ils/elles mangent</i>	<i>Ils/elles vont manger</i>

Geography

Today cold environments cover 25% of the World's land surface. In the UK ice and glaciers create our landscape in the past.
20,000 year ago much of the UK will have been covered in ice – up to 3km thick and large glaciers will have flowed down hill due to gravity.

Ice is a powerful force in shaping the land – Mechanical or physical weathering such as the wind, freeze thaw and frost shatter.

Freeze thaw creates scree.

Most active where the temperature varies regularly around 0°C.

This can break down rock which can then be transported by the glacier.

Erosion – breaks down rock e.g. plucking.

Glacier freezes to rocks, moves, plucks or pulls rocks out E.g. **Abrasion** – rock and sediment at glacier base, grinds against the ground eroding like sandpaper.

Transport – where sediment is carried within, under or on top of the ice. Some movement is rotational – where gravity, the mass of the ice and the slope act to make the ice move down slope in a curved or rotational movement.

At snout, ice bulldozers material forward.

Soil, rocks and boulders are pushed forward by the huge mass of the ice descending the valley.

Glacial deposition – where ice drops down sediment.

Other landforms of erosion – ribbon lakes – caused by differential rates of erosion.

Long time lakes where ice has over deepened the valley floor.

They fill with water as ice retreats.

Truncated spurs – interlocking spurs from V shaped river valleys 'snapped' off as ice descends a valley.

Hanging valleys – U shaped valleys left hanging above main valley because main valley eroded more than tributary valleys by thicker ice.

Often have waterfalls.

Landforms of transportation and deposition – found in much lower altitudes in lower valleys.

They are found in areas where the temperature is warmer so the ice melts and loses its capacity to carry materials.

Erratics are large boulders that sit on top of a different type of rock on the landscape. Eg The Bowder Stone in Borrowdale, Cumbria is a 2,000 tone erratic thought to originate in Scotland.

Geography

Moraine – This is the material produced by glacial erosion.

Unsorted (it contains really huge boulders and at the same time a fine powder called glacial flour) and angular.

Ground moraine – spread all over the ground. Terminal moraine – which are rocks deposited in a ridge at the maximum advance of the ice

Lateral Moraine which are ridges of moraine that come from the valley sides and run parallel to those valley sides.

Medial Moraine – these are a ridge of rocks running down the middle of a valley formed by 2 lateral moraines from 2 glaciers coming together.

Recessional moraine – these often run parallel to terminal moraines and these ridges of material mark the retreat of a glacier.

Each recessional moraine marks a point where the ice has been static long enough in the glaciers retreat for material to build up.

Drumlins – are thought to form where material is deposited underneath a glacier as ground moraine. This material is then shaped into the drumlin shape as the ice advances or retreats. Running water under the ice could also play a role in helping shape the drumlin.

Glacial landscapes offer opportunities for development

Farming – Challenges **relief is very steep** (hard to use machinery), **soils are often thin** on mountain sides, non-existent in areas scoured by ice or waterlogged in upland mountain areas (so Arabic farming difficult),

Temperatures are lower at higher altitudes, and the mountainous landscape creates lots of shaded areas that receive less sunlight.

Result – Extensive pastoral farming (animals, commonly sheep, are kept for their meat, milk or hides at low densities).

Forestry – Uplands plant with pine (coniferous) trees which grow quickly and can be harvested often. 2 million hectares of coniferous forests exist in the UK, and the Forestry Commission manage a lot of that. Much of the UK's forestry is said to be **sustainable** as felled areas are replanted, and our forest cover has actually increased in recent decades. Used in construction, furniture and increasingly as a fuel for people.

Quarrying – store and mineral wealth. A quarry is basically an area of land where we dig out rock that we can then use.

Lake District – long history of mining and quarrying, for minerals such as lead, copper, graphite, and coal.

Slate mining are quarrying still take place, providing building material for dwellings. Slate is used extensively as a roofing material.

Granite from the highlands of Scotland used pavement materials or even for kitchen work surfaces.



Feste	Celebrations
1. Karneval	<i>carnival</i>
2. Weihnachten	<i>Christmas</i>
3. Heiligabend	<i>Christmas Eve</i>
4. Ostern	<i>Easter</i>
5. Fastnacht	<i>Mardigras</i>
6. Neujahr	<i>New Year</i>
7. Silvester	<i>New Year's Eve</i>
8. Valentinstag	<i>Valentine's Day</i>
9. Eid	<i>Eid</i>
10. Nikolaustag	<i>6th December</i>
11. mein Geburtstag	<i>my birthday</i>
12. eine Hochzeit	<i>a wedding</i>

Essen und Trinken	Food and Drink
23. Ich werde...essen.	<i>I will eat....</i>
24. Ich werde...trinken.	<i>I will drink...</i>
25. schöne Sachen	<i>lovely things</i>
26. Gans	<i>goose</i>
27. Blaukraut	<i>red cabbage</i>
28. Kartoffeln	<i>Potatoes</i>
29. Schokolade	<i>chocolate</i>
30. Lebkuchen	<i>gingerbread</i>
31. Stollen	<i>stollen</i>
32. Fondue	<i>fondue</i>
33. Raclette	<i>melted cheese</i>
34. Bockwürstchen	<i>sausages</i>
35. Glühwein	<i>mulled wine</i>

Prost Neujahr!	Happy New Year
13. Wir machen eine Party.	<i>We have a party.</i>
14. Wir sagen 'Prost Neujahr'.	<i>We say: 'Happy New Year'.</i>
15. Wir machen ein Feuerwerk.	<i>We have fireworks.</i>
16. Wir trinken Sekt oder Limo.	<i>We drink sparkling wine or lemonade.</i>
17. Wir machen eine Wanderung.	<i>We go for a walk.</i>
20. Wir essen Linsensuppe und Schweinefleisch.	<i>We eat lentil soup and pork.</i>
21. Das ist eine Tradition.	<i>That is a tradition.</i>
22. Es bringt Glück.	<i>It brings luck.</i>

Der Weihnachtsmarkt	Christmas market
36. Ich werde...	<i>I will...</i>
37. Wir werden...	<i>We will...</i>
38. den Markt besuchen.	<i>visit the market.</i>
39. Geschenke kaufen.	<i>buy presents.</i>
40. den Weihnachtsschmuck bewundern.	<i>admire the Christmas decorations.</i>
41. Weihnachtslieder singen.	<i>sing Christmas carols.</i>
42. Kastanien essen.	<i>eat chestnuts.</i>
43. Glühwein trinken.	<i>drink mulled wine.</i>

Phonics Focus:	
[eu] = /oi/ <i>Fre<u>u</u>nd</i>	[au] = /ow/ <i>H<u>a</u>us</i>
[ei] = /eye/ <i>E<u>i</u>s</i>	[ie] = /ee/ <i>B<u>i</u>ene</i>

Vital verb: essen (to eat)	
Present	Future
<i>Ich esse</i>	<i>Ich werde...essen.</i>
<i>Du isst</i>	<i>Du wirst...essen.</i>
<i>Er/sie isst</i>	<i>Er/sie wird...essen.</i>
<i>Wir essen</i>	<i>Wir werden...essen.</i>
<i>Ihr esst</i>	<i>Ihr werdet...essen.</i>
<i>Sie/sie essen</i>	<i>Sie/sie werden...essen.</i>

History

1. Antisemitism	Hostility to or prejudice against Jews.
2. Aryan	Germans of pure blood, characterised by their blue eyes and blond hair.
3. Collaborators	People, organisations and governments that helped the Nazis persecute and/or murder Jews.
4. Concentration camps	Places where large numbers of people were kept as prisoners under armed guard.
5. Death Camp	Killing centres established by the Nazis in Central Europe during WW2
6. Demonised	Something or someone portrayed as wicked and threatening.
7. Deportation	Forcibly removing someone from one country to another.
8. Discrimination	Unfairly treating an individual or a group differently from others.
9. Einsatzgruppen	Nazi soldiers that carried out mass shootings in Eastern occupied countries.
10. Ghettos	Areas in towns/cities where Jews were separated from other people.
11. Genocide	The killing of, and attempted destruction of an entire group of people.
12. Liberation	Setting someone free.
13. Partisan	A member of an armed group formed to fight against an occupying force.
14. Persecution/ Persecuted	Being treated badly, usually because of 'race' or religion or political beliefs.
15. Prejudice	An unfair opinion, judgement or feeling towards someone.
16. Work camps	Camps in which prisoners were forced to work as slave labourers.

History

Timeline of Jewish persecution in German

1933	The SA organised a boycott of Jewish shops and businesses. Jewish civil servants, lawyers and teachers were sacked, and Jewish doctors and dentists could not treat Aryans (pure Germans). Science lessons about race were introduced which taught that Jews were subhuman.
1934	Jewish shops were marked with a yellow star. Jews had to sit on separate seats on buses and trains. Many councils banned them from public spaces.
1935	The Nuremberg Laws stripped Jews of German citizenship, outlawed marriage and sexual relations between Jews and Germans, and removed all the civil and political rights of the Jews. These laws were to be the foundation for much of the extreme persecution which took place later.
1938	Jews were ordered to register all wealth and property. They could no longer practice as doctors or lawyers, and Jewish businessmen could not have Aryan clients. Jews were forced to change their first names: males would be known as Israel, females as Sarah. Jewish children were forbidden to go to school and universities. Kristallnacht - 9 November (The Night of Broken Glass). The SS organised attacks on Jewish homes, businesses and synagogues in retaliation for the assassination of the German ambassador to France by a Jew. During Kristallnacht, 400 synagogues and 7,500 shops were destroyed. Jews were then made to clear up the destruction on their hands and knees and pay a fine of one billion marks to the government. The remaining Jewish property was then confiscated.
1939	The Nazis, who had been encouraging Jews to emigrate from 1933 onwards, now started “forced” emigration. Göring set up the Reich Central Office for Jewish Emigration. 150,000 Jews were deported, but they had to pay a large “tax” before they could leave. In March, there were mass arrests. 30,000 Jews were sent to concentration camps.
1941	The ‘Final Solution’ agreed. The Nazi policy on Jews moved from expulsion to containment to commanders being ordered to systematically murder the Jews of Europe.

Mathematics

9.6 Numbers.....

What do I need to be able to do?

By the end of this unit you should be able to:

- Identify integers, real and rational numbers
- Work with directed number
- Solve problems with number
- Find HCF/ LCM
- Add/ Subtract fractions
- Multiply/ Divide fractions
- Write numbers in standard form

Keywords

Integer: a whole number that is positive or negative

Rational: a number that can be made by dividing two integers

Irrational: a number that cannot be made by dividing two integers

Inverse operation: the operation that reverses the action

Quotient: the result of a division

Product: the result of a multiplication

Multiples: found by multiplying any number by positive integers

Factor: integers that multiply together to get another number

Multiplication/Division of fractions: M157, M197, M110, M265

Directed number: M106, M288

HCF/LCM: M227, M698, M365

Integers, real and rational numbers: M187, M354

Standard form: M719, M678

Addition/subtraction of fractions: M835

Sparx

Mathematics

Multiplication/ Division of fractions

$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$

Shade in 3 parts

Repeat it on this many rows

Modelled

This many columns

This many rows

Remember to use reciprocals

Represented

$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$

Multiplying by a reciprocal gives the same outcome.

$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$

Parts shaded

Total number of parts in the diagram

Directed number

Addition

$2 + -4 = -2$

Zero pair $(-1 + 1 = 0)$

Two -1 's left -2

Generalisation $+ - = -$

Subtraction

$2 - -1 = 3$

Take away one

Representation for calculation

Generalisation $- - = +$

"Subtract" means take away or remove

Two -1 's left -2

Generalisation $- + = -$

Multiplication

$-2 \times -3 = 6$

The act of making counters into their negative is turning them over

Directions are the inverse operations

$a = 5$

$b = -4$

Brackets around negative substitutions helps remove calculation errors

$2a - b = 2 \times 5 - (-4) = 10 + 4 = 14$

Integers, real and rational numbers

Rational – root word ratio

Real numbers: $\frac{2}{3}$ stems from $2 \frac{2}{3}$ of the whole)

Irrational numbers: $\sqrt{2}$ the solution is a decimal that never ends and does not repeat

The square root of a negative is not a real number and cannot be found

LCM/HCF

Common factors are factors two or more numbers share.

HCF – Highest common factor

HCF of 18 and 30

18: 1, 2, 3, 6, 9, 18

30: 1, 2, 3, 5, 6, 10, 15, 30

HCF = 6

LCM – Lowest common multiple

LCM of 9 and 12

9: 9, 18, 27, 36, 45, 54

12: 12, 24, 36, 48, 60

LCM = 36

The first time they multiples match

Addition/ Subtraction of fractions

$\frac{4}{5} - \frac{2}{3} = \frac{12}{15} - \frac{10}{15} = \frac{2}{15}$

Use equivalent fractions to find a common multiple for both denominators

Mathematics

9.7 Using percentages.....

What do I need to be able to do?

By the end of this unit you should be able to:

- Use FDP equivalence
- Calculate percentage increase and decrease
- Express percentage change
- Solve reverse percentage problems
- Solve percentage problems (calculator and non calculator problems)

Keywords

Percent: parts per 100 — written using the $\%$ symbol

Decimal: a number in our base 10 number system. Numbers to the right of the decimal place are called decimals.

Fraction: a fraction represents how many parts of a whole value you have.

Equivalent: of equal value.

Reduce: to make smaller in value.

Growth: to increase/ to grow

Integer: whole number, can be positive, negative or zero.

Invest: use money with the goal of it increasing in value over time (usually in a bank)

Multiplier: the number you are multiplying by

Profit: the income take away any expenses/ costs.

FDP Equivalence: M410,

Converting FDP: M264, U594

Reverse percentages: U286

Percentage increase/decrease: U773, U671

Percentage change: U278

Sparx

Mathematics

FDP Equivalence

Percentage

100% = a whole = 100 hundredths

10 hundredths
10 out of 100
10%

One hundredth
 $\frac{10}{100} = \frac{1}{10} = 0.10$
(one whole split into 100 equal parts)

ones	tenths	hundredths
	•	•

Converting FDP

Using a calculator

$\frac{70}{100}$ → 70 out of 100 squares → 70 "hundredths" = 7 "tenths" = 0.7

This also means $70 \div 100$

Convert to a decimal

$S = D$ → $\times 100$ converts to a percentage

Be careful of recurring decimals
e.g. $\frac{1}{3} = 0.3333333$
 $\frac{3}{10} = 0.3$
The dot above the 3

Reverse Percentages

40% of my number is 16
What am I thinking of?

Original Number (100%)

16

40% = 16
 $10\% = 4$
100% = 40

Try to scale down to 10% or 1% and then scale back up to 100%

140% of my number is 84
What is the original number?

Original Number (100%)

84

140% = 84
 $10\% = 6$
100% = 60

Percentage change

I bought a phone for £200
A year later sold it for £125

Percentage loss

$\frac{75}{200} \times 100 = 37.5\%$

Percentage increase/decrease

I bought a house for £180,000
later sold it for £216,000

Percentage profit

$\frac{36000}{180000} \times 100 = 20\%$

Difference in values

$\frac{\text{Difference in values}}{\text{Original value}} \times 100$

Mathematics

9.8 Maths and money.....

What do I need to be able to do?

By the end of this unit you should be able to:

- Solve problems with bills and bank statements
- Calculate simple interest
- Calculate compound interest
- Calculate wages and taxes
- Solve problems with exchange rates
- Solve unit pricing problems

Keywords

Credit: money being placed into a bank account

Debit: money that leaves a bank account

Balance: the amount of money in a bank account

Expense: a cost/ outgoing

Deposit: an initial payment (often a way of securing an item you will later pay for)

Multiplier: a number you are multiplying by (Multiplier more than 1 = increasing, less than 1 = decreasing)

Per Annum: each year

Currency: the type of money a country uses

Unitary: one – the cost of one

Bills and Bank statements: M901

Simple Interest: U533

Compound Interest: U332

Exchange Rates: U610

Value Added Tax (VAT): M901

Wages and Taxes: M901

Unit Pricing: U721

Sparx

Mathematics

Bills and Bank Statements

Bills – tell you the amount items cost and can show how much money you need to pay

Some can include a total
Look for different units
(Is it in pence or pounds?)

Menu	Price
Milk	89p
Tea	£1.50

Bank Statements

Bank statement can have negative balances if the money spent is higher than the money coming into the account

Date	Description	Credit	Debit	Balance
1 st Sept	Salary	£1500		£1500
1 st Sept	Mortgage		£600	£900
25 th Sept	Bobay Money	£15		£915

Simple Interest

For each year of investment the interest remains the same

$$\frac{\text{Principal amount} \times \text{Interest Rate} \times \text{Years}}{100}$$

Principal amount is the amount invested in the account
e.g. Invest £100 at 30% simple interest for 4 years

This account earned **£120 interest**
At the end of year 4 they have **£220**

$$\frac{100 \times 30 \times 4}{100} = £120$$

Compound Interest

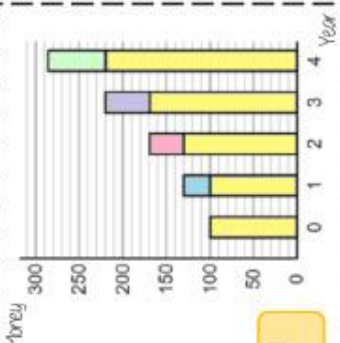
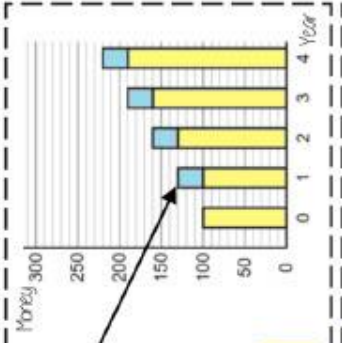
Interest is added to the current value of investment at the end of each year so the next year's interest is greater

$$\text{Principal amount} \times \text{Multiplier}^{\text{Years}}$$

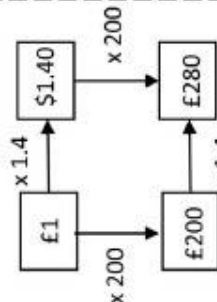
e.g. Invest £100 at 30% compound interest for 4 years

$$100 \times 1.3^4 = £285.61$$

This account has **£285.61 in total**
at the end of the 4 years



Exchange Rates



When making estimates it is also useful to use estimates to check if our solution is reasonable.

Use inverse operations to reverse the exchange process

Common Currencies	£ Pounds
United Kingdom	£ Pounds
United States of America	\$ Dollars
Europe	€ Euros

Wages and Taxes

Salaries fall into tax brackets – which means they pay this much each month from their salary

Taxable Income	Tax Rate
£12 501 to £50 000	20%
£50 001 to £150 000	40%
over £150 000	45%

Over time.
Time and a half – means 1.5 times their hourly rate
Double – 2 times their hourly rate

Value Added Tax (VAT)

VAT is payable to the government by a business in the UK VAT is 20% and added to items that are bought

Essential items such as food do not include VAT

Unit Pricing

4 Oranges	£1
5 cupcakes	£1.20

$$\begin{aligned} 4 &= £1.00 \div 2 & 5 &= £1.20 \div 5 \\ 2 &= £0.50 & 1 &= £0.20 \\ 1 &= £0.25 \div 2 & 1 &= £0.20 \end{aligned}$$

Cost per Unit

To calculate unit per cost you divide by the cost

Cupcakes are the best value as one item has the cheapest value

There is a directly proportional relationship between the cost and number of units

Exploring Film Music	
SOUNDTRACKS	
<p>A. The Purpose of Music in Film</p> <p>Film Music is a type of DESCRIPTIVE MUSIC that represents a MOOD, STORY, SCENE or CHARACTER through music, it is designed to SUPPORT THE ACTION AND EMOTIONS OF THE FILM ON SCREEN. Film Music can be used to:</p> <ul style="list-style-type: none">● Create or enhance a mood (though the ELEMENTS OF MUSIC)● Function as a LEITMOTIF (see D)● To emphasise a gesture (MICKEY-DOUSING – when the music fits precisely with a specific part of the action in a film e.g. cartoons)● Provide unexpected juxtaposition/irony (using music the listener wouldn't expect to hear giving a sense of uneasiness or humour!)● Link one scene to another providing continuity● Influence the pacing of a scene making it appear faster/slower● Illustrate the geographic location (using instruments associated with a particular country) or historical period (using music 'of the time').	
<p>D. Leitmotifs</p> <p>LEITMOTIF – A frequently recurring short melodic or harmonic idea which is associated with a character, event, concept, idea, object or situation.</p> <p>Leitmotifs can be changed through SEQUENCING, REPETITION or MODULATION giving a hint as to what may happen later in the film or may be heard in the background giving a "subtle hint" to the listener e.g. the "Jaws" <i>Leitmotif</i></p>	
<p>B. Composing using musical elements</p> <p>PITCH AND MELODY – RIISING MELODIES are often used for increasing tension, FALLING MELODIES for defeat. Westerns often feature a BIG THEME. Q&A PHRASES can represent good versus evil. The INTERVAL OF A FIFTH is often used to represent outer space with its sparse sound. DYNAMICS – FORTE (LOUD) dynamics to represent power; PIANO (SOFT) dynamics to represent weakness/calm/resolve. CRESCENDOS used for increasing threat, triumph or proximity and DECRESCENDOS or DIMINUENDOS used for things going away into the distance. Horror film soundtracks often use EXTREME DYNAMICS or SUDDEN DYNAMIC CHANGES to 'shock the listener'.</p> <p>HARMONY – MAJOR – happy; MINOR – sad. CONSONANT HARMONY OR CHORDS for "good" and DISSONANT HARMONY OR CHORDS for "evil". SEVENTH CHORDS often used in Westerns soundtracks. DURATION – LONG notes often used in Westerns to describe vast open spaces and in Sci-Fi soundtracks to depict outer space; SHORT notes often used to depict busy, chaotic or hectic scenes. PEDAL NOTES – long held notes in the BASS LINE used to create tension and suspense. TEXTURE – THIN/SPARE textures used for bleak or lonely scenes; THICK/FULL textures used for active scenes or battles. ARTICULATION – LEGATO for flowing or happy scenes, STACCATO for 'frozen' or 'icy' wintry scenes. ACCENTS (>) for violence or shock. RHYTHM & METRE – 2/4 or 4/4 for Marches (battles), 3/4 for Waltzes, 4/4 for "Big Themes" in Westerns. IRREGULAR TIME SIGNATURES used for tension. OSTINATO rhythms for repeated sounds e.g. horses.</p>	<p>C. Film Music Key Words</p> <p>SOUNDTRACK – The music and sound recorded on a motion-picture film.</p> <p>STORYBOARD – A graphic organiser in the form of illustrations and images displayed in sequence to help the composer plan their soundtrack.</p> <p>CUESHEET – A detailed listing of MUSICAL CUES matching the visual action of a film so that composers can time their music accurately.</p> <p>CLICK TRACKS – An electronic METRONOME which helps film composers accurately time their music to on-screen action through a series of 'clicks' (often heard through headphones)</p> <p>DIEGETIC FILM MUSIC – Music within the film for both the characters and audience to hear e.g. <i>a car radio, a band in a nightclub</i> or <i>sound effects</i>.</p> <p>NON-DIEGETIC FILM MUSIC – Music which is put "over the top" of the action of a film for the audience's benefit and which the characters within a film can't hear – also known as UNDERScore</p>
<p>E. Film Music Composers and their Soundtracks</p> <p> Jerry Goldsmith <i>Planet of the Apes</i> <i>Star Trek: The Motion Picture</i> <i>The Omen</i> <i>Alien</i></p> <p> John Williams <i>Star Wars</i> <i>Jaws</i> <i>Harry Potter</i> <i>Indiana Jones</i> <i>Superman, E.T.</i></p> <p> James Horner <i>Titanic</i> <i>Apollo 13</i> <i>Braveheart</i> <i>Star Trek II</i> <i>Aliens</i></p> <p> Ennio Morricone <i>The Good, The Bad and The Ugly</i> <i>For a Few Dollars More</i> <i>The Mission</i></p> <p> Danny Elfman <i>Mission Impossible</i> <i>Batman Returns</i> <i>Men in Black</i> <i>Spider-Man</i></p> <p> Hans Zimmer <i>The Lion King</i> <i>Gladiator</i> <i>Dunkirk</i> <i>Blade Runner 2049</i> <i>No Time to Die</i></p> <p> Bernard Hermann <i>Psycho</i> <i>Vertigo</i> <i>Taxi Driver</i></p>	

Define: Calories

Calories refer to the energy people get from the food and drink they consume.

Define: Obesity

Obesity has been defined by the National Institutes of Health (the NIH) as a BMI of 30 and above.

Define: BMI

This is a numerical value of your weight in relation to your height. A BMI between 18.5 and 25 kg/m² indicates a normal weight. BMI is a person's weight in kilograms (kg) divided by his or her height in meters squared.

Define: Nutrition

The process of providing or obtaining the food necessary for health and growth.

Define: Veganism

A diet where a person does not eat or use animal products.

Define: Vegetarianism

A diet where a person does not eat meat or fish

The Eat Well Plate



What does 1 portion of your 5 a day look like?

- 80g of fresh, canned or frozen fruit and vegetables
- 30g of dried fruit – which should be kept to mealtimes
- 150ml glass of fruit juice or smoothie – but do not have more than 1 portion a day as these drinks are sugary and can damage teeth
- Just 1 apple, banana, pear or similar-sized fruit is 1 portion each.
- A slice of pineapple or melon is also 1 portion.
- 3 heaped tablespoons of vegetables is another portion.

How much exercise should you do?

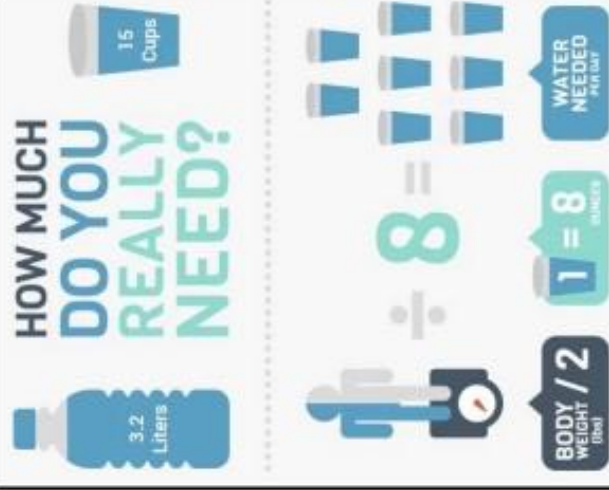
<p>Children 5-12 years 60 minutes of moderate to vigorous intensity physical activity every day</p>	<ul style="list-style-type: none"> Jogging or running Racewalking Hiking uphill Cycling more than 10 miles per hour or steeply uphill Swimming fast or lap swimming Aerobic dancing, fast dancing, step aerobics Heavy gardening with digging, hoeing, shovelling heavy snow, moving or pushing heavy objects, carrying loads of 50 pounds on level ground or 25 pounds or more upstairs.
<p>Young People 13-17 years 60 minutes of moderate to vigorous intensity physical activity every day</p>	<ul style="list-style-type: none"> Marital arts Playing sports with lots of running such as basketball, hockey, soccer Singles tennis Court sports such as handball, racquetball, squash
<p>Adults 18-64 years 150 to 300 minutes (75 to 150 minutes if 5 to 6 days a week) of moderate intensity physical activity or 75 to 150 minutes (37 to 75 minutes if 5 to 6 days a week) of vigorous intensity physical activity or an equivalent combination of both moderate and vigorous activities, each week</p>	

Impacts of poor Nutrition

- Short term:
- stress,
 - tiredness
 - limit capacity to work.
- Long term it can contribute to the risk of developing some illnesses and other health problems such as:
- being overweight or obese
 - tooth decay
 - high blood pressure
 - high cholesterol
 - heart disease and stroke
 - type-2 diabetes
 - osteoporosis
 - some cancers
 - depression
 - eating disorders.

Where to get more help and support

- Parents and trusted family
- School Staff and Wellbeing Team
- NHS Eat Well:
<https://www.nhs.uk/live-well/eat-well/>
- British Nutrition Foundation:
<https://www.nutrition.org.uk/healthy/living/lifestyles/teenagers.html>
- Kids Health:
<https://kidshealth.org/en/teen/dieting.html>



Define: Sleep Disorders

These are medical conditions which affect our sleep. They can only be diagnosed by a Doctor and can require medical intervention.

Define: REM Sleep

A kind of sleep that occurs at intervals during the night and is characterized by rapid eye movements, more dreaming and bodily movement, and faster pulse and breathing.

Define: Sleep Apnoea

Sleep apnoea occurs when the upper airway becomes completely or partially blocked, interrupting regular breathing for short periods of time -- which then wakes you up.

Define: Insomnia

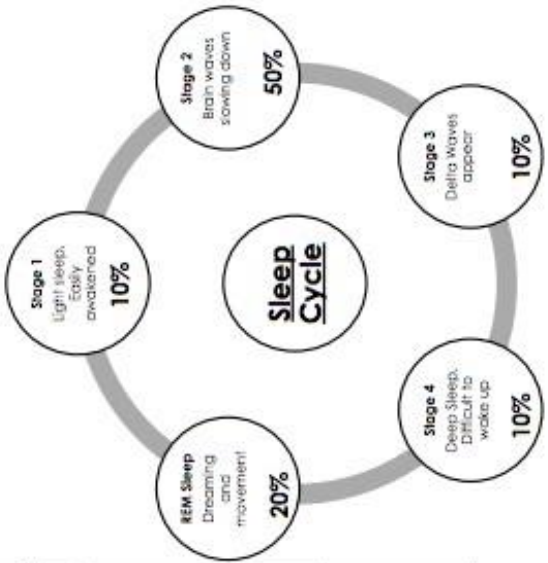
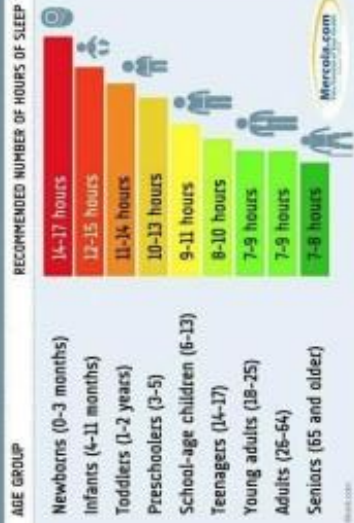
Trouble falling asleep or may wake up frequently during the night or early in the morning. Acute insomnia is when this occurs infrequently. Chronic is when it occurs regularly.

Define: Sleep Deprivation

Sleep deprivation means you're not getting enough sleep. This can be caused intentionally or not. It can be either chronic or acute and may vary widely in severity.

How Much Sleep Is "Enough"?

Sleep is one of the cornerstones of health. Sleeping too much or too little can have adverse effects on your health. Sleeping less than 5 hours per night can double your risk of heart disease, heart attack, and stroke. There is also a persistent relationship between lack of sleep and weight gain, insulin resistance, and diabetes.



What can cause problems with our sleep?

Medical Issues - The are 89 recognised sleep disorders and the most common are Insomnia, Sleep apnoea, Restless limb syndrome.

Technology - The blue light emitted by screens restricts the production of melatonin, the hormone that controls your sleep/wake cycle or circadian rhythm. Reducing melatonin makes it harder to fall and stay asleep.

Hunger - It is not recommended to eat a big meal before bedtime, a small bedtime snack helpful. If you go to bed hungry, you're likely to wake up with hunger pangs.

Stress causes hyperarousal, which can upset the balance between sleep and wakefulness.

Mental Health Issues - Mental health issues can have a variety of impacts on sleep, such as anxiety making it hard to settle due to racing thoughts. PTSD can lead to nightmares and night terrors, depression can lead to over sleeping.

Your Bed - Past research shows that sleeping on an uncomfortable mattress can rob you of up to an hour's vital, restful sleep.

Clutter and Messy Rooms - A cluttered bedroom makes for a cluttered mind. Don't use it as a dumping ground for the rest of the house. Your bedroom should be a sanctuary, somewhere you can go to turn off and relax.

Napping and Lie In: Trying to make up for lack of sleep with extra time in bed the following morning, or even a few days later, throws off your internal body clock. Naps of under 30 minutes can be refreshing any longer throws out your body clock.

Consequences of Sleep Deprivation

- Emotional Affects**
 - Irritability
 - Mood Swings
 - Fatigue / tiredness
 - Lack of Motivation
 - Depression
- Physical Affects**
 - High Blood Pressure
 - Reduced Sex Drive
 - Lower Immune system
 - Disrupt hormone regulation
 - Higher risk of type 2 diabetes
- Cognitive effects**
 - Forgetfulness
 - Clumsiness
 - Difficulty Focusing

Top Tips for a Good nights sleep

1. Routines - set a routine which your body can recognize is a wind down for sleep.
2. Tech free bedrooms - stop using technology such as tablets and phones 2 hours before bed or use a blue light filter.
3. Clutter free bedrooms - Keeping your bedroom clutter free and tidy and help make the room feel calmer and more relaxing.
4. Reduce stimulant food intake - foods and drinks which contain a lot of sugar and caffeine can impact your sleep so try not to consume too much after 3pm.
5. Temperature - the suggested bedroom temperature should be around 18 degrees Celsius.

More Information & Support

Sleep deprivation means you're not getting enough sleep. This can be caused intentionally or not. It can be either chronic or acute and may vary widely in severity.

Personal Development

Who Can you turn to for help and Support	
Parents and Family members	School Staff and Safeguarding Team
Your GP or Practice Nurse	
NSPCC	Helpline: 0800 800 5000 nspcc.org.uk
Childline	Helpline: 0800 1111 (https://www.childline.org.uk)
NHS Live Well Website	www.nhs.uk/livewell
The Mix	Helpline: 0800 808 4994
Talk to Frank	Helpline: 0300 123 6600 talktofrank.com
Action on Addiction	Helpline: 0300 330 0659 actiononaddiction.org.uk
DrugFAM	Helpline: 0300 888 3853 drugfam.co.uk

Mental and Emotional Withdrawal Symptoms	
• Anxiety: Anxiety, panic attacks, restlessness, irritability	
• Depression: Social isolation, lack of enjoyment, fatigue, poor appetite	
• Sleep: Insomnia, difficulty falling asleep or staying asleep	
• Cognitive: Poor concentration, poor memory	
Physical Withdrawal Symptoms	
• Head: Headaches, dizziness	
• Chest: Chest tightness, difficulty breathing	
• Heart: Racing heart, skipped beats, palpitations	
• GI: Nausea, vomiting, diarrhoea, stomach aches	
• Muscles: Muscle tension, twitches, tremors, shakes, muscle aches	
• Skin: Sweating, tingling	
Dangerous Withdrawal Symptoms	
• Grand mal seizures	
• Heart attacks	
• Strokes	
• Hallucinations	
• Delirium tremens (DTs)	

Drug	Analgesic	Hallucinogen	Stimulant	Depressant
Caffeine			✓	
Cocaine			✓	✓
Heroin	✓			✓
Cannabis		✓		✓
Crack Cocaine			✓	
Amphetamines		✓		
Ecstasy			✓	
Alcohol				✓
Inhalants		✓		
Tobacco				✓
LSD		✓		
Magic Mushrooms		✓		
Steroids	✓			

Define: Stimulant

A drug which cause a person to feel like they have more energy or more awake.

Define: Depressant

A drug which cause a person to feel calmer or lethargic.

Define: Hallucinogen

A drug which cause a person to experience sensations that are not really there. This could be visual, auditory or physical.

Define: Analgesic

A drug which reduces the feeling of pain.

Define: Withdrawal

a predictable group of signs and symptoms that result from either the sudden removal of, or abrupt decrease in the regular dosage of a drug.

Define: Addiction

The feeling of needing a drug in order to get through the day.

Personal Development

Caffeine	Cocaine	Heroin	Cannabis	Crack Cocaine	Amphetamines	Ecstasy
Caffeine is a naturally occurring chemical stimulant called trimethylxanthine. In its pure form, caffeine is a white crystalline powder that tastes very bitter. Caffeine is in tea, coffee, chocolate, many soft drinks, and pain relievers and other over-the-counter medications.	The hydrochloride salt is usually in a powdered form by the time it makes it to street dealers and users. The texture is similar to baby powder. In fact, it is so similar that many dealers will cut their coke with baby powder in order to increase their profits. The color can range from a clear white to an off-white, and sometimes even a yellowish color.	In its purest form, heroin is a fine white powder. But more often, it is found to be rose gray, brown or black in color. The coloring comes from additives which have been used to dilute it, which can include sugar, caffeine or other substances. Street heroin is sometimes "cut" with strychnine ¹ or other poisons.	Soft black resin, furry green leaves dried to look like herbs or hard brown lumps, cannabis can look very different depending on its type – but it all comes from cannabis plants.	Crack cocaine is a purer form of cocaine and looks somewhat like rocks. Most of the time, crack cocaine is off-white in color, but it can have a rosy hue that makes it appear pink.	It's usually an off-white or pinkish powder and can sometimes look like crystals. It's also available in a paste form which is usually white/grey or brown in colour, and can be damp and gritty.	Ecstasy comes in pill or powder form. Ecstasy pills can be white, coloured, round, square or pressed into any shape. Some pills have designs stamped into them, like well known company logos that the pills are then named after. Ecstasy powder looks like white/grey crystals and is called MDMA, mandy or MD.
Alcohol	Inhalants	Tobacco	LSD		Magic Mushrooms	Steroids
While some drinks have more alcohol than others, the type of alcohol in all alcoholic drinks is the same – it's a type of alcohol called ethanol. Alcohol is a colourless, odourless and inflammable liquid.	The term inhalants refers to the various substances that people typically take only by inhaling. These substances include solvents (liquids that become gas at room temperature), aerosol sprays; gases; nitrites (prescription medicines for chest pain)	Tobacco is a plant grown for its leaves, which are dried and fermented before being put in tobacco products. People can smoke, chew, or sniff tobacco. Smoked tobacco products include cigarettes, cigars, bidis, and kreteks. Some people also smoke loose tobacco in a pipe or hookah (water pipe). Chewed tobacco products include chewing tobacco, snuff, dip, and snus; snuff can also be sniffed.	It is produced in crystal form laboratories, mainly in the United States. These crystals are converted to a liquid for distribution. It is odorless, colorless, and has a slightly bitter taste. LSD is sold on the street in small tablets ("microdots"), capsules or gelatin squares ("window panes"). It is sometimes added to absorbent paper, which is then divided into small squares decorated with designs or cartoon characters ("loony toons"). Occasionally it is sold in liquid form.		Magic mushrooms are often sold raw or dried. In the UK, the most common types are liberty caps (Psilocybe semilanceata) and fly agaric (Amanita muscaria). Liberty caps look like small tan-coloured mushrooms. Fly agarics look like red and white spotted toadstools	Anabolic steroids come in the form of tablets, capsules, a solution for injection and a cream or gel to rub into the skin. Weightlifters and bodybuilders who use steroids often take doses that are up to 100 times greater than those used to treat medical conditions.

Define: Drug

Drugs are chemicals that alter, block, or mimic chemical reactions in the brain. This causes alterations of the body's normal process's causing physical or mental changes.

Define: Medicine

A drug or other preparation for the treatment or prevention of disease.

Define: Nicotine

A toxic colourless or yellowish oily liquid which is the chief active constituent of tobacco. It acts as a stimulant in small doses, but in larger amounts blocks the action of autonomic nerve and skeletal muscle cells.

Define: Vaping

The action or practice of inhaling and exhaling the vapour produced by an electronic cigarette or similar device.

Define: Smoking

The action or habit of inhaling and exhaling the smoke of tobacco or a drug. Usually through Cigarettes or Cigars.

Define: E-Cigarette

E-cigarettes are electronic devices that heat a liquid and produce an aerosol or mix of small particles in the air. Which is then inhaled.

Effects Of Nicotine

Nicotine is both a sedative and a stimulant.

When a body is exposed to nicotine, the individual experiences a "kick." This is partly caused by nicotine stimulating the adrenal glands, which results in the release of adrenaline.

This surge of adrenaline stimulates the body. There is an immediate release of glucose, as well as an increase in heart rate, breathing activity, and blood pressure. Indirectly, nicotine causes the release of dopamine in the pleasure and motivation areas of the brain.

How do E-Cigarettes Work

E-cigarettes produce an aerosol by heating a liquid that usually contains nicotine, flavorings, and other chemicals that help to make the aerosol.

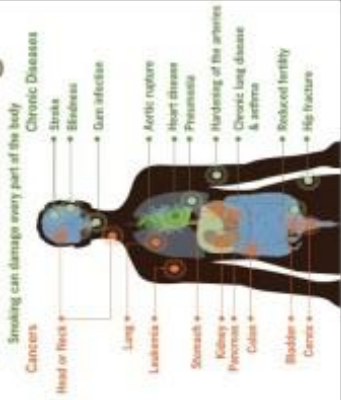
The liquid used in e-cigarettes often contains nicotine and flavorings. This liquid is sometimes called "e-juice," "e-liquid," "vape juice," or "vape liquid."

Users inhale e-cigarette aerosol into their lungs. Bystanders can also breathe in this aerosol when the user exhales it into the air. E-cigarette aerosol is NOT harmless "water vapor." The e-cigarette aerosol that users breathe from the device and exhale can contain harmful and potentially harmful substances, including:

- Nicotine
- Ultrafine particles that can be inhaled deep into the lungs
- Flavoring such as diacetyl, a chemical linked to a serious lung disease
- Volatile organic compounds
- Cancer-causing chemicals
- Heavy metals such as nickel, tin, and lead

It is difficult for consumers to know what e-cigarette products contain. For example, some e-cigarettes marketed as containing zero percent nicotine have been found to contain nicotine.

Risks from Smoking



Side effects of vaping

Mouth and airways

- Irritation
- Cough
- Increased airway resistance

Heart and circulation

- Chest pain
- Increased blood pressure
- Increased heart rate

Stomach

- Vomiting
- Nausea

Smoking and the Law

- You must be over 18 to buy cigarettes in the UK. If you're under 16 the police have the right to confiscate your cigarettes.

It's illegal:

- For shops to sell you cigarettes if you are underage
- For an adult to buy you cigarettes if you are under 18
- To smoke in all public enclosed or substantially enclosed area and workplaces.
- To smoke in a car with a child.

Vaping and the Law

- You must be 18 or over to purchase e-cigarettes or e-liquids in the UK. It also became illegal for an adult to buy e-cigarettes for someone under the age of 18.
- Although there is no legal restriction on where you can vape in the UK there are local laws and bylaws in force that prohibit the practice. The choice of whether or not to allow vaping is that of the property owner.
- Vaping generally is not allowed on the underground, planes, buses or trains and train stations in the United Kingdom.
- Vaping while you drive may not seem like such a big deal but it could land you with up to nine penalty points and a fine of £2,500.

Who Can you turn to for help and Support

Parents or trusted family members	School Safe Guarding Team or any member of staff.
Your GP or Practice Nurse.	
Smoke Free Future	https://smokefreefuture.co.uk
NHS – Stop Smoking	https://www.nhs.uk/live-well/quit-smoking
Smoke Free	https://smokefree.gov/

Physical Education

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

WADHAM KS3 PE KNOWLEDGE ORGANISER: NETBALL	
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, lifting ball up to net.	Rules: <ul style="list-style-type: none">• 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
--

Physical Education

WADHAM KS3 PE KNOWLEDGE ORGANISER: Basketball

Skills and Techniques:

Dribbling Used to keep possession 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. Another way 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.

Tactics:

Defending tactics- Full court and half court press

Attacking tactics -rebounding and manipulating the speed of play.

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 big part of their game.

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

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.

Key Words:

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

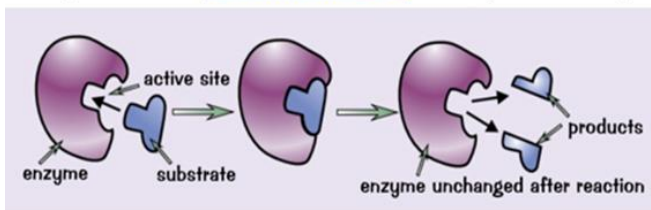
Key Words:

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

Biology – 9B1 Enzymes

Enzymes are complex protein molecules which catalyse (speed up) chemical reactions in the body.

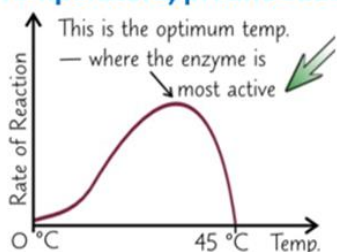
Enzymes have specific shapes so they can catalyse reactions



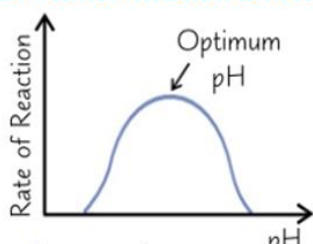
Every enzyme has an active site – the part where it joins on to its substrate.

For an enzyme to work, the substrate has to fit into the active site. If it doesn't fit the reaction won't be catalysed. This is called the lock and key mechanism.

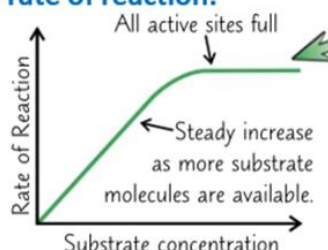
Temperature, pH and substrate concentration affect the rate of reaction.



As T increases rate of reaction increases then decreases. As enzymes get denatured at high T



As pH increases rate of reaction increases then decreases. As enzymes get denatured at high pH

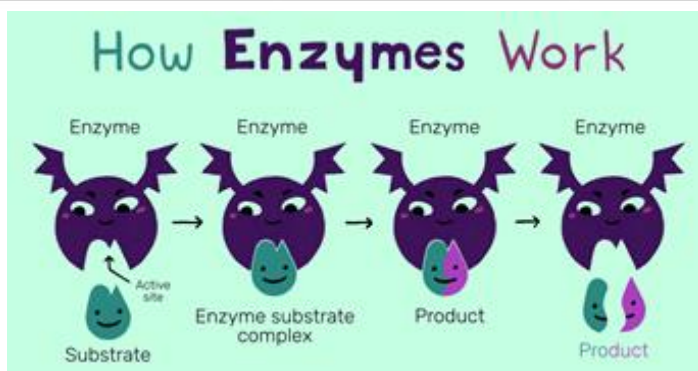


As substrate conc. increases rate of reaction increases up to a point.



SB1e Enzymes and nutrition

Word	Pronunciation	Meaning
biological catalyst	<i>bio-loj-i-cal cat-a-list</i>	A substance found in living organisms that speeds up reactions (an enzyme).
catalyst	<i>cat-a-list</i>	A substance that speeds up the rate of a reaction, without itself being used up.
digest	<i>die-jest</i>	To break down large molecules into smaller subunits, particularly in the digestive system.
monomer		A small molecule that can join with other molecules like itself to form a polymer.
polymer		A substance made up of very long molecules containing repeating groups of atoms. (Formed by joining monomer molecules together.)
product		A substance formed in a reaction.
substrate		A substance that is changed during a reaction.
synthesis	<i>sinth-eh-sis</i>	To build a large molecule from smaller subunits.



Biology - 9B1 Enzymes

Nutrients

- A **balanced diet** involves eating the right amount of nutrients for your body to function
- Not eating enough of a nutrient means you have an unbalanced diet, and this can lead to a **deficiency**

Nutrient	Role in your body
carbohydrates	main source of energy
lipids	fats and oils provide energy
proteins	growth and repair of cells and tissues
vitamins and minerals	essential in small amounts to keep you healthy
water	needed in all cells and body fluids
fibre	provides bulk to food to keep it moving through the gut



- positive **food test** for starch – add iodine solution and the solution will turn dark blue/black
- positive test for lipids – add ethanol and the solution will turn cloudy
- positive test for sugar – add Benedict's solution, heat, and the solution turns orange/red
- positive test for protein – add copper sulfate and sodium hydroxide and the solution turns purple.

SB1f Testing foods

Word	Pronunciation	Meaning
Benedict's solution		A bright blue chemical reagent that turns orange or red when warmed with a solution of reducing sugars.
biuret test		A test that uses copper sulfate solution and potassium hydroxide solution to test for proteins. The blue of the copper sulfate solution turns purple in the presence of proteins.
calorimeter		Equipment used to measure the energy released from a substance by burning it.
chemical reagent	<i>ree-ay-jent</i>	A substance or mixture used in chemical analysis or reactions.
iodine solution		A yellow-orange solution that turns black-blue when in contact with starch.
precipitate		Insoluble substance formed when two soluble substances react together.
reducing sugar		A simple sugar, such as glucose or fructose, that reacts with (reduces) Benedict's solution and changes its colour.

Biology – 9B1 Enzymes

Lesson 7 – Enzymes in Digestion

Enzymes break down big molecules such as **proteins, lipids (fats and oils)** and **some carbohydrates**. Molecules in food are **too big** to pass through the walls of our digestive system, so **digestive enzymes** break them into **smaller, soluble** molecules.

- Enzymes called **carbohydrases** convert **carbohydrates** into **simple sugars**.
E.g. **amylase** is an example of a **carbohydrase**. It breaks down **starch**.



- Proteases** convert **proteins** into **amino acids**.



- Lipases** convert **lipids** into **glycerol** and **fatty acids**.



When lipids are broken down, the fatty acids will lower the pH of the solution they are in.

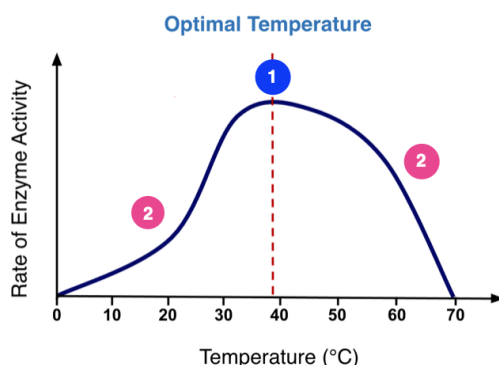
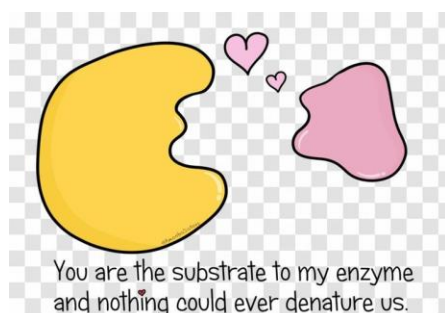
Some enzymes **join molecules together**, such as **glycogen synthase**. This is an enzyme that joins together lots of chains of **glucose** molecules to make **glycogen** (a molecule used to **store energy** in animals)

SB1g Enzyme action

Word	Pronunciation	Meaning
active site		The space in an enzyme where the substrate fits during an enzyme-catalysed reaction.
denatured		A denatured enzyme is one where the shape of the active site has changed so much that its substrate no longer fits and the reaction can no longer happen.
lock-and-key model		Model that describes the way an enzyme catalyses a reaction when the substrate fits within the active site of the enzyme.
specific	<i>spe-sif-ick</i>	Where an enzyme only reacts with one kind of substrate.

SB1h Enzyme activity

Word	Pronunciation	Meaning
optimum pH		The pH at which an enzyme-catalysed reaction works fastest.
optimum temperature		The temperature at which an enzyme-catalysed reaction works fastest.



Chemistry – C4 Periodic Table

SC4a Elements and the periodic table

Word	Pronunciation	Meaning
chemical property	<i>kem-ik-al</i>	How a substance reacts with other substances.
periodic table		An ordered list of all known elements.
physical property	<i>fi-zi-kal</i>	A description of how a material behaves and responds to forces and energy. Hardness is a physical property.
prediction	<i>pred-ik-shun</i>	What you think will happen in an experiment and why you think this.
relative atomic mass, A_r		The mean mass of an atom relative to the mass of one-twelfth of an atom of carbon-12, which is assigned a mass of 12. The A_r of an element is the mean relative mass of the isotopes in the element.

Development of the Periodic Table

The Periodic Table has changed over time as scientists have organised it differently. Mendeleev was able to accurately predict the properties of undiscovered elements based on the gaps in the table.

	First lists of elements	Mendeleev's Periodic Table	Modern Periodic Table
How are elements ordered?	by atomic mass	normally by atomic mass but some elements were swapped around	by atomic number
Are there gaps?	no gaps	gaps left for undiscovered elements	no gaps – all elements up to a certain atomic number have been discovered
How are elements grouped?	not grouped	grouped by chemical properties	grouped by the number of electrons in the outer shells
Metals and non-metals	no clear distinction	no clear distinction	metals to the left, non-metals to the right
Problems	some elements grouped inappropriately	incomplete, with no explanation for why some elements had to be swapped to fit in the appropriate groups	—

Lesson 4 Mendeleev and the early periodic table

When Mendeleev wrote his table scientists knew about 40 different elements

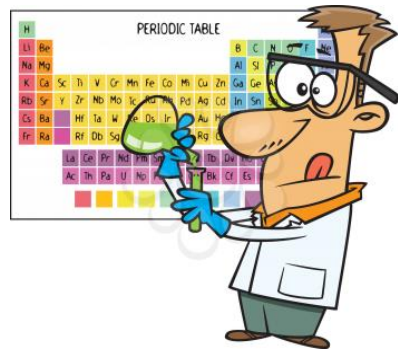
They arranged these elements in order of **increasing mass**

Scientists who first did this found that the properties of elements repeated themselves every 8 elements.

Mendeleev is famous because he left gaps in his periodic table for elements which had not been discovered. He predicted the properties of these elements. When they were found they fitted his predictions

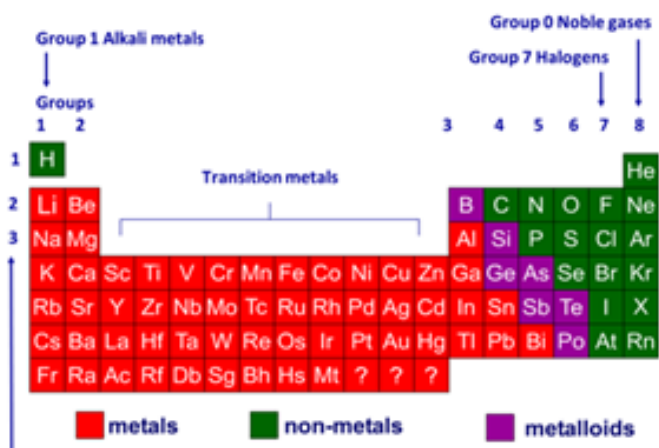


I	II	III	IV	V	VI	VII	VIII
H	Li	Be	B	C	N	O	F
Na	Mg	Al	Si	P	S	Cl	Br
K	Ca	Sc	Ti	V	Cr	Mn	Fe
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru
Cs	Ba	La	Ce	Pr	Nd	Pm	Sm
Fr	Ra	Ac	Th	Pa	U	Np	Pu



Chemistry– C4 Periodic Table

Lesson 5 The modern periodic table



The modern periodic table is arranged according to increasing atomic number

Mendeleev had to reverse the order of some elements to make them fit their families

You don't have to do this in the modern periodic table

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

SC4b Atomic number and the periodic table

Word	Pronunciation	Meaning
atomic number		The number of protons in the nucleus of an atom (symbol Z). Also known as the proton number.
group		A vertical column of elements in the periodic table. Elements in the same group generally have similar properties.
inert		Does not react.
period		A horizontal row in the periodic table.
relative atomic mass		The mean mass of an atom compared to 1/12 th the mass of an atom of carbon-12. (One atom of carbon-12 has been assigned a mass of 12.)
X-ray		Electromagnetic radiation that has a shorter wavelength than UV but longer than gamma rays.

SC4c Electronic configurations and the periodic table

Word	Pronunciation	Meaning
electron		Tiny particle with a negative charge that is found in shells around the nucleus of an atom.
electron shell		Areas around a nucleus that can be occupied by electrons, usually drawn as circles. Also called an electron energy level.
electronic configuration		The arrangement of electrons in shells around the nucleus of an atom.

1	2											3	4	5	6	7	0					
<div> <div> <div>7 Li lithium 3</div> <div>9 Be beryllium 4</div> </div> <div> <div>23 Na sodium 11</div> <div>24 Mg magnesium 12</div> </div> <div> <div>relative atomic mass</div> <div>atomic symbol</div> <div>name</div> <div>atomic (proton) number</div> </div> <div> <div>1 H hydrogen 1</div> </div> </div>																	<div> <div>11 B boron 5</div> <div>27 Al aluminium 13</div> </div>	<div> <div>12 C carbon 6</div> <div>28 Si silicon 14</div> </div>	<div> <div>14 N nitrogen 7</div> <div>31 P phosphorus 15</div> </div>	<div> <div>16 O oxygen 8</div> <div>32 S sulfur 16</div> </div>	<div> <div>19 F fluorine 9</div> <div>35.5 Cl chlorine 17</div> </div>	<div> <div>20 Ne neon 10</div> <div>40 Ar argon 18</div> </div>
39 K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36					
85 Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[98] TC technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54					
133 Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86					
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[261] Rf rutherfordium 104	[262] Db dubnium 105	[266] Sg seaborgium 106	[264] Bh bohrium 107	[277] Hs hassium 108	[268] Mt meitnerium 109	[271] Ds darmstadtium 110	[272] Rg roentgenium 111	Elements with atomic numbers 112-116 have been reported but not fully authenticated											

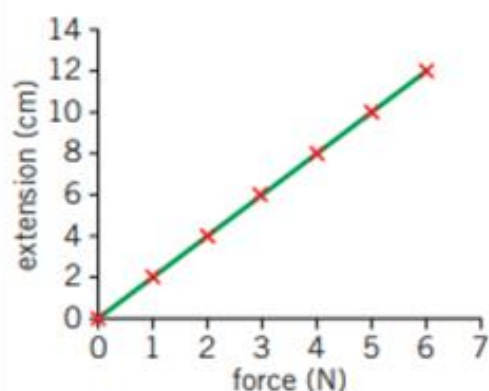
Physics – 9P13 – Forces & Matter

SP15a Bending and stretching

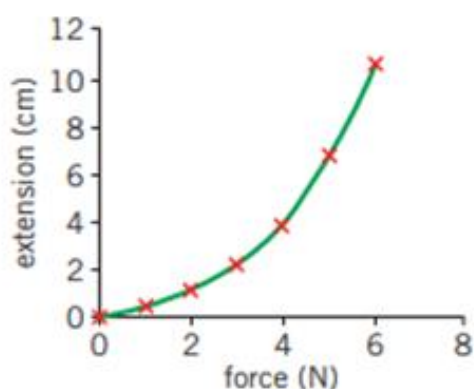
Word	Pronunciation	Meaning
direct proportion		A linear relationship in which one variable doubles as the other does.
elastic		An elastic material changes shape when there is a force on it but returns to its original shape when the force is removed.
extension		The amount by which a spring or other stretchy material has stretched. It is worked out from the stretched length minus the original length.
inelastic		An inelastic material changes shape when there is a force on it but does not return to its original shape when the force is removed.
linear relationship		A relationship between two variables shown by a straight line on a graph. For a linear relationship the line does not have to go through the origin.
non-linear relationship		A relationship between two variables that does not produce a straight line on a graph.

Hooke's law

- Some objects, like springs, can be stretched, the amount that they stretch is known as their **extension**
- A force needs to be applied to the spring for it to be stretched, we can achieve this by adding masses which exert the force weight
- A spring will continue to stretch until it passes its **elastic limit**
- If an object obeys **Hooke's law** it will have a **linear relationship**: if the force applied to the spring is doubled, the extension will double too
- If an object does not obey Hooke's law, it will not have a linear relationship



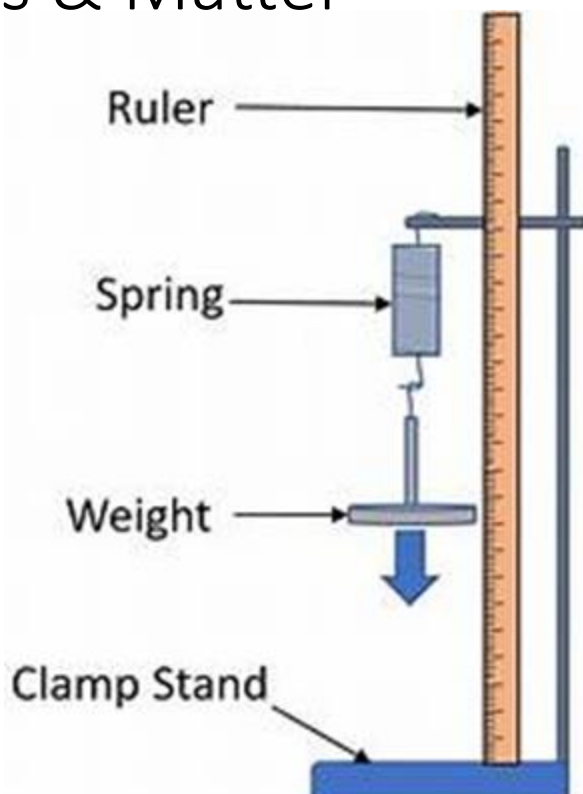
This graph shows how the extension of a spring changes as you pull it



This graph shows the relationship between force and extension

Physics – 9P13 – Forces & Matter

9. Extensions and energy transfers	
Spring constant	A measure of the strength of a spring: units = N/m
Spring constant and graphs	The spring constant is the gradient of a graph of force vs extension.
Force and extension calculations	Force = spring constant x extension $F = k \times X$ Force = N Spring constant = N/m Extension = m
Extension is greater when...	Force is higher, spring constant is lower
Work done	The energy transferred by a force.



SP15b Extension and energy transfers

Word	Pronunciation	Meaning
spring constant		A measure of how stiff a spring is. The spring constant is the force needed to stretch a spring by 1 m.
work done		A measure of the energy transferred when a force acts through a distance.

$$E_e = \frac{1}{2} k e^2$$

Spring energy calculations	Energy transferred in stretching = $\frac{1}{2} \times$ spring constant \times extension ² $E = \frac{1}{2} \times k \times X^2$ Energy = J Spring constant = N / m Extension = m
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SP15c Pressure in fluids

Word	Pronunciation	Meaning
atmospheric pressure		The pressure exerted by the weight of the air around us.
density		A measure of a substance's mass per unit volume. A common unit for density is kg/m ³ .
fluid		A gas or liquid.
pascal (Pa)	<i>pas-kal</i>	A unit for pressure. 1 Pa = 1 newton per square metre (N/m ²).
pressure		The amount of force pushing on a certain area. It is a way of saying how spread out a force is.
normal		At right angles to a surface.

Physics – 9P13 – Forces & Matter

Pressure

Pressure is the force acting per square metre on a surface.

The unit of pressure is the **pascal** (Pa), which is equal to one newton per square metre.

Pressure can be calculated using:

$$\text{pressure (Pa)} = \frac{\text{force (N)}}{\text{area (m}^2\text{)}}$$

$$p = \frac{F}{A}$$

When a force acts over a:

- large surface area, the pressure is reduced (e.g., caterpillar tracks on a tank)
- small surface area, the pressure is increased (e.g., knife edge).

Pressure in a substance

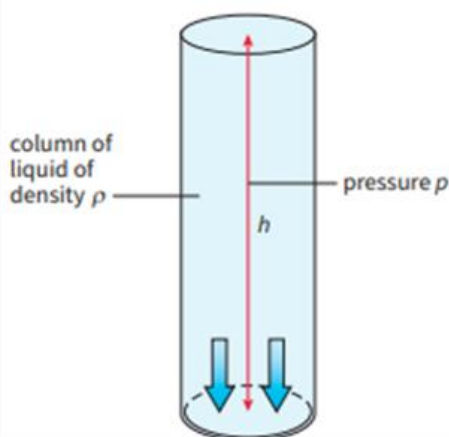
A **fluid** is a liquid or gaseous substance that can flow.

When the particles of a fluid collide with a surface, such as in a container, they exert a force at right angles (normal) to the surface.

Pressure at depth

The pressure in a liquid increases with the depth of the liquid because:

- the pressure at any point in a liquid is due to the weight of the liquid above that point
- the weight of a liquid depends on its **density**.



$$\text{Pressure} = p \times g \times h$$

$$p = \text{force} / A$$

$$\text{Force} = m \times g$$

$$m = p \times v$$

$$v = A \times h$$

$$\text{Force} = p \times a \times h \times g$$

$$\text{Pressure} = p \times a \times h \times g / a$$

$$\text{Pressure} = p \times g \times h$$

P = final Pressure

p = density of liquid

g = acceleration of gravity (9.8 m/s² 9.8 m/sec² at the earth's surface)

h = height of the liquid

Calculating pressure in a column of water

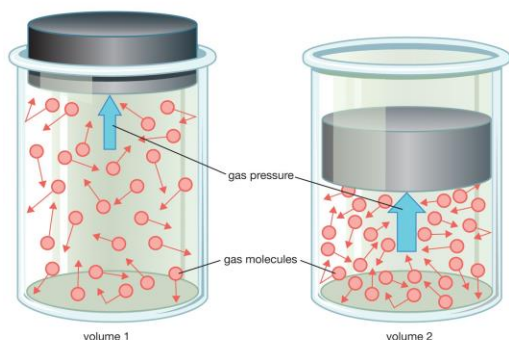
The pressure caused by a column of liquid can be calculated using:

pressure (Pa) = height of the column (m) × density of the liquid (kg/m³) × gravitational field strength (N/kg)

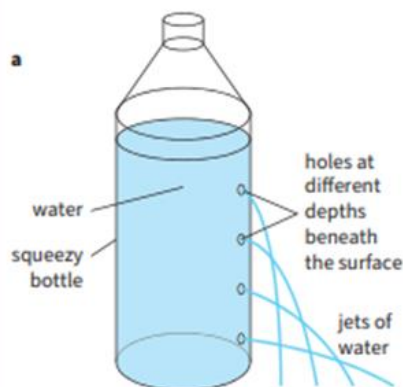
$$p = h \rho g$$

To calculate the difference in pressure at different depths in a liquid, calculate the pressure at each depth (*h*) and subtract the smaller value from the larger one.

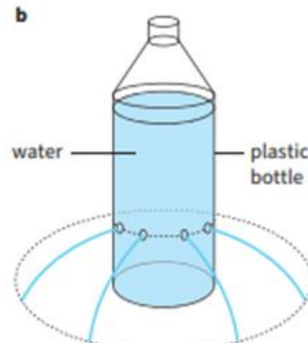
Ideal gas law



a



b

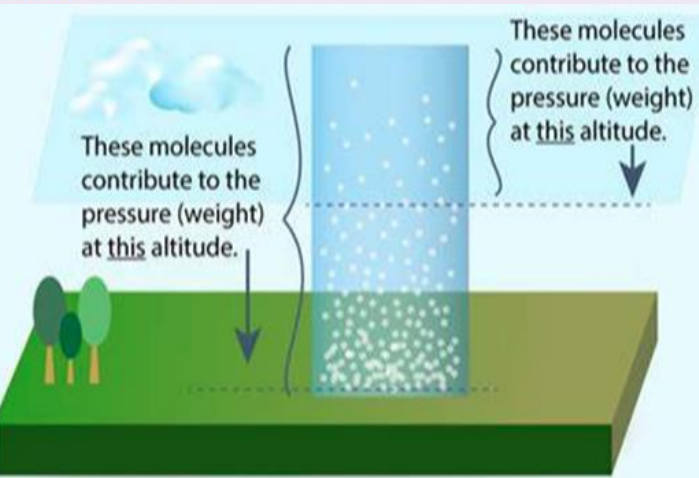


Physics – 9P13 – Forces & Matter

The Earth's atmosphere

The Earth is surrounded by a thin (relative to the size of the Earth) layer of air known as the atmosphere.

Air is a fluid, so there is pressure in the atmosphere – this is called **atmospheric pressure**. As the altitude increases (e.g., walking to the top of a mountain), the concentration of oxygen in the atmosphere will decrease.



Upthrust

An object that is partially or completely submerged in a fluid experiences a greater pressure on its bottom surface than its top surface.

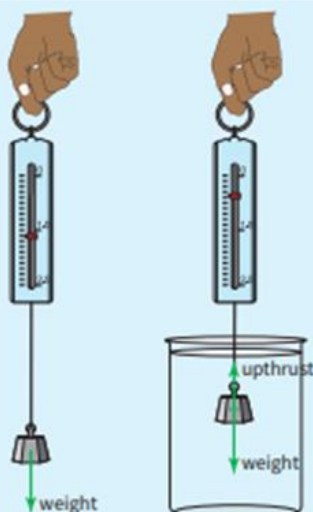
This difference in pressure creates an upwards resultant force on the submerged object, known as **upthrust**.

SP15d Pressure and floating

Word	Pronunciation	Meaning
displace		To push out of the way.
upthrust		A force that pushes things up in liquids and gases.

Measuring upthrust

Measure the weight of an object in air using a newtonmeter. Repeat with the object completely in water. The difference between the two readings is the upthrust.

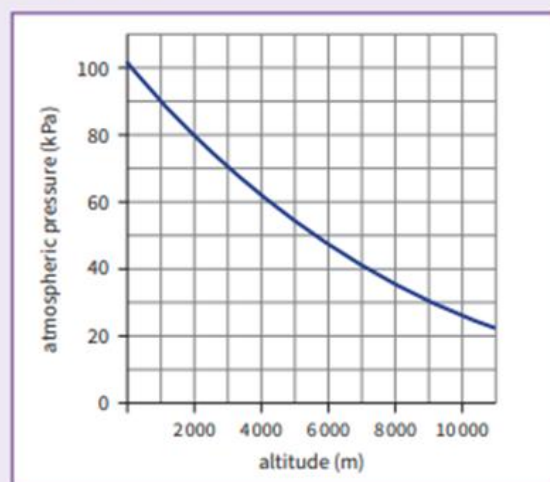


Atmospheric pressure

Atmospheric pressure is caused by air molecules colliding with surfaces. This decreases as height above a surface (**altitude**) increases because:

- 1 there are fewer air molecules in total above the surface as height increases, so the weight of air above the surface decreases
- 2 density of the atmosphere decreases with altitude, so there are fewer air molecules per cubic metre.

These both mean that atmospheric pressure decreases with increasing altitude because there is less **weight** of air above the surface.



Floating and sinking

An object will sink if its weight is greater than the upthrust.

An object will float if its weight is equal to the upthrust.

Whether an object in a fluid will float or sink depends on its density because:

- the upthrust on an object is equal to the weight of the fluid it **displaces** (pushes out of the way)
- an object that is *more dense* than the fluid will sink because its weight is greater than the weight of the liquid displaced (and so greater than the upthrust)
- an object that is *less dense* than the fluid will float because its weight is less than the weight of the fluid displaced (and so less than the upthrust).