Wadham School

A Church of England Community School

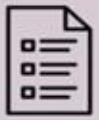
Knowledge Organisers
Year 7
Term 3
2023-2024

Name.....

Tutor group.....

"Life in all its fullness" John 10:10

How to use a knowledge organiser – step by step guide

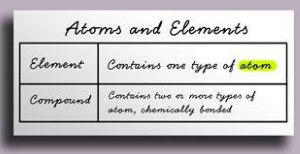
	Look, Cover, Write, Check	Definitions of Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	Look at and study a specific area of your KO. 	Write down the key words and definitions. 	Use your KO to condense and write down key facts or information onto flash cards. 	Use your KO to create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

How to use Knowledge Organisers?

HOW TO USE KNOWLEDGE ORGANISERS TO CHECK YOUR UNDERSTANDING

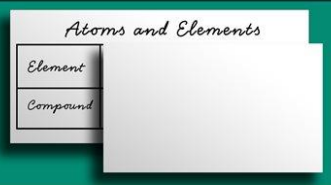
1 READ

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



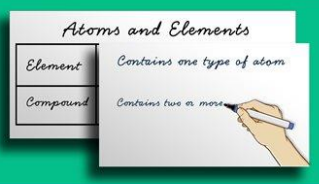
2 COVER

NOW COVER THE DEFINITIONS - CAN YOU STILL REMEMBER THEM?



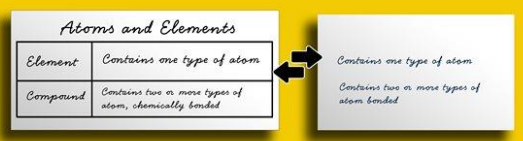
3 WRITE

NOW WRITE THE DEFINITIONS/FACTS AS ACCURATELY AS YOU CAN



4 CHECK

CHECK WHAT YOU GOT RIGHT AND WRONG



5 CORRECT

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

YEAR 7 ART

Colour theory

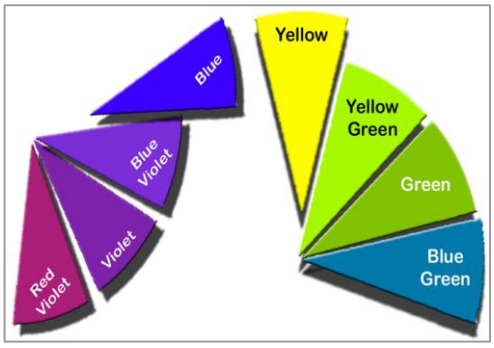
- Our understanding of colour was formalised by the artist and teacher Johannes Itten.
- Itten taught at the famous German Art School, The Bauhaus.
- He created the Colour Wheel.
- Itten's theories of colour use formed the foundations of practice for all modern art and design.
- The Bauhaus (Building House) was a famous school of Art & Design and Architecture in Weimar, Germany.
- Many famous Artists/Teachers worked there, (including Itten, Kandinsky, Marc).
- It's teachings influence all modern Art, Design and Architecture.
- It was closed by the German Nazi regime in 1933.

The Colour Wheel

Painting by Wassily Kandinsky, showing use of colour theory, especially complementary colours

Contrasting Colours
Also known as complementary colours.
When placed together they create a strong contrast.
For example red is from the warm half of the colour wheel and green is from the cool half.

Harmonious Colours
A harmonious colour is one that sits next to another on the colour wheel. These combinations create pleasing contrasts.



Tint
A tint is where an artist adds a colour to white to create a lighter version of the colour.
An example of a tint is pink.

Shade
A shade is where an artist adds black to a colour to darken it.

Drawing from Observation

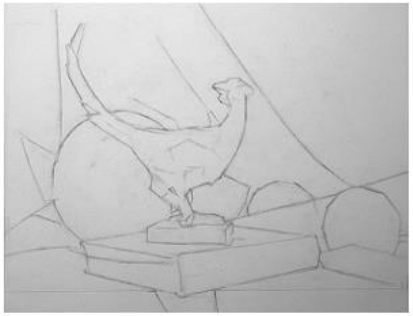
1. **Don't trace.** This shows minimal skill and teaches you very little.

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

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

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

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



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

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

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

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

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

Art

Beliefs and World Views

Creation stories

1	Genesis	First book of the Christian Bible and the Christian creation story.
2	Creation	The created world, all of creation.
3	Big Bang	Scientific explanation of how the universe started 13.8 billion years ago.
4	Red shift	Shift of light from distant stars toward red as they move away from us.
5	Om	Sacred or holy sound in Hinduism.

Climate Change

6	Climate change	The climate heating up and changing due to human beings.
7	Greenhouse gases	Gasses that trap heat inside the earths atmosphere and warm the planet.
8	C02	Greenhouse gas produced by burning fossil fuels like oil and gas.
9	Methane	Greenhouse has produced by animals like cows.
10	Chief Seattle	American Indian chief who defended American Indian land.

Franciscan beliefs

11	St Francis	Christian Saint of animals and nature.
12	Gubbio	Village where St Francis reconciled villagers with a wolf.
13	Reconciliation	Bringing together two people who were fighting.
14	Stewardship	Idea we must look after the world as God gave it to us to care for.
15	Franciscan	Group of monks who follow St Francis' lifestyle and values.
16	Hilfield Friary	Friary run by Franciscan monks outside Yeovil.

Extinction rebellion

17	Extinction rebellion	A group that protests climate change using a range of methods.
18	Civil disobedience	Causing a disturbance to protest against something you disagree with.

Computing

Network	A network is when two or more devices are connected together to allow them to communicate and share Resources
Protocol	A protocol is a set of rules for transmitting data between devices, such as HTTP, or HTTPS
Internet	The Internet is a worldwide network of computers, whereas the web is the collection of web pages found on the Internet
URL	'URL' stands for 'Uniform Resource Locator'. It is the address of a World Wide Web page and is sometimes called the 'web address'.
Packets	Packet switching is when messages are broken up into very small pieces, called packets. Each packet consists of two parts: 1. Header - this includes the sender's and recipient's IP addresses, the packet number, the total number of packets the message contains, plus the details of any protocols used 2. payload - this is part of the actual message itself

Wired vs Wireless:

Wired	Wireless
Faster data transfer	No trailing wires
More secure	Quick and cheap to connect devices
Less interference	Portability

Network Hardware:

Router

Server

Hub

Network cable

Year 7 Design and Technology

1	Softwoods	From coniferous trees. These often have pines or needles, and they stay evergreen all year round - they do not lose leaves in the autumn. They are faster growing than hardwoods, making them cheaper to buy, and are considered a sustainable material.	Pine Cedar Redwood Spruce
2	Hardwoods	From deciduous trees, which have large flat leaves that fall in the autumn. Hardwoods take longer to grow, are not easily sourced and are expensive to buy.	Beech Oak Teak Walnut
3	Manufactured board	A man-made material created by pressing and bonding timbers together.	Plywood Chipboard

4	Coping Saw	A saw used to create curves and complex shapes in woods, metals and plastics.	
5	Tenon Saw	A saw used to cut straight lines in wood.	
6	Steel rule	An accurate tool for measuring and marking out.	
7	Try Square	To check and mark right angles.	
8	File	Used for shaping woods, metals and plastics.	
9	Glass paper	Used to smooth the edges of wood.	

10	Isometric drawing	A three-dimensional drawing technique.
11	Brief	A statement of nformation given to a designer from a client.
12	Specification	The criteria of requirements for a product.
13	Shaping	A process using tools to shape material.
14	Joining	Attaching one material to another.
15	Plan of production	An ordered list of how a product will be made.
16	Evaluation	A reflection on how a product has been made, to improve future products.

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…

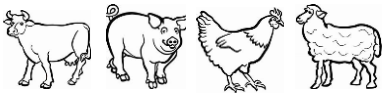
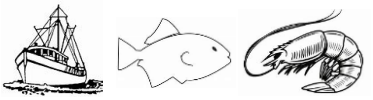
POETIC POEMS	Definition
Personification	Giving something human characteristics
Oxymoron	Contradictory phrase
Enjambment	Continuing a line of poetry
Tone	Mood or atmosphere
Imagery	Descriptive language
Contrast	Very different things put together
Perspective	Viewpoint
Onomatopoeia	Words that sound like 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.

Coraline

Key words	Definition
Genre	A category of literature – Coraline is fantasy
Fantasy	Stories based in supernatural or improbable things
Familial relationships	Family links – these are strained at the start of Coraline
Trauma	A deeply distressing or disturbing experience that has a lasting impact
Gothic	A genre that deals with dark, mysterious and often supernatural ideas
Protagonist	The main character. Coraline is the protagonist
Trope	Something that often occurs in a particular genre
Beldam	An old-fashioned term for a hag or terrifying woman.

Food

1	Reared	Animals are bread and raised Meat comes mainly from: cattle (beef), pigs (pork), sheep (lamb) and poultry (chicken).	
2	Caught	Fish and shellfish are caught	
3	Dairy	Dairy cows are reared by farmers around the UK. Cows are milked 2-3 times per day. • Milk is chilled and stored • A tanker takes it to be processed. • Milk is treated to make it safe to drink and bottled • Transported to shops or used to make cheese, yogurt and butter.	
4	Meat	Cuts of meat are prepared by butchers in shops and supermarkets  mince chops steak whole	
		Meat is also bought ready prepared  saussages ham burgers	
		Meat can be cooked in many different ways.  barbeque stir fry roasted	
5	Poultry	Types of poultry meat include chicken, turkey, duck, goose and game birds e.g., pheasants and partridges.	
6	Fish and shellfish	Fish can be found in freshwater (rivers and lakes) or saltwater (seas and oceans). It can be caught in the wild or farmed. Fish can be caught in many different ways, using rods, lines or nets.  It is sold at market and bought by fish processing companies, fishmongers and restaurants. The 'big five' are the most common seafood items that are eaten in the UK: cod; haddock; tuna; salmon; prawns	
		Oily fish: Contain a healthy fat called omega-3. Salmon, trout, Mackerel, herring, sardines.	
		White fish, Cod and haddock are popular fish in the UK. Plaice, sole, halibut and turbot are flatfish classified as white fish	
		Shrimp and prawns are a wide group of small shellfish. Mussels and oysters are 'bivalve molluscs'. They have two shells that close around the soft body inside. Cockles, whelks, and winkles are small shellfish that are common around the UK.	
7	Meat alternatives	Vegetarian – chooses not to eat meat Vegan – avoiding animal products Tofu, Myco-protein (Quorn) Tempeh, Textured vegetables protein (TVP)	
8	Recipe modification	Making changes to recipes to alter tastes, texture and a[appearance sensory analysis – human senses (sight, smell, taste, touch and hearing) to describe and evaluate foods	

Year 7 French Spring Term 1: Mon temps libre

Le temps	*Weather*
1. Quel temps fait-il?	*What's the weather like?*
2. Il fait beau.	*The weather's fine.*
3. Il fait mauvais.	*The weather's bad.*
4. Il fait chaud.	*It's hot.*
5. Il fait froid.	*It's cold.*
6. Il y a du soleil.	*It's sunny.*
7. Il y a du vent.	*It's windy.*
8. Il pleut.	*It's raining.*
9. Il neige.	*It's snowing.*
10. au printemps	*in spring*
11. en été	*in Summer*
12. en automne	*in Autumn*
13. en hiver	*in Winter*
14. quand	*when*

Les sports	*Sports*
15. Je joue…	*I play…*
16. au basket	*basketball*
17. au billard	*pool*
18. au football	*football*
19. au rugby	*rugby*
20. au hockey	*hockey*
21. au tennis	*tennis*
22. au volleyball	*volleyball*
23. à la pétanque	*boules*
24. aux cartes	*cards*
25. aux échecs	*chess*
26. Je suis…	*I am…*
27. Je ne suis pas…	*I am not…*
28. sportif/sportive	*sporty*

Phonics Focus:	
[u] = /oo/	**[e] = /uh/**
salut	***petit***
[ç] = /s/	**[qu] = /kuh/**
Ça va?	***musique***

Les activités	*Activities*
29. Je fais…	*I do/go…*
30. du skate	*skateboarding*
31. du patin à glace	*iceskating*
32. du vélo	*cycling*
33. du judo	*judo*
34. du théâtre	*drama*
35. de la cuisine	*cooking*
36. de la danse	*dancing*
37. de la gymnastique	*gymnastics*
38. de la natation	*swimming*
39. de l'athlétisme	*athletics*
40. de l'équitation	*horse riding*
41. des randonnées	*hiking*

La technologie	*Technology*
42. J'aime…	*I like…*
43. Je n'aime pas…	*I don't like…*
44. J'adore…	*I love…*
45. Je déteste…	*I hate…*
46. bloguer	*blogging*
47. écouter de la musique	*listening to music*
48. envoyer des SMS	*sending texts*
49. prendre des selfies	*taking selfies*
50. partager des photos	*sharing photos*
51. regarder des films	*watching films*
52. tchatter avec mes copains/copines	*chatting with my friends*
53. télécharger des chansons	*downloading songs*

Vital verb: *jouer (to play)*	
Le présent	***Present tense***
Je joue	*I play*
Tu joues	*You play*
Il/elle/on joue	*He/she/we play*
Nous jouons	*We play*
Vous jouez	*You play (formal/plural)*
Ils/elles jouent	*They play*

Geography

Key Vocabulary

Climate – The average weather conditions over a long period of time.
Deforestation – The cutting down and clearing of forests.
Equator – An imaginary circle running around the centre of the Earth to divide the northern and southern hemisphere
Humid – Feeling damp due to water vapour in the air
Native tribes – The original settlers of an area
Species – A group of similar animals or plants

Rainforest Key Facts

- South America is a **Continent** made up of many countries including **Brazil** (capital-Brazilia). **Venezuela** (Capital –Caracas), **Columbia** (Capital-Bogota), **Peru** (Capital – Lima), **Argentina** (Capital – Buenos Aires) and **Chile** (Capital – Santiago).
- The Andes is the world's longest mountain range. Machu Picchu is a citadel which can be found high up here.
- The climate in the rainforest is the same all year round (hot and humid). The average rainfall is 6cm each month and it usually rains every day.
- Angel falls is the world's highest uninterrupted waterfall located in Venazus-la
- Tropical rainforests are found near to the equator between the tropic of Cancer and the tropic of Capricorn
- Rainforests can be found in every continent except Antarctica.

Amazon Rainforest

- The Amazon Rainforest is found in South America, and it goes across many countries such as Brazil, Peru, Ecuador, Venezuela and Colombia
- This amazing forest is 5.5 million square km and is the largest tropical rainforest in the world.
- The Amazon Rainforest is often called 'The Lungs of the Earth' because it produces over 20% of the world's oxygen supply thanks to all of its trees.
- There are over 2,00 species of birds and mammals. Some common animals that live the rain forest are jaguars, howler monkeys, sloths, anacondas, alligators, and apes. There are also lots of poisonous animals including electric eels, flesh-eating piranhas, poisonous dart frog.
- It is thought that between 400 or 500 different groups of native tribes live in the forest.

Year 7 German Spring Term 1: Freizeit – juhu!

Sport	*Sports*
1. Ich spiele gern…	*I like playing…*
2. Ich spiele nicht gern…	*I don't like playing…*
3. Basketball	*basketball*
4. Fußball	*football*
5. Badminton	*badminton*
6. Eishockey	*Ice hockey*
7. Tennis	*tennis*
8. Volleyball	*volleyball*
9. Handball	*handball*
10. Wasserball	*water polo*
11. Tischtennis	*table tennis*
12. Ich bin (ziemlich)…	*I am (quite)…*
13. Ich bin nicht (sehr)…	*I am not (very)…*
14. sportlich	*sporty*

Was machst du gern?	*What do you like doing?*
15. Ich fahre Rad.	*I ride my bike.*
16. Ich fahre Skateboard.	*I go skateboarding.*
17. Ich fahre Ski.	*I ski.*
18. Ich fahre Snowboard.	*I snowboard.*
19. Ich lese.	*I read.*
20. Ich mache Judo.	*I do judo.*
21. Ich mache Karate.	*I do karate.*
22. Ich reite.	*I go horse riding.*
23. Ich schwimme.	*I swim.*
24. Ich sehe fern.	*I watch TV.*
25. Ich spiele Gitarre.	*I play the guitar.*
26. Ich tanze.	*I dance.*

Vital verb: *spielen (to play)*	
Präsens	***Present tense***
*Ich spiel**e***	*I play*
*Du spiel**st***	*You play*
*Er/sie spiel**t***	*He/she plays*
*Wir spiel**en***	*We play*
*Ihr spielt**et***	*You play (plural)*
*Sie/sie spiel**en***	*They/you (formal) play*

Meinungen	*Opinions*
27. Ich finde es…	*I find it…*
28. irre	*amazing*
29. toll	*great*
30. gut	*good*
31. nicht schlecht	*not bad*
32. langweilig	*boring*
33. nervig	*annoying*
34. stinklangweilig	*deadly boring*
35. furchtbar	*awful*

Freizeit	*Free time*
36. Ich chille…	*I chill out.*
37. Ich esse Pizza.	*I eat pizza.*
38. Ich gehe einkaufen.	*I go shopping.*
39. Ich gehe ins Kino.	*I go to the cinema.*
40. Ich gehe in die Stadt.	*I go into town.*
41. Ich gehe ins Park.	*I go to the park.*
42. Ich höre Musik.	*I listen to music.*
43. Ich mache Sport.	*I do sport.*
44. Ich spiele Xbox.	*I play Xbox.*

Online	*Online*
45. Ich chatte auf Facebook.	*I chat on Facebook.*
46. Ich lade Musik herunter.	*I download music.*
47. Ich mache Fotos.	*I take photos.*
48. Ich sehe Videos.	*I watch videos.*
49. Ich simse.	*I text.*
50. Ich surfe im Internet.	*I surf the internet.*
51. Ich telefoniere mit Freunden.	*I call my friends.*

Phonics Focus:	
[o] long and short	**[ö] = /urgh/**
Vogel / Schokolade	***Löwe***
[st] = /st/	**[s] = /z/**
Sterne	***Sonne***

History

Keyword	Definition
Alms	Money or food given to poor people
Barber-Surgeon	Someone who could cut your hair and provide minor treatment.
Bishops	A bishop is an ordained member of the clergy who is entrusted with a position of authority and oversight in a religious institution.
Black Death	Also known as the Bubonic Plague, a disease that killed 1/3rd of the population in 1348-49.
Buboes	A swollen inflamed lymph node in the armpit or groin. This would happen when a person caught the bubonic plague
Cesspits	A pit where waste would be put
Chainmail	What a knight wears for protection.
Chivalry	The way a knight was supposed to behave. Knights were expected to be strong, brave and skilled in warfare.
Doom painting	A Church illustration of how to get to heaven or hell.
Hue and Cry	Medieval policing - if you saw someone committing a crime you had to call out o everyone else is aware. Everyone then has to chase after the thief.
Knight	A Lord that has been trained to fight and given land to rule. Knights generally fought on horseback.
Lancing	Using a sharp tool to 'pop' a boil or bubo
Lords	Lords swore loyalty to the King and provided him with soldiers. They were given lands to govern, manor houses or Castles to live in and ruled over these areas.
Magna Carta	An agreement between King and Barons that guaranteed rights and freedoms for people
Medieval	This is the period of time from about the 5th century (when the Romans left England) to about the end of the 15th century (when the Tudors came to power)

History

Monastery	a building or buildings occupied by a community of monks living under religious vows
Monks & Nuns	Monks (Men) and Nuns (Women) devoted their life to God. They lived separately from other people in special buildings called Abbeys, Monasteries or Nunneries. Monks and Nuns spent their days praying, singing and writing.
Peasants	People who worked as farmers or labourers on land owned by others. 90% of people were peasants. They also had to work for the church for free and pay a tax of 10% of all they grew. Life was very harsh.
Peasants Revolt	The rebellion of the working classes in 1381 against an unpopular tax, and in fear of harsh working conditions. Led by Wat Tyler and locally by the Vicar of Bridgwater
Privy	Outside toilet.
Purgatory	A state of suffering if you have sinned (hell). A place where medieval Christians believed they would be tortured until their had made up for their bad deeds and thoughts. After this, they would go on to heaven.
Tanner	The job of making leather.
The Pope	The 'Pope' is the title, since about the 9th century, of the bishop of Rome, the head of the Roman Catholic Church. In Medieval times the Catholic Church was the only church in England.
Tithe	1 tenth – this was how much people had to pay the lord, 1 teeth of their processions.
Trial by ordeal	If a local jury could not decide the outcome of a crime, then the villagers would turn to God to decide. Trial by ordeal often took place in a church. In one the accused held a red hot iron or put his hand in a flame. If the wound healed, the accused was deemed innocent. In ordeal by cold water, used particularly for villeins, the accused was thrown, bound, into a pond or river. If he sank, he was deemed to be innocent, but if he floated he was regarded as guilty.

Mathematics

7.6 Solving problems with addition & subtraction.....

What do I need to be able to do?

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

- Understand properties of addition/ subtraction
- Use mental strategies for addition/subtraction
- Use formal methods of addition/Subtraction for integers
- Use formal methods of addition/Subtraction for decimals
- Solve problems in context of perimeter
- Solve problems with finance, tables and timetables
- Solve problems with frequency trees
- Solve problems with bar charts and line charts

Keywords

Commutative: changing the order of the operations does not change the result
Associative: when you add or multiply you can do so regardless of how the numbers are grouped
Inverse: the operation that undoes what was done by the previous operation. (The opposite operation)
Placeholder: a number that occupies a position to give value
Perimeter: the distance/ length around a 2D object
Polygon: a 2D shape made with straight lines
Balance: in financial questions – the amount of money in a bank account
Credit: money that goes into a bank account
Debit: money that leaves a bank account

Add & subtract integers: M928, M347

Add & subtract decimals: M429, M152

Perimeter problems: M635, M690

Finance problems: M901, M681

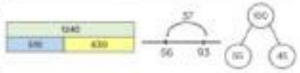
Time tables & tables: M963, M899

Bar charts : M460, M738

Sparx

Mathematics

Addition/ Subtraction with integers



Modelling methods for addition/ subtraction
- Bar models
- Number lines
- Part/ Whole diagrams

Addition is commutative

6 + 3 = 3 + 6

The order of addition does not change the result

Subtraction the order has to stay the same

360 – 147 = 360 – 100 – 40 – 7

- Number lines help for addition and subtraction
- Working in 10's first aids mental addition/ subtraction
- Show your relationships by writing fact families

Formal written methods

	H	T	O
	1	8	7
+	5	4	2

	H	T	O
	4	2	7
–	2	4	9

Remember the place value of each column
You may need to move 10 ones to the ones column to be able to subtract

Solve problems with finance

Profit = Income – Costs

Credit – Money coming into an account

Debit – Money leaving an account

Money uses a two decimal place system
14.2 on a calculator represents £14.20

Check the units of currency – work in the same unit

Addition/ Subtraction with decimals

4	.	3	8	
7	.	9	0	+

0 can be used to fill empty places with value

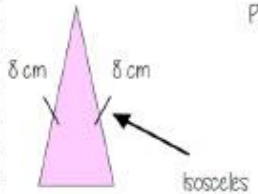
The decimal place acts as the placeholder and aligns the other values

If  represents 1 instead of 100

$5.43 + \frac{8}{10}$

Revisit Fraction – Decimal equivalence
5.43 + 0.8

Solve problems with perimeter



Isosceles Triangle notation

Perimeter is the length around the outside of a polygon

The triangle has a perimeter of 25cm
Find the length of x

8cm + 8cm + $x$cm = 25cm
16cm + $x$cm = 25cm
$x$cm = 9cm

Tables and timetables

Distance tables

	London	Cardiff	Glasgow	Belfast
London	211			
Cardiff	556	493		
Glasgow	518	392	177	
Belfast				

This shows the distance between Glasgow and London
It is where their row and column intersects

Two-way tables

	H	T
H	HH	HT
T	TH	TT

Where rows and columns intersect is the outcome of that action

Bus/ Train timetables

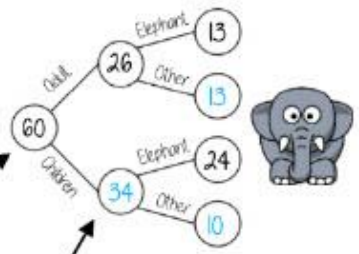
Harton	1005	1045	1130
Bridge	1024	1106	1147
Aville	1051	1133	1205
Ware	1117	1202	1233

Each column represents a journey, each row represents the time the 'bus' arrives at that location

TIME CALCULATIONS – use a number line

Frequency trees

60 people visited the zoo one Saturday morning
26 of them were adults. 13 of the adult's favourite animal was an elephant. 24 of the children's favourite animal was an elephant.

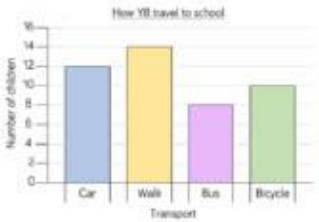


The overall total "60 people"

A frequency tree is made up from part-whole models
One piece of information leads to another

Probabilities or statements can be taken from the completed trees
e.g. 34 children visited the zoo

Bar and line charts



Use addition/ subtraction methods to extract information from bar charts

e.g. Difference between the number of students who walked and took the bus
Walk frequency – bus frequency

When describing changes or making predictions
- Extract information from your data source
- Make comparisons of difference or sum of values
- Put into the context of the scenario

Mathematics

7.7 Solving problems with multiplication & division.....

What do I need to be able to do?

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

- Understand and use factors
- Understand and use multiples
- Multiply/ Divide integers and decimals by powers of 10
- Use formal methods to multiply
- Use formal methods to divide
- Understand and use order of operations
- Solve area problems
- Solve problems using the mean

Keywords

Array: an arrangement of items to represent concepts in rows or columns
Multiples: found by multiplying any number by positive integers
Factor: integers that multiply together to get another number.
Mil: prefix meaning one thousandth
Centi: prefix meaning one hundredth
Kilo: prefix meaning multiply by 1000
Quotient: the result of a division
Dividend: the number being divided
Divisor: the number we divide by.

Sparx

Factors & multiples: M823

Powers of 10: M113

Metric conversions: M772, M865

Order of operations: M521

Area problems: M291, M610, M996

Mathematics

Factors

Arrays can help represent factors

5 x 2 or 2 x 5

Factors of 10: 1, 2, 5, 10

10 x 1 or 1 x 10

The number itself is always a factor

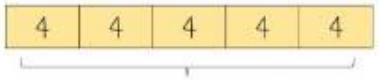
Square numbers have an ODD number of factors

Factors of 4: 1, 2, 4

Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Be strategic - Lay factors out in pairs can help you not to miss any

Multiples



Bar models can represent by something is a multiple. E.g. 20 is a multiple of 4

Lowest Common Multiples

LCM of 9 and 12

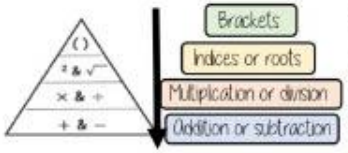
The first time their multiples match

LCM = 36

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

12: 12, 24, 36, 48, 60

Order of operations



Brackets

Indices or roots

Multiplication or division

Addition or subtraction

If you have multiple operations from the same tier work from left to right

e.g. 10 − 3 + 5 → 10 − 3 → 7 + 5

6 x 4 + 8 x 2

24 + 16 = 40

Mean problems

Mean – a measure of average. It gives an idea of the central value

Lily, Annie and Ezra have the following cubes

24 in total

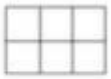
Finding the mean amount is the average amount each person would have if shared out equally

The mean number of blocks would be 8 each

Area problems

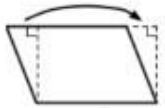
Rectangle

Base x Perpendicular height



Parallelogram/ Rhombus

Base x Perpendicular height



Triangle

½ x Base x Perpendicular height

A triangle is half the size of the rectangle it would fit in

Multiply/ Divide by powers of 10

3 x 100 = 300

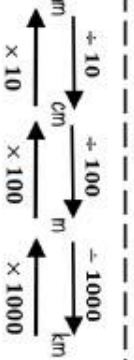
0.03 x 100 = 3

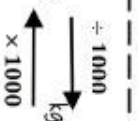
Repeated multiplication and division by powers of 10 is commutative

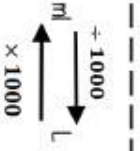
÷ 10 then ÷ 10 → ÷ 100

Metric conversions

Useful Conversions



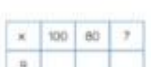




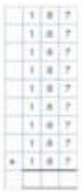
Multiplication methods

Less effective method especially for bigger multiplication

Long multiplication (column)



Grid method



Repeated addition

Multiplication with decimals

Perform multiplications as integers

e.g. 0.2 x 0.3 → 2 x 3

Make **adjustments** to your answer to match the question 0.2 x 10 = 2

0.3 x 10 = 3

Therefore 6 ÷ 100 = 0.6

Estimations: Using estimations allows a 'check' if your answer is reasonable

Division methods

3584 ÷ 7 = 512

Short division

	5	1	2
7	3 ³5	8 ¹4	

Complex division

÷ 24 = ÷ 6 ÷ 4

Break up the divisor using factors

Division with decimals

The placeholder in division methods is essential – the decimal lines up on the dividend and the quotient

24 ÷ 0.02 → 24 ÷ 0.2 → 240 ÷ 2

All give the same solution as represent the same proportion

Multiply the values in proportion until the divisor becomes an integer

Mathematics

7.8 Fractions & percentages of amounts.....

What do I need to be able to do?

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

- Find a fraction of a given amount
- Use a given fraction to find the whole or other fractions
- Find the percentage of an amount using mental methods
- Find the percentage of a given amount using a calculator

Keywords

Fraction: how many parts of a whole we have
Equivalent: of equal value
Whole: a number with no fractional or decimal part
Percentage: parts per 100 (uses the / symbol)
Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right
Convert: change into an equivalent representation, often fraction to decimal to a percentage cycle

Fraction of a given amount: M695, M684

Use a fraction of an amount: M695, M684

Find the percentage of an amount (Mental methods): M437

Find the percentage of an amount (Calculator methods): M905

Sparx

Mathematics

Use a fraction of amount

$\frac{2}{3}$ of a value is 70. What is the whole number?

70

35 | 35 | 35

35 x 3 = 105

The whole number is 105

70 ÷ 2 = 35

Each part of the bar model represents 35

The wording of the question is important to setting up the bar model

$\frac{3}{4}$ of a number is 63

63

21 | 21 | 21 | 21

Find the whole

What is $\frac{1}{6}$ of the number?

= 14

84

14 | 14 | 14 | 14 | 14 | 14

Use the whole to find a given part

Find the percentage of an amount (Mental methods)

The whole represents 100/

10/ = $\frac{1}{10}$ of the whole

0% 20% 40% 60% 80% 100%

10/ = $\frac{1}{10}$ of the whole

20/ = $\frac{2}{10}$ = $\frac{1}{5}$ of the whole

50/ = $\frac{5}{10}$ = $\frac{1}{2}$ of the whole

5/ = $\frac{1}{20}$ of the whole

Find 65/ of 80

80

8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8

For bigger percentages it is sometimes easier to take away from 100/

Method 1

65/ = 10/ x 6 + 5/

= (8 x 6) + 4

= 52

Method 2

65/ = 50/ + 10/ + 5/

= 40 + 8 + 4

= 52

Find the percentage of an amount (Calculator methods)

Using a multiplier

Find 65/ of 80

Fraction, decimal, percentage conversion

65/ = $\frac{65}{100}$ = 0.65 ← The multiplier

0.65 x 80 = 52

Using the percent button

Find 65/ of 80

This brings up the / button on screen

You will see 65/

Type 65

Press SHIFT ((%)

Press × 80 and then press =

You can also use the calculator to support non calculator methods and find 1/ or 10/ then add percentages together

"of" can represent 'x' in calculator methods

Fraction of a given amount

Find $\frac{2}{5}$ of £205

£205

£41 | £41 | £41 | £41 | £41

2 out of the 5 equal parts

2 x £41 = £82

£205 ÷ 5 = £41

Each part of the bar model represents £41

The bar represents the whole amount

90

30 | 30 | 30

45

15 | 15 | 15

Use bar models for comparisons

$\frac{1}{3}$ of 90 = 30

$\frac{2}{3}$ of 45 = 30

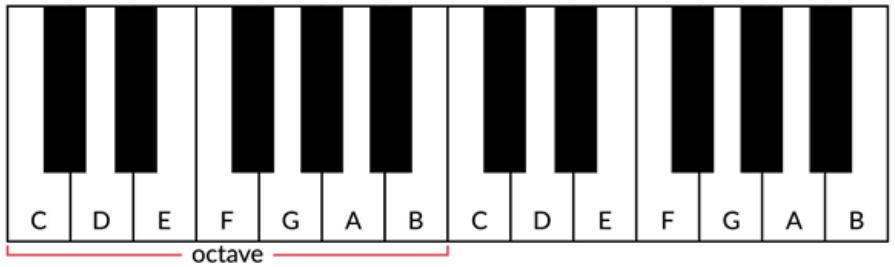
∴ $\frac{1}{3}$ of 90 = $\frac{2}{3}$ of 45

Keyboard Skills

Exploring Treble Clef Reading and Notation

Music

A. Layout of a Keyboard/Piano



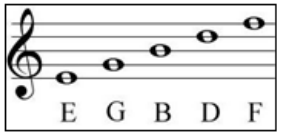
A piano or keyboard is laid out with **WHITE KEYS** and Black Keys (see section G). C is to the left of the two Black Keys and the notes continue to G then they go back to A again. Notes with the same letter name/pitch are said to be an **OCTAVE** apart. **MIDDLE C** is normally in the centre of a piano keyboard.

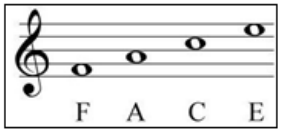
B. Treble Clef & Treble Clef Notation

A **STAVE** or **STAFF** is the name given to the five lines where musical notes are written.

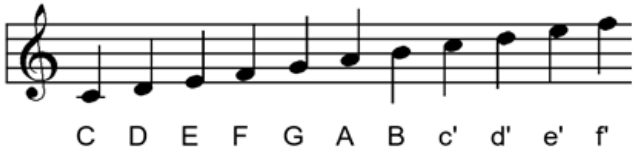
The position of notes on the stave or staff shows their **PITCH** (how high or low a note is). The **TREBLE CLEF** is a symbol used to show high-pitched notes on the stave and is *usually* used for the right hand on a piano or keyboard to play the **MELODY** and also used by high pitched instruments such as the flute and violin. The stave or staff is made up of 5 **LINES** and 4 **SPACES**.

Every **G**reen **B**ogie **D**eserves **F**licking. Notes in the **SPACES** spell **"FACE"**

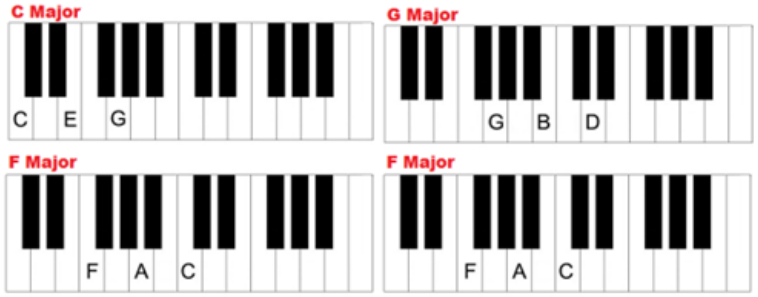




Notes from **MIDDLE C** going up in pitch (all of the white notes) are called a **SCALE**.

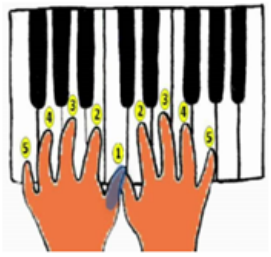


C. Keyboard Chords



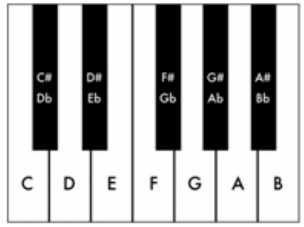
Play one – Miss one – play one – miss one – play one

D. Left Hand/Right Hand (1-5)



E. Black Keys and Sharps and Flats

There are five different black notes or keys on a piano or keyboard. They occur in groups of two and three right up the keyboard in different pitches. Each one can be a **SHARP** or a **FLAT**. The # symbol means a **SHARP** which raises the pitch by a semitone *(e.g. C# is higher in pitch (to the right) than C)*. The *b* symbol means a **FLAT** which lowers the pitch by a semitone *(e.g. Bb is lower in pitch (to the left) than B)*. Each black key has 2 names – C# is the same as D*b* – there's just two different ways of looking at it! Remember, black notes or keys that are to the RIGHT of a white note are called SHARPS and black notes to the LEFT of a white note are called FLATS.



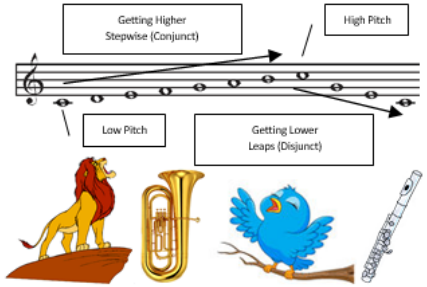
Building Bricks

Exploring the Elements of Music MAD T SHIRT

Music

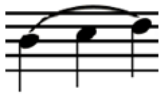
Melody - Pitch

The **highness** or **lowness** of a sound.



Articulation

How individual notes or sounds are **played/techniques**.



LEGATO – playing notes in a long, smooth way shown by a **SLUR**.

STACCATO – playing notes in a short, detached, spiky way shown by a **DOT**.

Dynamics

The **volume** of a sound or piece of music.

VERY LOUD: *Fortissimo (ff)*
LOUD: *Forte (f)*
QUITE LOUD: *Mezzo Forte (mf)*
QUITE SOFT: *Mezzo Piano (mp)*
SOFT: *Piano (p)*
VERY SOFT: *Pianissimo (pp)*
GETTING LOUDER: *Crescendo (cre*
GETTING SOFTER: *Diminuendo (dim.)*

Texture

How much sound we hear.

THIN TEXTURE: *(sparse/solo)* – small amount of instruments or melodies.

THICK TEXTURE: *(dense/layered)* – lots of instruments or melodies.

Structure

Mow the music is put together in sections and how often they are repeated

Harmony and Tonality

Harmony refers to the sound that is made when more than one pitch is sounded at the same time, often these are **chords**

Tonality is the key or scale used for a piece of music that gives it colour or character usually **Major or Minor**

Instruments (Timbre/Sonority)

Describes the **unique sound or tone quality** of different instruments voices or sounds.

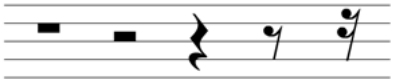
Velvety, Screechy, Throaty, Rattling, Mellow, Chirpy, Brassy, Sharp, Heavy, Buzzing, Crisp, Metallic, Wooden etc.

Rhythm (Duration)

The **length** of a sound.

SHORT ⟶ **LONG**

The opposite or absence of sound, **no sound**. In music these are **RESTS**.



Tempo (speed)

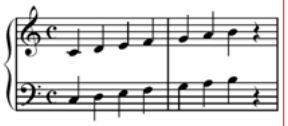
The **speed** of a sound or piece of music.

FAST: *Allegro, Vivace, Presto* **SLOW:** *Andante, Adagio, Lento*
GETTING FASTER – *Accelerando (accel.)*
GETTING SLOWER – *Ritardando (rit.) or Rallentando (rall.)*

Music can create an **atmosphere**
Music can create an **image** *e.g., in response to art or, a story*– this is called **PROGRAMME MUSIC**.
Music can be **calming**
Music can be used for **spiritual reasons**

Notation

How music is **written** down.



STAFF NOTATION – music written on a **STAVE** (5 lines and spaces)
GRAPHIC NOTATION/SCORE – music written down using shapes and symbols to represent sounds.

THE HECTIC TEACHER
RESOURCE

STRESS AND ANXIETY

Personal Development

Define: *Stress*

A state of mental or emotional strain or tension resulting from adverse or demanding circumstances.

Define: *Chronic Stress*

The response to emotional pressure suffered for a prolonged period of time in which an individual perceives they have little or no control.

Define: *General Anxiety Disorder*

A condition characterized by 6 months or more of chronic, exaggerated worry and tension that is unfounded or much more severe than the normal anxiety most people experience.

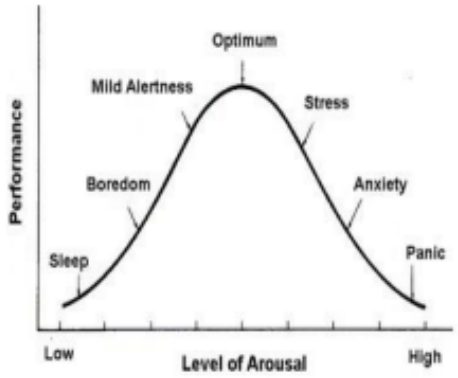
Define: *Social Anxiety Disorder*

Also called social phobia, is intense anxiety or fear of being judged, negatively evaluated, or rejected in a social or performance situation.

Define: *Depression*

People experience low mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration.

Some stress is good as it can motivate people however too much can be detrimental, especially if over a long period of time.



Symptoms of Chronic Stress

Chronic stress affects the whole body. It can have several physical or psychological symptoms, which can make functioning on a daily basis more challenging.
The type and severity of symptoms vary considerably from person to person.
Signs and symptoms of chronic stress can include:

- Irritability, which can be extreme
- Fatigue
- Headaches
- Difficulty concentrating,
- Rapid, disorganized thoughts
- Difficulty sleeping / insomnia
- Digestive problems and changes in appetite
- Feeling helpless
- A perceived loss of control
- Low self-esteem
- Loss of sexual desire
- Nervousness
- Frequent infections or illnesses
- High blood pressure

Anxiety Disorders

Anxiety is an evolutionary and survival mechanism which is often linked to the flight or fight response. The brain responds to a perceived threat or danger by releasing stress hormones such as adrenaline and cortisol which cause the physical symptoms of anxiety. Once the threatening situation has stopped, the body will usually return to normal.

But if someone has an anxiety disorder these feelings of fear and danger can be ongoing and interrupt their daily routine long after the threat has gone. They can make them feel like things are worse than they actually are.

General Anxiety Disorder is a long-term condition that causes a person to feel anxious about a wide range of situations and issues, rather than a specific event. People with GAD feel anxious most days and often struggle to remember the last time they felt relaxed. As soon as 1 anxious thought is resolved, another may appear about a different issue.

Social Anxiety Disorder, also called social phobia, is a long-lasting and overwhelming fear of social situations. Social Anxiety is more than shyness. It's an intense fear that does not go away and affects everyday activities, self-confidence, relationships and work or school life.

Symptoms of General Anxiety Disorder

Mental symptoms of anxiety can include:

- Racing thoughts,
- Uncontrollable over thinking,
- Difficulties concentrating,
- Feelings of dread, panic or 'impending doom',
- Feeling irritable,
- Heightened alertness,
- Problems with sleep,
- Changes in appetite,
- Wanting to escape from the situation you are in, and
- Dissociation.

Physical symptoms of anxiety can include:

- Sweating,
- Heavy and fast breathing,
- Hot flushes or blushing,
- Dry mouth,
- Shaking,
- Hair loss,
- Fast heartbeat,
- Extreme tiredness or lack of energy
- Dizziness and fainting, and
- Stomach aches and sickness.

Treatments for Chronic Stress and Anxiety

- Therapy and Counselling such as Cognitive Behaviour Therapy
- Medications – including SSRI's, Benzodiazepines, and Beta-blockers
- Self Care including mindfulness, meditation and journaling.
- Alternative therapies such as acupuncture.

Things to Remember

- Everyone experiences stress and anxiety at points in their lives.
- Only a Doctor or Mental Health Professional can diagnose Chronic Stress or an Anxiety Disorder.
- There are treatments available and coping mechanisms.
- Having a stress or anxiety disorder is not a sign of weakness and is more common than people think.

Where to get more help and support

- Parents and trusted family
- School Staff and Wellbeing Team
- GP or Practice Nurse.
- MIND - https://www.mind.org.uk Help line - **0300 123 3393** open 9am to 7pm, Monday to Friday or Text: 86463
- Young Minds - https://youngminds.org.uk Text: 85258 or Parents Helpline: 0808 802 5544
- Stem4 - https://stem4.org.uk/

THE HECTIC TEACHER
RESOURCE

MENTAL WELLBEING

Personal Development

Define: *Mental Wellbeing*

Mental wellbeing describes your mental state - how you are feeling and how well you can cope with day-to-day life. Our mental wellbeing is dynamic. It can change from moment to moment, day to day, month to month or year to year.

Define: *Emotional Literacy*

The ability to understand and express feelings.
Emotional Literacy involves having self-awareness and recognition of one's own feelings and knowing how to manage them.

Define: *Primary Emotions*

There are 5 primary emotions but over 600 words in the English language for different emotions. The primary emotion groups are:

1. Joy
2. Anger
3. Sadness
4. Disgust
5. Fear

Define: *Mental Illness*

Mental illnesses comprise of a broad range of problems, with different symptoms. However, they are generally characterized by some combination of abnormal thoughts, emotions, behaviour and relationships with others.

They can only be diagnosed by a Doctor or Mental Health Professional

Signs of good mental wellbeing

- Feeling relatively confident in yourself and have positive self-esteem
- Feeling and express a range of emotions
- Building and maintaining good relationships with others
- Feel engaged with the world around you
- Live and work productively
- Cope with the stresses of daily life
- Adapt and manage in times of change and uncertainty

Things that can affect our mental wellbeing

Everyone is different and what affects someone's mental wellbeing won't necessarily affect others in the same way. Everyone will have times when they have low mental wellbeing, where they feel stressed, upset or find it difficult to cope.
Common life events that can affect your mental wellbeing include:

- loss or bereavement
- loneliness
- relationship problems
- issues at work
- worry about money

However there are times when there is no discernable reason for the way a person feels which can be extremely frustrating.

There are some factors that may make people more vulnerable to experiencing a period of poor mental wellbeing. These may have happened in the past or might still be happening now:

- Childhood abuse, trauma, violence or neglect
- Social isolation or discrimination
- Homelessness or poor housing
- A long-term physical health condition
- Social disadvantage, poverty or debt
- Unemployment
- Caring for a family member or friend
- Significant trauma as an adult, such as military combat, being involved in a serious accident or violent crime

Signs of poor mental wellbeing

- Erratic changes in mood and behavior
- Distancing from friends and family.
- Loss of interest in things that they used to be interested in.
- Excessive sleeping or not sleeping.
- Increased alcohol consumption.
- Poor concentration and being easily distracted
- Finding it hard to make decisions
- Feeling overwhelmed by things & tearfulness
- Finding it difficult to control your emotions
- Irritability and short temper or aggression

The Importance of Positive Relationships

Connecting with others can help us to feel a greater sense of belonging and can help to challenge feelings of loneliness.

- **Make time for the people you love.** Keeping regular contact with friends and family, whether it's face-to-face, on the phone or by text, can strengthen your relationships.
- **Join a group.** Think of the things you like to do, such as drawing, gardening or sport and look for local groups. Meeting others with a shared interest can increase your confidence and build your support network.
- **Talk about the way you feel.** Opening up to a trusted friend or family member can help you to feel listened to and supported. Just acknowledging your feelings by saying them out loud can help.
- **Use peer support.** If you're finding things difficult, talking to people who have similar feelings or experiences can help you to feel accepted.

The Importance of Self Care

At times people may feel guilty for spending time on themselves. But it's essential for mental wellbeing and can help people to be more resilient.

Some self care techniques include

- Mindfulness
- Doing something you enjoy
- Relaxation techniques
- Get outdoors and fresh air
- Exercise

If someone is living with a mental health problem, taking steps to look after their mental health can help you improve your wellbeing.
Strategies can include:

- Talking to someone
- Knowing triggers and warning signs
- Keeping a mood diary
- Building your self esteem.

Where to get more help and support

- Parents and trusted family.
- School Staff and Wellbeing Team
- Your Doctor or Practice Nurse
- MIND - https://www.mind.org.uk Help line - **0300 123 3393** open 9am to 7pm, Monday to Friday or Text: 86463
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THE HECTIC TEACHER
RESOURCE

SOCIAL MEDIA

Personal Development

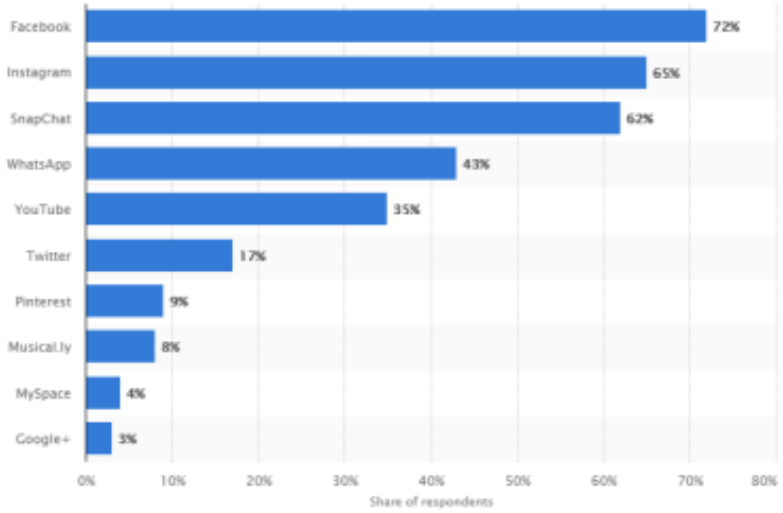
Define: *Social Media*

Websites and applications that enable users to create and share content or to participate in social networking.

Top tips for staying safe on Social media

1. Use a strong password. The longer it is, the more secure it will be.
2. Use a different password for each of your social media accounts.
3. If you have social media apps on your phone, be sure to password protect your device.
4. Be selective with friend requests. If you don't know the person, don't accept their request. It could be a fake account.
5. Click links with caution. Social media accounts are regularly hacked.
6. Be careful about what you share. Don't reveal sensitive personal information ie: home address, financial information, phone number.
7. Become familiar with the privacy policies of the social media channels you use and customize your privacy settings to control who sees what.
8. Remember to log off when you're done.
9. Report any inappropriate behavior to the site.

Social media sites or apps used by children (12- 15) in the UK in 2018



Age Restrictions On Social Media

13	14	16	17	18	18
Twitter Facebook Instagram Pinterest Google+ Tumblr Reddit Snapchat	LinkedIn	WhatsApp	Vine Tinder	Path	(13 with parents consent) YouTube Keek Foursquare WeChat Kik Flickr

These are in the websites terms and conditions and are not legal restrictions.

Define: *WhatsApp*

WhatsApp is a messenger app for smartphones. WhatsApp uses the internet to send messages, images, audio or video. The service is very similar to text messaging services, however, because WhatsApp uses the internet to send messages, the cost of using WhatsApp is significantly less than texting.

Define: *YouTube*

YouTube is a video sharing service where users can watch, like, share, comment and upload their own videos. Users can search for and watch videos. Create a personal YouTube channel. Upload videos to your channel. Like/Comment/share other YouTube videos. Users can subscribe/follow other YouTube channels and users. Create playlists to organize videos and group videos together

Define: *Twitter*

Twitter is known as a micro-blogging site. Blogging has been around for some time. Usually blogging consists of people setting up basic websites where they write about whatever they want, whether it be politics, sport, cooking, fashion etc. Posting a message is known as a tweet. People make connections by following other people's twitter feeds. Once you click follow, anything that person or organisation says will appear on your timeline.

Define: *TBH*

short for To Be Honest — is a polling app that lets your friends answer questions anonymously. Essentially it is a big popularity contest, where people received "gems" when they are picked in a poll.

Define: *Facebook*

Facebook is a website which allows users, who sign-up for free profiles, to connect with friends, work colleagues or people they don't know, online. It allows users to share pictures, music, videos, and articles, as well as their own thoughts and opinions with however many people they like.

Define: *Snapchat*

Snapchat is a mobile messaging application used to share photos, videos, text, and drawings. It's free to download the app and free to send messages using it. There is one feature that makes Snapchat different from other forms of texting and photo sharing: the messages disappear from the recipient's phone after a few seconds.

Define: *Instagram*

At its most basic, Instagram is a social networking app which allows its users to share pictures and videos with their friends. Once a user snaps a picture, Instagram filters – of which there are dozens – can transform images in a manner reminiscent of old-fashioned Polaroid prints.

Define: *TikTok (formally Musical.ly)*

TikTok is an app for creating, sharing and discovering short music videos (15 sec), think Karaoke for the digital age. It used by young people as an outlet to express themselves through singing, dancing, comedy, and lip-syncing.

THE HECTIC TEACHER
RESOURCE

HEALTHY DIET AND EXERCISE

Personal Development

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?

- 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, shoveling heavy snow, moving or pushing heavy objects, carrying loads of 50 pounds on level ground or 25 pounds or more upstairs.
- Martial arts
- Playing sports with lots of running such as basketball, hockey, soccer
- Singles tennis
- Court sports such as handball, racquetball, squash

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/healthyliving/lifestages/teenagers.html
- Kids Health: https://kidshealth.org/en/teens/dieting.html

WADHAM KS3 PE KNOWLEDGE ORGANISER: Football

Physical Education

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

WADHAM KS3 PE KNOWLEDGE ORGANISER: Hockey

Physical Education

Skills and Techniques:

Dribbling: Allows you to move the ball around the pitch without losing possession. Keep the ball close to your stick at all times. 'Sit on the toilet'. When running, keep the ball in front of you and at the 1 o'clock position

Don't look down when running with the ball. Keep your head up.

Passing: Push pass - stand side onto the ball. Bend your back leg and keep your front leg straight, with your foot pointing towards where you want the ball to go. With a slight bend in your arms, place your stick on the ball and push it forwards, transferring your weight from your back foot to your front foot.

Tackling: Keep your stick on the ground.

Block tackle – put your stick flat on the ground with your body in a lunge position.

Rules:

- A game consists of two 30 minute halves.
- The game is started with a centre pass/push back from the centre of the pitch.
- Two umpires officiate the game.
- You can only use the flat side of the stick to control the ball.
- You cannot use your feet or hands to control the ball unless you are the goalkeepers
- Players can 'self-pass' from free hit and pass ins. The opposition need to be 5m away from where it is taken
- Only 1 defender can tackle the player with the ball at a time.

Positions:

11 players on a team

CF - centre forward
RF - right forward
LF - left forward
CM - centre midfield
RM - right midfield
LM - left midfield
SW - sweeper
CB - centre back
RB - right back
LB - left back
GK- goalkeeper

Scoring System:

Players can only shoot within the D.

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.

Pass to your team mates 'stick side'.

Key Words:

Penalty flick
16 yard hit out
Self-pass
Short corner
Long corner
PPE gum shield / shin pads
Centre pass

Key Words:

Indian dribbling
Dribbling
Push pass
Hockey stick
Block tackle
Reverse stick
Jab tackle

WADHAM KS3 PE KNOWLEDGE ORGANISER: NETBALL

Physical Education

Skills and Techniques:

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

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

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

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

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

Rules:

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

Positions:

7 players on a team

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

Scoring System:

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

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

Tactics:

Quick Passing

Dodging and changing speed to receive ball.

Key Words:

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

Key Words:

Pivot
Footwork
Contact
Held ball
Obstruction
Intercept
Marking
Penalty

Science – animal reproduction

Reproduction

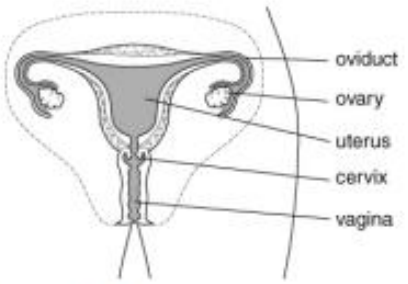
Reproduction produces new living things (**offspring**). Two **parents** are needed for **sexual reproduction**.

Males and females have **reproductive systems**, which contain **reproductive organs** to allow them to reproduce. The ovaries and testes produce **gametes** or **sex cells**.

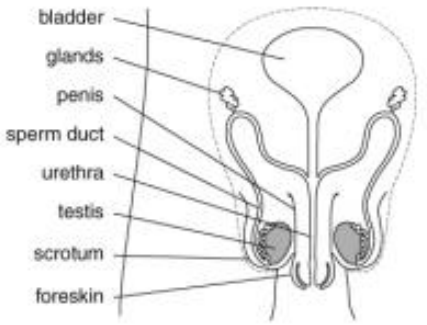
Sexual intercourse in mammals

During **sexual intercourse**, **semen** (sperm cells mixed with special liquids from the **glands**) is forced out of the penis and into the top of the **vagina**. This is called **ejaculation**. The semen travels into the top of the **uterus** and the sperm cells then swim down the **oviducts**.

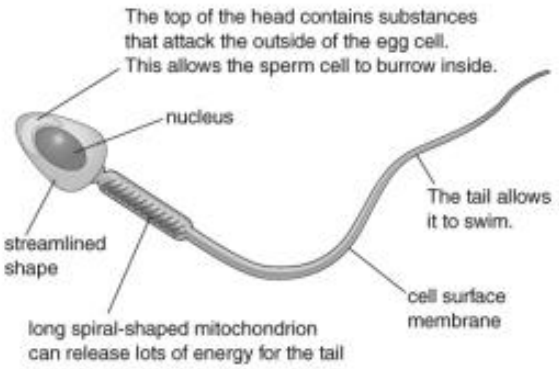
Sperm and egg cells are **adapted** to their **functions**. A sperm cell is much smaller than an egg cell.

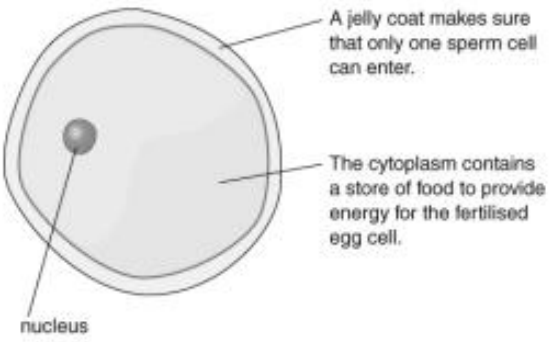


The female reproductive system



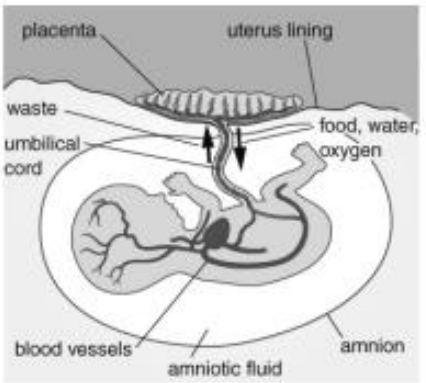
The male reproductive system





Pregnancy in mammals

If an egg cell meets a sperm cell in an oviduct, **fertilisation** can occur (the nuclei from the two cells **fuse**). The **fertilised egg cell** divides to form a ball of cells (an **embryo**). The embryo travels to the uterus where it sinks into the uterus lining (**implantation**). The woman is now **pregnant**. Once the embryo has developed all its organs it is called a **fetus**. It takes about 40 weeks (9 months) for a human fertilised egg cell to grow into a baby ready to be born. This time is called the **gestation period**.



Science – animal reproduction

While inside the uterus, the fetus is supplied with oxygen and food by the **placenta**. The placenta also gets rid of waste (especially carbon dioxide) from the fetus. The **umbilical cord** connects the fetus to the placenta.

If a mother smokes, drinks too much alcohol or takes drugs while pregnant, she might damage the baby. The baby might be **premature**.

Birth in mammals

- The uterus starts **contractions** and the woman goes into **labour**.
- The muscles of the **cervix** relax.
- The baby is pushed out head first through the cervix and the vagina.
- The baby starts to breathe and the umbilical cord is cut. The scar left behind is the **navel**.
- Then the placenta is pushed out of the uterus. This is the **afterbirth**.

The mother's breasts contain **mammary glands** that produce milk to feed the baby. Breast milk contains all the nutrients that a baby needs and **antibodies**, which help destroy micro-organisms that might cause diseases.

Growing up

The stages through which an organism goes as it grows and develops are its **lifecycle**. In the human lifecycle, a baby grows into a child. Between the ages of 10 and 14 years, most children start to go through **puberty**. During puberty, **sex hormones** cause big physical changes to occur. **Adolescence** is the time when emotional as well as physical changes occur. It ends at about 18.

Changes in boys	Changes in girls
• hair grows under arms, on face and on chest	• hair grows under arms
• pubic hair grows	• pubic hair grows
• shoulders get wider	• hips get wider
• body smell increases	• body smell increases
• testes start to make sperm cells	• ovaries start to release egg cells
• testes and penis get bigger	• breasts develop
• voice deepens ('breaks')	

After puberty, animals are able to sexually reproduce. Men produce sperm cells for the rest of their lives. Women stop releasing egg cells at the age of 45–55 and this is called the **menopause**.

In all mammals fertilisation happens inside the female. This is called **internal fertilisation**. In some animals (e.g. frogs, fish) fertilisation happens outside the female (**external fertilisation**).

The fertilised egg cells of many animals also grow and develop outside their parents. This is called **external development**. Amphibians, birds and fish use external development. Humans use **internal development** and produce fewer offspring than animals using external development because the growing embryos are protected inside the mother.

Science – animal reproduction

7Ba – Animal sexual reproduction

Word	Pronunciation	Meaning
egg cell		The female sex cell (gamete).
endangered	*en-**dayn**-jerd*	When a type of organism is in danger of ceasing to exist.
external fertilisation	*fert-ill-l-**zay**-shun*	When fertilisation happens outside the bodies of the parents.
fertilisation	*fert-ill-l-**zay**-shun*	Fusing of a male gamete with a female gamete.
fertilised egg cell	***fert**-ill-l-zed*	What is produced when a sperm cell fuses with an egg cell.
fuse	***fewz***	When two things join together to become one.
gamete		A cell used for sexual reproduction.
internal fertilisation	*fert-ill-l-**zay**-shun*	When fertilisation happens inside the body of a parent.
offspring		The new organisms produced by reproduction.
parent		An organism that has produced offspring.
sex cell		Another word for a gamete.
sexual reproduction	*ree-prod-**uck**-shun*	Reproduction that needs two individuals to produce a new organism of the same type.
sperm cell		The male sex cell (gamete).

7Bb – Reproductive organs

Word	Pronunciation	Meaning
adapted		When something has special features that allow it to carry out its function.
bladder		Organ that stores urine.
cervix	***sir**-vicks*	Ring of muscle at the bottom of the uterus in females.
cilia	***sil**-lee-ah*	Small hairs on the surface of some cells.
circumcision	*sir-cum-**siz**-shun*	Removal of the foreskin.
Fallopian tube		Another term for 'oviduct'.
foreskin		A covering of skin protecting the head of the penis.
function		Something's job.
glands		Special tissues that make and release substances. The glands in the male reproductive system add a special liquid to the sperm cells to make semen.
menopause	***men**-O-paws*	When the ovaries in women stop releasing egg cells.
ovary	***O**-very*	Female reproductive organ. Produces egg cells.
oviduct		Carries egg cells from the ovaries to the uterus in females. Fertilisation happens here.
puberty		Time during which big physical changes happen in the body.
reproductive organs		Organs used in sexual reproduction.
reproductive system		All the reproductive organs.
scrotum	***scrow**-tum*	Bag of skin containing the testes in males.
semen	***see**-men*	Mixture of sperm and special fluids released by males during ejaculation.
sperm duct		Tube that carries sperm cells from the testes to the urethra.
testis		Male reproductive organ. Produces sperm cells. Plural = testes.
urethra	*you-**ree**-thra*	Tube that carries sperm cells from the testes and urine from the bladder.
uterus	***you**-ter-ous*	Organ in females in which a baby develops.
vagina	*vaj-**eye**-na*	Tube in females leading from the cervix to the outside.

Science – animal reproduction

7Bc – Becoming pregnant

Word	Pronunciation	Meaning
amnion		Bag containing amniotic fluid.
amniotic fluid		Liquid surrounding the growing embryo and protecting it.
ejaculation	*edge-ack-you-**lay**-shun*	When semen is pumped out of a man's penis.
embryo	***em**-bree-O*	Tiny new human life that grows by cell division from a fertilised egg cell.
erection		When the penis becomes stiff.
implantation	*im-plant-**ay**-shun*	When an embryo sinks into the lining of the uterus.
placenta	*plas-**en**-ta*	Attached to the uterus wall, this takes oxygen and food out of the mother's blood and puts waste materials into the mother's blood.
pregnant		When a female animal has an embryo growing inside her uterus.
sexual intercourse		Or 'making love', 'having sex', during which semen is ejaculated into the end of the vagina.
umbilical cord	*um-**bill**-ick-al*	Carries food, oxygen and waste between the placenta and the growing embryo or fetus.

7Bd – Gestation and birth

Word	Pronunciation	Meaning
afterbirth		When the placenta is pushed out through the vagina after the baby has been born.
antibodies		Substances produced by white blood cells that help to fight micro-organisms that might cause diseases.
contractions	*con-**track**-shuns*	The uterus muscles squeezing.
fetus	***fee**-tus*	An embryo is known as a fetus once it has developed a full set of organs.
gestation period	*jess-**tay**-shun*	The length of time from fertilisation to birth.
labour		Labour starts when contractions start in the uterus and ends when the afterbirth has come out.
mammary glands		Glands contained in the breasts of women that produce milk after childbirth.
navel	***nave**-ell*	Scar left by the cord. Often called the 'belly button'.
ultrasound scan		An ultrasound scanner uses sound to create a picture of what is inside someone's body.

Science – animal reproduction

7Be – Growing up

Word	Pronunciation	Meaning
puberty	***pew**-bert-ty*	Time when big physical changes happen in the body.
sex hormones	***hor**-moans*	Natural chemicals released in our bodies that control the menstrual cycle and puberty.
acne	***ack**-nee*	Spots on the skin.
adolescence	*add-ol-**less**-sense*	Time when physical and emotional changes occur in teenagers.
menstrual cycle	***men**-strew-al*	Series of events lasting about a month, happening in the female reproductive system. The cycle causes ovulation and the lining of the uterus is replaced.
menstruation	*men-strew-**ay**-shun*	When the lining of the uterus and a little blood pass out of the vagina as part of the menstrual cycle.
ovulation	*ov-you-**lay**-shun*	Releasing of an egg cell from an ovary.
lifecycle		The series of changes in an organism during its life.

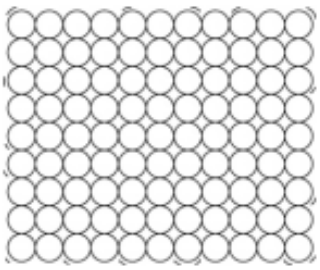
Science – particles

The particle theory

A **scientific method** describes how scientists try to explain the world around them. It usually starts with some observations, which generate a question. Scientists may then follow a series of unbiased steps to answer the questions. These steps could include the following:

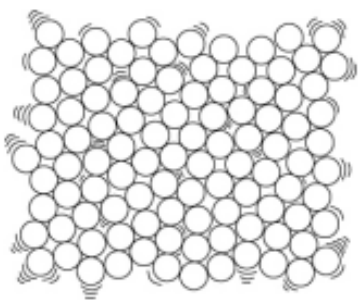
- thinking up an idea or using existing ideas that would explain the observations. These ideas are called **hypotheses**.
- using the hypothesis to make a **prediction** about the hypothesis.
- testing the prediction by experiment, and collecting data.
- checking the **data** to see if it matches the prediction.
- using the data as **evidence** to support the hypothesis (or prove it is wrong).
- forming a **theory** if the hypotheses have been tested many times and shown, by the evidence, to be correct. The **particle theory** is an example.

The different **properties** of solids, liquids and gases can be explained by the **particle theory** (or **particle model**). Solids, liquids and gases (the three **states of matter**) need to be handled and stored differently because of these different properties.



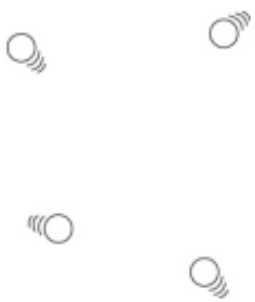
Solids

- Solids are made up of particles that are very close together. (Strong forces of attraction hold the particles together.)
- The particles in solids vibrate in fixed positions.
- The shape and volume of solids do not change.
- Solids cannot be squashed and do not flow.



Liquids

- Liquids are made up of particles that are fairly close together. (Quite strong forces of attraction hold the particles together.)
- The particles in liquids are able to move past each other.
- Liquids have a fixed volumes but their shape can change to fit the container as they flow easily.
- Liquids cannot be easily compressed (squashed).



Gases

- Gases are made up of particles that are well spread out. (There are only weak forces of attraction between the particles.)
- The particles in gases move about freely in all directions.
- The shape and the volume of gases can change as they flow very easily and spread out.
- Gases can be compressed (squashed) quite easily.

Science – particles

Brownian motion

When pollen grains in water are observed through a microscope they are seen to move jerkily in different directions. This is called **Brownian motion**. It is caused by water particles, which are moving all the time, hitting the pollen grains. The pollen grains are small enough so that when many water particles hit one side of the grain, the grain is moved in that direction.

Brownian motion provides evidence to support particle theory.

Diffusion

Diffusion is said to have occurred when chemicals mix together without anything moving them. Diffusion occurs because particles in a substance are always moving around. Diffusion is fastest in gases, and slower in liquids.

Dilution

When you add water to orange squash you dilute it. The colour becomes paler because the orange coloured squash particles are spread out more among the water particles.

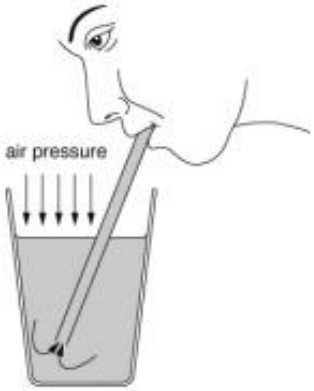
Pressure in gases

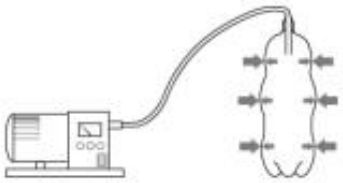
Pressure is caused by particles hitting the walls of the container they are in. The pressure may increase because:

- the container has been squashed, making the volume smaller so that the particles will be hitting the walls more often.
- the number of particles has been increased, so that there are more particles moving around to hit the walls.

If the particles are in a flexible container, like a balloon, an increase in pressure inside the container can make the volume increase. If the pressure becomes too great, the balloon will burst.

Air pressure is the pressure caused by air particles around us. Air pressure lets us suck things up using a straw and also causes a container to collapse if the air is sucked out. If all the air is sucked out of a container, you get a **vacuum** – nothingness.





Science – particles

7Ga – Solids, liquids and gases

Word	Pronunciation	Meaning
acid rain		Rainwater that is more acidic than usual due to air pollution.
corrosive	*(cor-**row**-sive)*	Substances that attack metals, stonework and skin are called corrosive.
compressed		To be squeezed into a smaller volume.
cubic centimetre (cm^3)		A unit used for measuring volume.
flammable		Easily set on fire.
flow		Move and change shape smoothly.
fossil fuel		Fuel formed from once living material over millions of years, e.g. coal, oil or natural gas.
hazard		Something that could cause harm.
states of matter		There are three different forms that a substance can be in: solid, liquid or gas. These are the three states of matter.
toxic		Poisonous.
volume	***vol**-yoom*	The amount of room something takes up. Often measured in cubic centimetres (cm^3).

7Gb – Particles

Word	Pronunciation	Meaning
observation	*ob-zur-**vey**-shuh-n*	Something that you see happening.
particle theory		Theory used to explain the different properties and observations of solids, liquids and gases.
particles	***part**-ick-uls*	The tiny pieces that everything is made out of.
random	***ran**-dom*	Having no regular pattern.

7Gc – Brownian motion

Word	Pronunciation	Meaning
Brownian motion	***moh**-shuh-n*	Erratic movement of small specks of matter caused by being hit by the moving particles that make up liquids or gases.
nanometres		unit of length: 1 nanometre = 0.000 000 001 metre
nanoscale		Scale for measuring very small particles: 1 nanometre (nm) = 0.000 000 001 metre (m)

7Gd – Diffusion

Word	Pronunciation	Meaning
diffusion	*diff-**you**-zshun*	When particles spread and mix with each other without anything moving them.

7Ge – Air pressure

Word	Pronunciation	Meaning
air pressure		The force on a certain area caused by air molecules hitting it.
vacuum	***vak**-yoom*	A completely empty space, containing no particles.

Science – forces

Forces

Forces are pushes or pulls. Forces can:

- change the shape or size of an object
- change the speed things are moving (make them move faster or slower)
- change the direction of a moving object.

The unit for measuring force is the **newton** (**N**).

Friction is a force caused by two things rubbing together. **Air resistance** and **water resistance** are kinds of friction.

Solid things, like your chair, push up on you when you sit on them. Upwards forces from water or air are called **upthrust**. Things float in water because of upthrust.

Contact forces only act when two objects or materials are touching. Examples of contact forces are:

- friction
- air resistance
- water resistance
- upthrust.

Some forces can have an effect without objects touching. They are called **non-contact forces**. There are three non-contact forces:

- **magnetism**
- **gravity**
- **static electricity**.

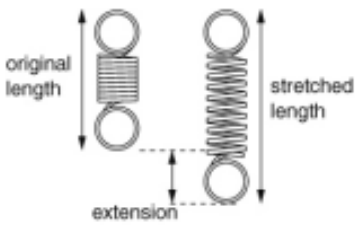
Weight and mass

Your **mass** is the amount of substance in your body. Your mass is measured in **kilograms** (**kg**). Your **weight** is a force caused by gravity pulling on your body. The newton (N) is the scientific unit used to measure forces, and so it is also used as the unit for weight.

Wherever you take an object, its mass will not change but its weight depends on the force of gravity. An object on the Moon would have a smaller weight than on Earth, because the Moon's gravity is not as strong as Earth's.

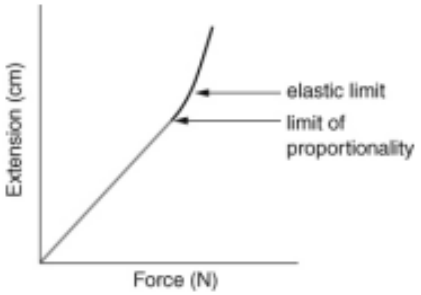
Measuring forces

Elastic materials will stretch with a force and then return to their original shape when the force is taken away. Springs are elastic. The extension of a spring is the difference between its original length and its stretched length.



The extension of a spring is **proportional** to the force on it. This is called **Hooke's Law**.

If the spring is stretched too far, the extension stops being proportional to the force. If it is stretched even further, it goes beyond its **elastic limit**. The spring will no longer return to its original length when the force is removed.



Force meters have springs inside them.

Materials like Plasticine® will stretch with a force but they will not return to their original shape afterwards. Plasticine® is a **plastic** material.

Science – forces

Friction

Friction is a contact force. Friction can:

- slow things down
- wear things away
- produce heat
- cause a noise.

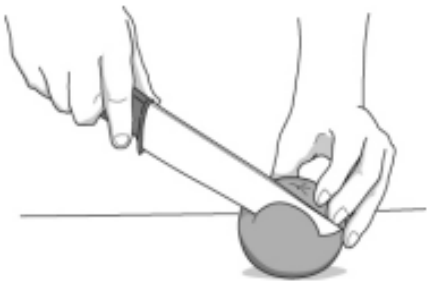
Friction can be increased by using rough surfaces, or by using materials such as rubber that have a lot of friction.

Friction can be reduced by using smooth surfaces, or by lubrication. Oil and grease are examples of lubricants, and help things to move past each other easily.

Pressure

Pressure is the amount of force pushing on a certain area.

For a certain area, the bigger the force, the bigger the pressure. For a certain force, the bigger the area, the smaller the pressure.



Sharp knife – a small area giving a large pressure.

Snow shoes – a large area giving a small pressure.

We can work out the pressure under an object using this formula:

pressure = force ÷ area

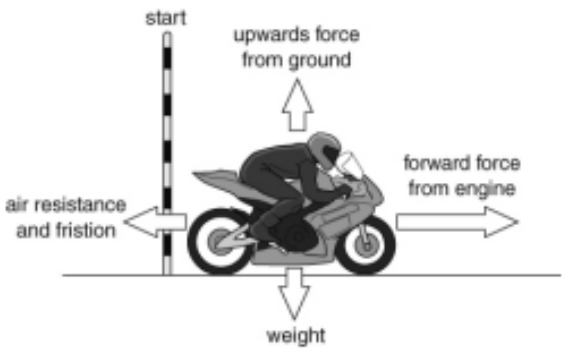
Balanced and unbalanced forces

Balanced forces are forces on an object that are the same size but work in opposite directions. If forces are balanced:

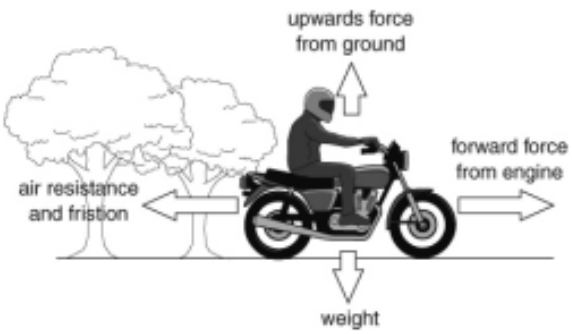
- a stationary object stays stationary
- a moving object continues to move at the same speed and in the same direction.

If there are **unbalanced forces** on an object:

- a stationary object will start to move
- a moving object will change its speed or direction.



Unbalanced forces – the motorbike will speed up.



Balanced forces – the motorbike will continue to move at a steady speed.

A car or motorbike uses the energy stored in fuel to move at a steady speed because it needs a force from the engine to balance the forces of air resistance and friction.

Science – forces

7Ka – Forces

Word	Pronunciation	Meaning
force		A push, pull or twist.

7Ka – Different forces

Word	Pronunciation	Meaning
air resistance		A force on objects moving through air.
contact forces		A force where there needs to be contact between objects before the force can have an effect (e.g. friction).
friction		A force between two objects that are touching. It usually acts to slow things down or prevent movement.
gram (g)		A unit for measuring mass.
gravity		The force of attraction between any two objects. The Earth is very big and so has strong gravity that pulls everything down towards it.
kilogram (kg)		A unit for measuring mass. There are 1000 g in 1 kg.
magnetism		A force that attracts objects made of iron or other magnetic materials. Two magnets can also repel each other.
mass		The amount of matter that something is made from. Mass is measured in grams (g) and kilograms (kg). Your mass does not change if you go into space or to another planet.
newton (N)		The unit of force.
non-contact force		A force that can affect something from a distance (e.g. gravity).
static electricity		A force that can attract or repel things. It is caused when certain materials rub together.
upthrust		A force that pushes things up in liquids and gases.
water resistance		A force on objects moving through water.
weight		The amount of force with which gravity pulls things. It is measured in newtons (N). Your weight would change if you went into space or to another planet.

Science – forces

7Kb – Springs

Word	Pronunciation	Meaning
compress		To squash something, or make it smaller.
elastic		An elastic material changes shape when there is a force on it but returns to its original shape when the force is removed.
elastic limit		If you stretch a spring beyond its elastic limit it will be permanently stretched. It is no longer elastic.
extension	*ex-**ten**-shun*	The amount by which a spring or other stretchy material has stretched. It is worked out from the stretched length minus the original length.
force meter		Piece of equipment containing a spring, used to measure forces.

Word	Pronunciation	Meaning
Hooke's Law		The law that says that the extension of a spring is proportional to the force on it.
limit of proportionality	*prO-por-shun-**al**-it-ee*	The extension of a spring is proportional to the force on it, up to a certain point called the limit of proportionality. If you apply more force the extension is no longer proportional to the force.
plastic		A plastic material changes shape when there is a force on it, but does not return to its original shape when the force is removed.
proportional	*prO-**por**-shun-al*	A relationship between two variables where one doubles if the other doubles. A graph of the two variables would be a straight line through the origin.
spring		A coil of wire that can be stretched or compressed.
stretch		To pull something to make it longer.

7Kc – Friction

Word	Pronunciation	Meaning
lubricant	***loo**-brick-ant*	A substance (usually a liquid) used to reduce friction.
lubrication	*loo-brick-**ay**-shun*	Adding a lubricant to something.

7Kd – Pressure

Word	Pronunciation	Meaning
pascal (Pa)		A unit for pressure. 1 Pa = 1 N/m^2.
pressure		The amount of force pushing on a certain area. A way of saying how spread out a force is.

7Ke – Balanced forces

Word	Pronunciation	Meaning
balanced forces		When two forces are the same strength but in opposite directions.
stationary	***stay**-shun-arry*	Not moving.
unbalanced forces		When two forces working in opposite directions are not the same strength. Unbalanced forces change the motion of objects.