



Bishop Ullathorne Catholic School Knowledge Organiser


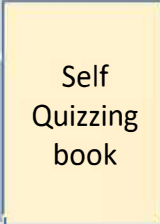
Year 8
Summer Term
2023-2024



*"If you are not willing to learn, no one can help you.
If you are determined to learn, no one can stop you."*

Name
Tutor Group

Your Knowledge Organiser and Self Quizzing Book

Knowledge Organisers	Self Quizzing Book	The 'Look Cover Write Check' method
		
<p>Knowledge Organisers contain critical, fundamental knowledge that you MUST know in order to be successful in Year 8 and subsequent years.</p> <p>They will help you recap, revisit and revise what you have learnt in order to move the knowledge within from your short-term memory to your long term memory.</p> <p>You must keep all of your Knowledge Organisers and Self Quizzing books at home because the fundamental knowledge required in Year 8 will also be required in Year 9 to 11.</p>	<p>This is the book that you should write in to complete your Knowledge Organiser Home Learning. You do not need to bring this to school.</p> <p>Follow the simple rules on the right about how to use your Knowledge Organiser. You can also watch the video on our Home Learning webpage for more ideas on how to use the Knowledge Organiser.</p> <p>You will be tested as a starter activity in your lesson on the day that the Home Learning is due. This will be completed in your normal exercise book and you will mark it in class.</p>	<p>Step 1 Check Class Charts for what section your teacher has set you to learn for your Home Learning.</p> <p>Step 2 Write the title of the section in your Self Quizzing Book .</p> <p>Step 3 Write out the section that you have been asked to learn.</p> <p>Step 4 Cover up the section in your Self Quizzing book. Read it, Cover it, Say it in your head, check it...REPEAT until confident.</p> <p>Step 5 Cover up the section and write from memory in your Self Quizzing book.</p> <p>Step 6 Check your answers and correct where required. Repeat steps 4 to 6 until you are confident.</p>

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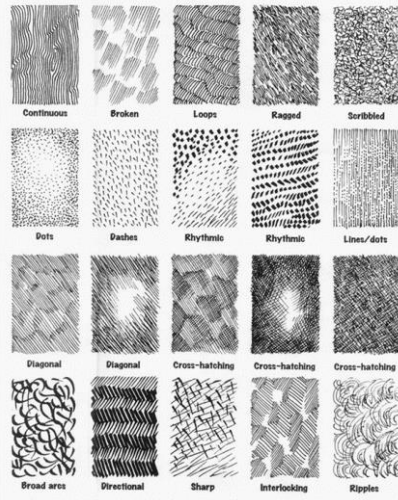
Knowledge Organiser – Year 8 War and Conflict- German Expressionists

a. Art key words

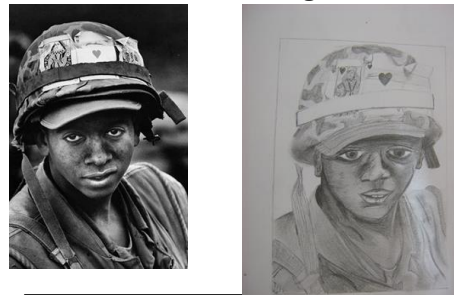
Formal Elements	The parts used to make a piece of artwork.
Analogous colours	Colour next to each other on the colour wheel.
Mark making	describes the different lines, dots, marks, patterns, and textures we create in an artwork.
Monochrome	Light and dark tones of a singular colour.
Hatching and cross hatching	refers to a shading technique that implies shade, tone, or texture. The technique is done with a series of thin, parallel lines that give the appearance of shadow in varying degrees.
Stippling	the creation of a pattern simulating varying degrees of solidity or shading by using small dots.
Foreground	The area of an image—usually a photograph, drawing, or painting—that appears closest to the viewer.
Background	The area of an artwork that appears farthest away from the viewer; also, the area against which a figure or scene is placed.
Palette	Palette 1. The range of colours used by an artist in making a work of art; 2. A thin wooden or plastic board on which an artist holds and mixes paint.

Skills: Mark making to create texture/tonal value

Line and linear drawing



Observational drawing from source.



Home learning tasks:

1. Texture and mark making page
2. Art analysis and copy
3. Image collage
4. Planning composition

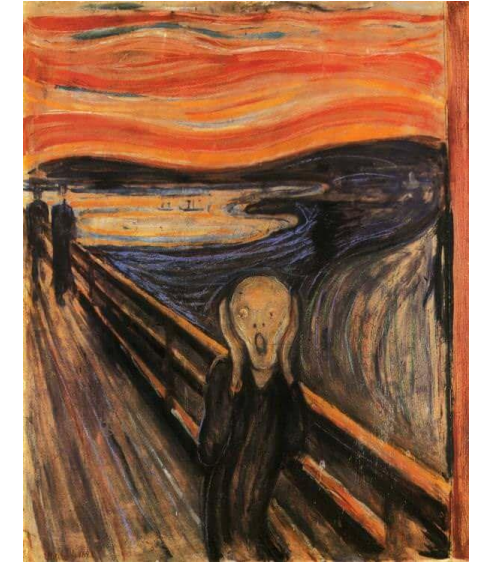


**Artists: Max Beckerman
Ernest Barlack
Otto Dix
Käthe Kollwitz
Franz Marc**

German expressionism was an early twentieth century German art movement that emphasized the artist's inner feelings or ideas over replicating reality, and was characterised by *simplified shapes, bright colours and gestural marks or brushstrokes.*



Expressionism refers to art in which the image of reality is distorted in order to make it expressive of the artist's inner feelings or ideas



Edvard Munch 'The scream' 1893'

Artists:
Edvard Munch
Wasilly Kandinsky
Egon Schiele
Paul Klee

Composition is the term given to a complete work of art and, more specifically, to the way in which all its elements work together to produce an overall effect. *The main types are:*



Symmetrical



asymmetrical



Radial symmetry



Year 8 Computer Science – Data Representation



Test Yourself

What is Binary?

Binary is a number system that only uses 2 digits: 1 and 0. All information that is processed by a computer is in the form of a sequence of 1's and 0's. Any information we want the computer to process needs to be converted to binary for the computer to understand it.

Binary Number System: is the number system which computers use. It represents the electrical current running through the computer as being ON (1) or OFF (0). The binary system is known as the base 2 system.



Base 10 Number Systems

Denary/Decimal Number System: uses the digits 0-9 (10 digits, hence the name). Each digit is given a value based on where it is placed in a number. For example in the number 458, the digit 5 represents 5 tens. This is also known as base 10.



Key Terms

Memory	Number of bytes
Bit	1/8 byte
Nibble	1/2 byte
Byte	1 byte
Kilobyte	1000 bytes
Megabyte	1000 000 bytes
Gigabyte	1 000 000 000 bytes
Terabyte	1 000 000 000 000 bytes

Using the ASCII Table

- Find the character you need.
- Locate the first half of the binary number using the top column
- Add the second half of the binary number using the start of the row your character is in
- Join them together to get your binary number. **A = 100 0001**

ASCII

ASCII stands for **American Standard Code for Information Interchange**. ASCII uses 7 bit binary numbers which means it can create up to 128 different characters.

		First half							
		000	001	010	011	100	101	110	111
Second half	0000	NULL	DLE		0	@	P	'	p
	0001	SOH	DC1	!	1	A	Q	a	q
	0010	STX	DC2	"	2	B	R	b	r
	0011	ETX	DC3	#	3	C	S	c	s
	0100	EDT	DC4	\$	4	D	T	d	t
	0101	ENQ	NAK	%	5	E	U	e	u
	0110	ACK	SYN	&	6	F	V	f	v
	0111	BEL	ETB	'	7	G	W	g	w
	1000	BS	CAN	(	8	H	X	h	x
	1001	HT	EM	)	9	I	Y	i	y
	1010	LF	SUB	*	:	J	Z	j	z
	1011	VT	ESC	+	;	K	[	k	{
	1100	FF	FS	,	<	L	\	l	|
	1101	CR	GS	=	=	M	]	m	}
	1110	SO	RS	.	>	N	^	n	~
	1111	SI	US	/	?	O	_	o	DEL

Convert 8 bit Binary to Denary

Example: Convert the binary number 01000110 into denary.

Step 1: Create a binary table

128	64	32	16	8	4	2	1	Ans

Step 2: Add the binary number (Always work from right to left)

128	64	32	16	8	4	2	1	Ans
0	1	0	0	0	1	1	0	

Step 3: Add up all the numbers with a 1 underneath them to get your answer

128	64	32	16	8	4	2	1	Ans
0	1	0	0	0	1	1	0	70

Convert Denary to 8 bit Binary

Example: Convert the denary number 45 into binary

Step 1: Create a binary table

128	64	32	16	8	4	2	1	Ans
								45

Step 2: Place a 1 under each number you use to make up 45

128	64	32	16	8	4	2	1	Ans
		1		1	1		1	45

Step 3: Add a 0 to the left over columns

128	64	32	16	8	4	2	1	Ans
0	0	1	0	1	1	0	0	45



Year 8 Computer Science – Micro:bit (Pro)



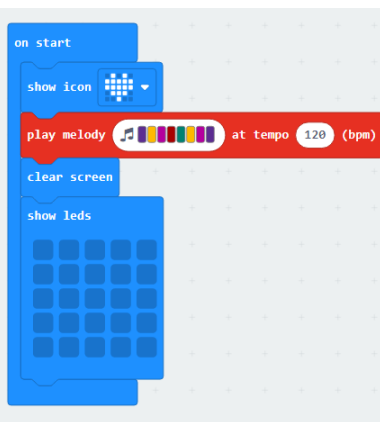
Test Yourself

Keywords

Keyword	Definition
Algorithm	Step by step instructions to solve a given problem
Pattern Recognition	Looking for similarities or characteristics that can help solve the problem
Decomposition	Breaking the problem down into smaller problems to solve
Abstraction	Removing aspects that are not required to solve the problem
Selection	A choice built into the program to determine the next section of code to execute based on the output to a set condition
Sequence	The order the program code must be in to work correctly
Repetition	A loop of a set section of the program code
Variable	A single temporary storage location within the program code that can be changed or edited
Function	A set of instructions that are given a name and only when this name is called in the main program, is it executed

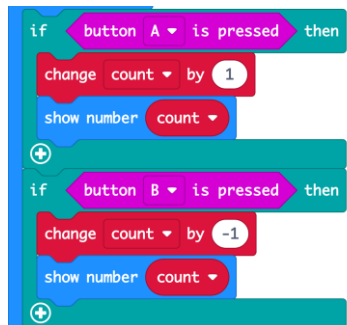
Sequence

A program which is executed line by line



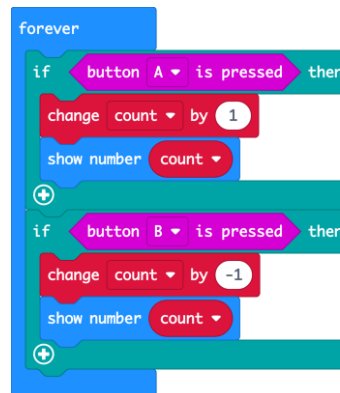
Selection

A program which makes a choice or decision – sometimes there may be more than one.



Iteration

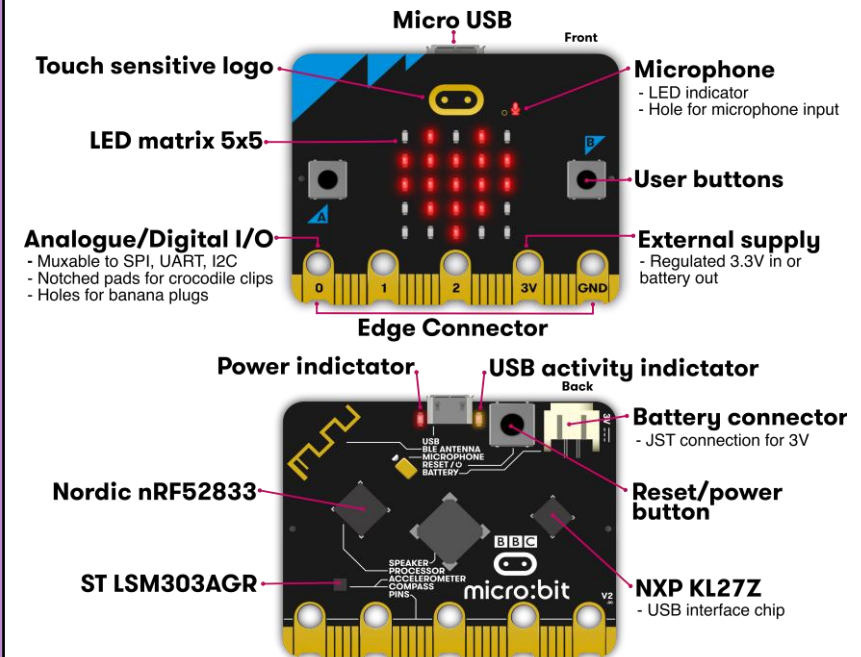
A program which repeats a number of times or until a condition is met



Micro:bit Hardware

Definition: The micro:bit is a tiny computer.

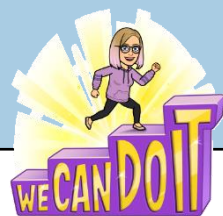
You can write programs for the micro:bit on your computer and then transfer them to the micro:bit to be run.



Functions

A function is a piece of code that is created with a name and you can call this function anywhere else by using its name.





Year 8 Computer Science – Spreadsheets



Test Yourself

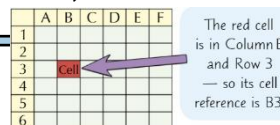
Spreadsheet Basics

A spreadsheet is a program that can display and process data in a structured way. You can record data, search and sort, perform calculations and functions and create graphs and charts. A spreadsheet is made up of rows (numbers) and columns (letters).

Formatting

Data in a spreadsheet can be formatted in the same way any other Office product by using fill, bold, italic, text alignment, and borders. These formatting techniques are unique to spreadsheets:

Technique	Use
Conditional formatting	The format of the cells changes when a certain condition is met – e.g. Pass or Fail
Merge & centre	Two or more cells can become one. This is useful for headings or labels
Text wrap	Let's you display text over a number of lines so the text does not run over into another cell

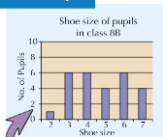


Charts

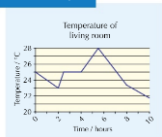
How to create a chart:

1. Highlight the data you want to use
2. Select the chart type you want from the Insert tab
3. Choose a meaningful title and axis labels

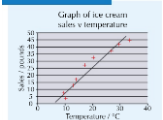
Bar Graph



Line Graph



Scatter Graph



Pie Chart



Functions and Formula

A formula is an instruction given to the computer to help it process data held in specific cells.

Function	Use	Example
SUM	Adds up numbers in a cell range	=SUM(C3:C5)
AVERAGE	Finds the average of a set of numbers	=AVERAGE (C3:C5)
MIN	Finds the smallest of a set of numbers	=MIN (C3:C5)
MAX	Finds the largest of a set of numbers	=MAX (C3:C5)

IF Statements

An IF statement is used to check if the data matches a certain condition. They can be simple, like the one below, or more complicated with lots of different data matches.

=IF(C2>B2,"Over Budget", "Within Budget")			
B	C	D	E
Budgeted	Actual	Status	Amount Over
\$800.00	\$921.58	Over Budget	\$121.58
\$375.00	\$324.98	Within Budget	\$0.00
\$150.00	\$128.43	Within Budget	\$0.00
\$150.00	\$174.38	Over Budget	\$24.38



IF

VLOOKUPS

A VLOOKUP function displays data from a table in another part of a spreadsheet

	A	B	C	D	E
1	ID	Last name	First name	Title	Birth date
2	101	Davis	Sara	Sales Rep	12/08/68
3	102	Fontana	Olivier	VP (Sales)	02/19/52
4	103	Leal	Karina	Sales Rep	08/30/63
5	104	Patten	Michael	Sales Rep	09/19/58
6	105	Burke	Brian	Sales Manager	03/04/55
7	106	Sousa	Luis	Sales Rep	07/02/63
8					
9					
10	Formula	=VLOOKUP(B3,B2:E7,2,FALSE)			
11	Result	Olivier			
12					

VLOOKUP looks for Fontana in the first column (column B) in table_array B2:E7, and returns Olivier from the second column (column C) of the table_array. FALSE returns an exact match.



VLOOKUP

Year 8 CPSHE Summer Term 1

Topics covered include:
Environment and Sustainable
Development and RSE

Lesson overview

My ecological footprint


Improving my ecological footprint

Bishop Ullathorne's ecological footprint

RSE 5—Tough relationships

Keywords	Definitions
Ecological footprint	The impact of a person or community on the environment, expressed as the amount of land required to sustain their use of natural resources.
Sustainable	Conserving an ecological balance by avoiding depletion of natural resources.
Equality	The state of being equal, especially in status, rights, or opportunities.
Discrimination	The unjust or prejudicial treatment of different categories of people, especially on the grounds of race, age, sex, or disability
Prejudice	Preconceived opinion that is not based on reason or actual experience.

Carbon vs. Ecological Footprints

Carbon Footprint	2	Ecological Footprint
Measures CO ₂ generated by activities		Measures renewable and non-renewable resources used
Only includes carbon emission numbers		Includes both carbon emissions and environmental impact
Can be used for Carbon Credit Marketplace		Used to gauge global consumption
Directly impacts climate change		Directly impacts continuing life on Earth

The 9 Protected Characteristics

Equality Act (2010)



Age

This refers to a person belonging to a particular age (e.g. 32 year olds) or range of ages (e.g. 18 - 30 year olds).



Belief and Non-Belief

Religion has the meaning usually given to it but belief includes religious and philosophical beliefs including lack of belief or Atheism.



Disability

A person has a disability if s/he has a physical or mental impairment which has a substantial and long-term adverse effect on that person's ability to carry out normal day-to-day activities.



Gender Reassignment

The process of transitioning from one gender to another.



Marriage and Civil Partnership

In England and Wales marriage is a union between same sex or opposite sex couples. Same-sex couples can also have their relationships legally recognised as 'civil partnerships'.



Pregnancy and Maternity

Pregnancy is the condition of being pregnant or expecting a baby. Maternity refers to the period after the birth, and is linked to maternity leave in the employment context. In the non-work context, protection against maternity discrimination is for 26 weeks after giving birth, and this includes treating a woman unfavourably because she is breastfeeding.



Race

Refers to a group of people defined by their race, colour, nationality (including citizenship) and ethnic or national origins.



Sex (Gender)

A man or a woman.



Sexual Orientation

A person's attraction towards their own gender, the opposite gender or more than one gender



SIMPLE STEPS TO REDUCE YOUR ECOLOGICAL FOOTPRINT

3

1 DON'T DRIVE WHEN THERE IS AN ALTERNATIVE

Walk, bike, or take public transport whenever possible.



2 REDUCE ENERGY USE

Turn off all electrical appliances when you are not using them.



3 EAT LOCAL, ORGANIC AND IN SEASON FOODS

There are many benefits to buying locally grown food, and protecting the environment.



4 EAT LESS MEAT AND DAIRY

Eating less meat and dairy is much better for our health and the planet. You don't have to become a vegan to do your bit.



5 USE LESS WATER

Try to be more conscientious about how you use your water.



6 PLANT MORE TREES

If you can, plant new trees in your garden.



Year 8 CPSHE Summer Term 2

Topics covered include:

Exams and Welcome to BUssiness

2



Lesson overview

The Ullathorne Way

Revision strategies

CPSHE end of year exam

Welcome to Business—starting out

Welcome to Business— Work roles, skills and identities

Welcome to Business— Take a risk!

Summer safety

What attracts you to a company?



3

What's being offered to you?



6

Record It

Record yourself on your phone or tablet reading out the information. These can be listened to as many times as you want!



Teach it!

Teach someone your key facts and the get them to test you, or even test them!



Flash Cards

Write the key word or date on one side and the explanation on the other. Test your memory by asking someone to quiz you on either side.



Hide and Seek

Read through your knowledge organiser, put it down and try and write out as much as you can remember. Then keep adding to it until its full!



Back to front

Write down the answers and then write out what the questions the teacher may ask to get those answers.



Post its

Using a pack of post-it notes, write out as many of the keywords or dates as you can remember in only 1 minute!

PRACTICE MAKES PERFECT

Practice!

Some find they remember by simply writing the facts over and over again.

Read Aloud

Simply speak the facts and dates out loud as you're reading the Knowledge Organiser. Even try to act out some of the facts – it really helps you remember!



Sketch it

Draw pictures to represent each of the facts or dates. It could be a simple drawing or something that reminds you of the answer.

Keywords	Definitions
Business	A person's regular occupation, profession, or trade.
Risk	In business, could result in the possibility of financial loss.
Entrepreneur	A person who owns and runs their own business and takes risks.
Shifts	Shift pattern days refer to a schedule of working where staff are rostered to work in rotation, for example, the two-shift system rotates two teams of staff working mornings and afternoons (e.g. 6am-2pm and 2pm-10pm).

1

Differences between job roles

There are a number of differences between key job levels in a business. The roles of staff in managerial, supervisory, operative and support roles will vary in terms of:

- their key responsibilities
- their tasks or activities – what the job entails
- their job security
- decisions to make and problems to solve
- the skills, qualifications and personal qualities they require
- the related pay and benefits.

4

External Risks

Risks related to the external environment

- Economic trends
- Attacks from outside
- Natural disasters and accidents
- Climate change

Other

5

Business Risks

Risks related to business activities

Strategic Risks
Risks related to policies and strategies

- Management strategy
- Business environment
- Corporate governance
- Partnering and withdrawal

Operational Risks
Risks related to business processes

- Quality, cost, and deadlines for all aspects of business, such as orders, production, shipment and services

Other

Common Risks
Risks related to business activities

- Human rights and labor practices
- Compliance
- Information systems
- Environmental pollution

Other

What Do You Need To Become An

Entrepreneur?

Entrepreneurs need to be innovative and think in exciting, creative ways

Entrepreneurs need to be excellent planners, thinking about short term and long term business goals.

Entrepreneurs need to be committed and dedicated to help their business succeed.

Entrepreneurs need to be prepared to take risks to think ahead and help the business

Entrepreneurs need to be motivated and independent, able to make their own tough decisions.

Entrepreneurs need to be able to handle money wisely and stick to a budget.

Entrepreneurs need to be bold and courageous focusing on solutions when faced with challenges.

Entrepreneurs need to have great communication skills.

Entrepreneurs need to have a good knowledge of sales and customer service.

Entrepreneurs need to be energetic and be able to work long hours.

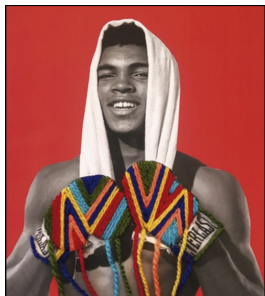
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Year 8 Art Textiles - Portraits

1. Keywords

Sample	A sample is an example of a textile technique you have tried.
Composition	The arrangement of the elements (objects) in a piece of creative work.
Portrait	A portrait is a representation of a particular person. This could be a painting, photograph, sculpture, or other artistic representation of a person's face and shoulders.
Texture	How an object looks or feels. An example of texture in textiles is the smooth feeling of satin.
Background	How an object looks or feels. An example of texture in textiles is the smooth feeling of satin.
Foreground	The part of a composition that appears closest to the viewer.
Collagraph	A form of printmaking using a collection of textures that have been collaged onto a firm surface.
Mono Printing	A form of printmaking that has lines or images that can only be made
Applique	A sewing technique that involves stitching a small piece of fabric onto a larger one to make a pattern or design. This can be done by hand or using a sewing machine.
Hand Embroidery	Adding detail, shape and pattern with thread. This can be by hand or machine.



9. Artist—Victoria Villasana

Is a textiles artist from Mexico who is interested in history and culture and how people relate to each other in a digital world. She creates embroidery collages on photographs. She uses geometric patterns and colour to express the human spirit.



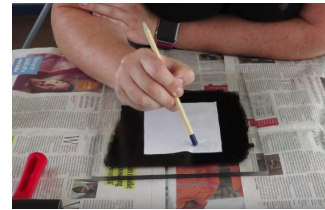
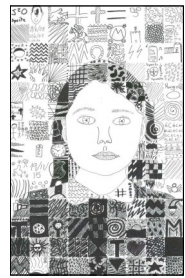
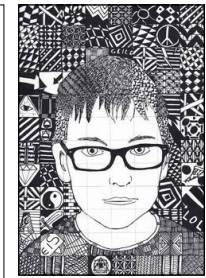
3. Techniques

The 3 techniques you will focus on in year 8 is:

Mono Printing

Hand Embroidery

Collagraph Printing

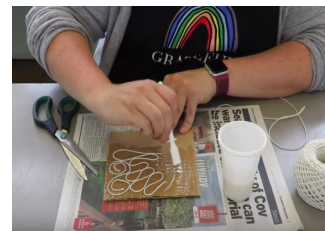


4. Mono Printing

A type of printing technique that creates a single impression, no two prints will be identical. A modern technique developed in the 1960's.

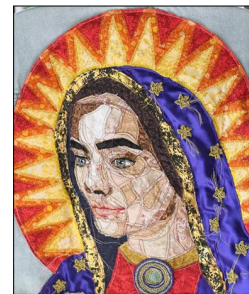
5. Hand Embroidery

A way of creating decorative stitching on fabric. Using a variety of stitches and threads to create embellished surfaces. The technique originates back to China 5th Century BC.



6. Collagraph

A printmaking process which creates different tonal qualities using a variety of textured raised surfaces on a printing plate. A modern technique developed just after the war in America.



8. Artist—Isabella González

Her work relates to the acceptance of living between two extremes, physically and emotionally. Her work involves different layers of fabric embroidered as an intention to mend herself. Her artistic production is deeply grounded in the handmade.

Key Points—Bacteria

Bacteria are found everywhere and need the right temperature, time, nutrients, pH level and oxygen to multiply.

Microorganisms (bacteria) are used to make a range of food products such as cheese, yoghurt and bread.

Bacterial contamination is the process of harmful bacterial in our food, which can lead to food poisoning and illness.

As a food handler you must do everything possible to prevent contamination and to control conditions that allow bacteria to multiply: cleaning, cooking, chilling, cross contamination.

The main symptoms of food poisoning are nausea, diarrhoea, vomiting, loss of appetite, mild fever.

Bacterial responsible for cause food poisoning are salmonella, e.coli, listeria and others.

Key Points—Nutrition

Protein is needed for growth, maintenance and repair.

Proteins are built up of units of amino acids.

Fats can be classified as either saturated or unsaturated.

Saturated fats are considered to be more harmful to health because they raise levels of cholesterol.

Carbohydrates provide the body with energy.

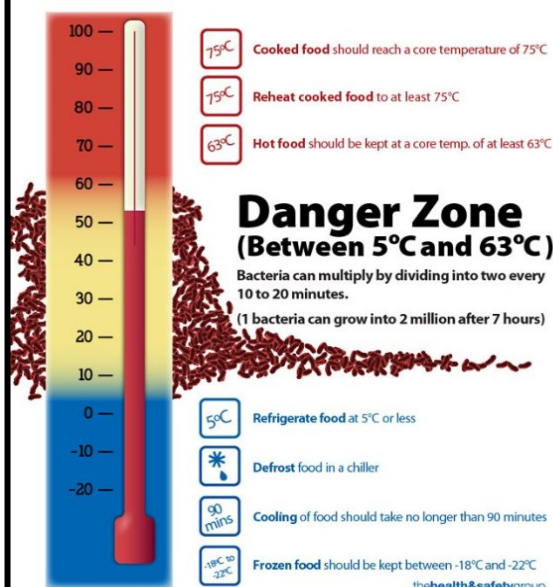
Most of our energy should come from complex starchy foods.

Vitamins are micronutrients, required in small amounts to do essential jobs in the body.

Water makes up 2/3 of the body so it is vital to drink regularly.

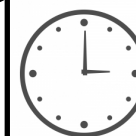
Nutritional needs change throughout life, but everyone needs to consider.

Keep food out of the Danger Zone



3

Microorganisms need five conditions to grow and multiply:



Time



pH



Moisture



Temperature



Food

5

Biological contamination - bacteria which might lead to food poisoning. Symptoms of food poisoning can include diarrhoea, vomiting, headaches and fever.

Physical contamination - foreign materials can cause injury. These could come from metal or plastic from factory machinery, or natural hazards like bones in fish.

Chemical contamination - pesticides or cleaning fluids contaminate food. These could cause severe illness.

6

Nutrient	Function and food source
Vitamin A	Keeps the eyes and skin healthy. Found in milk, liver, carrots, red peppers
Vitamin B Group	Releases energy from food. Bread, fish, broccoli, milk, peas, rice
Vitamin C	Keeps connective tissue healthy. Helps the body absorb iron. Oranges, blackcurrants, red and green peppers
Vitamin D	Helps the body absorb calcium for strong bones and teeth. Butter, eggs, milk, oily fish
Calcium	Builds strong bones and teeth. Yoghurt, cheese, milk, tofu
Iron	Keeps red blood cells healthy. Dark green vegetables, beans, fish, egg yolk, red meat
Sodium (Salt)	Keeps the correct water balance in the body. Cheese, ready meals, salted nuts, bacon

7

Environmental Health Officer (EHO)

The EHO is responsible for carrying out measure to protect public health and to provide support to minimise health and safety hazards.

EHO Responsibilities

Check food producers handle food hygienically.

They check food is being stored at the correct temperature.

They review processes in the workplace e.g. use of correct equipment such as coloured chopping boards.

They inspect food stores such as te fridge and freezers.

They identify hazards.



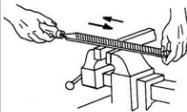

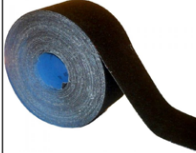

They ask questions to check compliance

4

<div>1</div> <p>E.g. cast iron</p> <p>Ferrous Metals</p> <p>E.g. stainless steel</p>		Metals which contain iron and will rust and will attract a magnet
<p>E.g. copper</p> <p>Non-ferrous Metals</p> <p>E.g. aluminium</p>		Metals which DO NOT contain iron and will NOT rust and will NOT attract a magnet
<p>E.g. ferrous alloy: stainless steel</p> <p>Alloys</p> <p>E.g. non-ferrous alloy: brass, bronze</p>		Metals that are a mixture of two or more metals or elements to make a new metal with improved properties

Metals are used for different purposes because of the properties they have.

Metal	Property	Used for	Reasons
Copper	good conductor of electricity	electrical wires	can pass electricity to the product
Stainless Steel	does not rust	kitchen items and sinks	so it can be washed easily and used hygienically
Stainless Steel	tough	cutlery	so it can withstand impact

<div>2</div> <p>Metal working tools</p>		
Scribe		Used to draw around a template onto metals to show where to cut to show where to cut
Junior Hacksaw		A saw used for cutting straight lines in woods, metals and plastics
File Filing		A tool used on material to small amounts to make it smooth. You can cross file and draw file.
Riveting		A permanent method of joining metals
Emery cloth		Coated abrasive on a cloth backing used on metals (instead of sandpaper)
Power drill		A power tool used to drill holes through materials

Year 8 Product Design

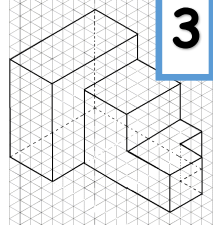
Top tips for isometric drawing:

Use the grid

Start with the corner

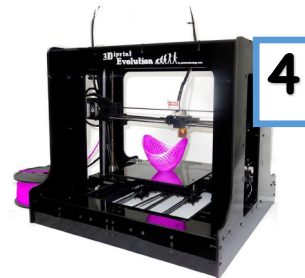
You must have vertical lines (no horizontal)

Make sure you have parallel lines



3d printing: Additive Manufacturing

Step 1: create a 3D CAD drawing. It is sliced into very thin layers using specialist software






Step 2: heat the polymer filament and extrude it out of the nozzle

Step 3: build the prototypes in very thin layers of filament until complete. It will build from the bottom up, with the build platform moving one slice lower as each layer is created.

Advancements in technology (like 3D printing) is a great thing for manufacturers! Products are made more **accurately** and more **consistently** than if people were making it.

However, people will often **lose their jobs** as technology replaces them.

People may need to **retrain** and **learn new skills** for new jobs that are available.

5 E.g. oak, beech Hard-woods E.g. ash, mahogany		Timbers from deciduous trees that lose their leaves in winter. They produce expensive, close grained woods.
Soft-woods E.g. cedar, pine		Timbers from coniferous trees that have needles and cones. They produce cheaper woods with lots of knots.
Manufac-tured Boards E.g. plywood, MDF		Boards that we make from scraps of other timbers e.g MDF, chipboard,

Thermoforming Polymers

- can be reheated
- can be reshaped
- can be recycled

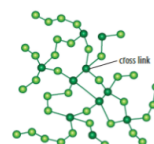
Examples: acrylic, HIPS, PVC



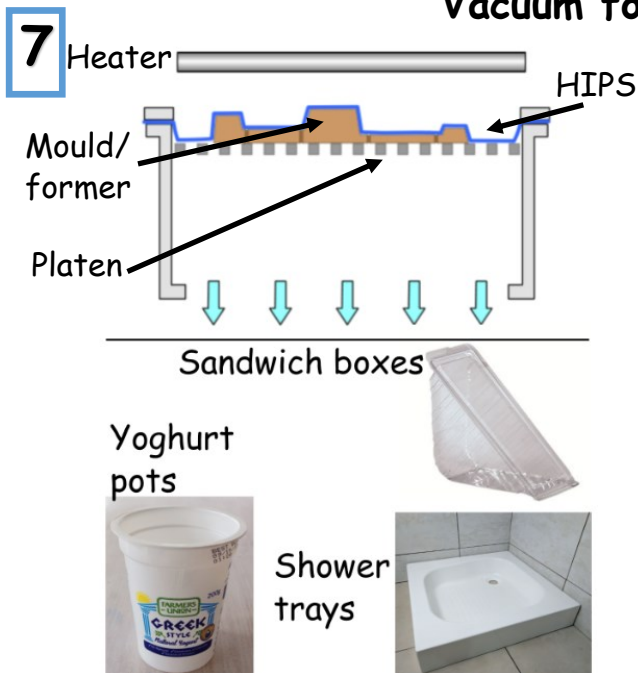
Thermosetting polymers

- can't be reheated
- can't be reshaped
- can't be recycled

Examples: urea formaldehyde, polyester resin



Vacuum forming



HIPS (high intensity polystyrene)



Lightweight, high stiffness, impact resistant
Used in vacuum forming
Low melting point

Can be easily scratched
Becomes brittle when exposed to UV light

Formers must have a draft angle so they can be removed from the HIPS. Webbing can occur if...

- formers are too close together
- formers are too high or
- the HIPS wasn't heated properly.





Step 1: the former/mould is placed onto the platen. The lever is used to lower the platen.

Step 2: a sheet of thermoforming polymer (HIPS or ABS) is clamped onto the machine using toggle clamps.

Step 3: the HIPS is heated until softened

Step 4: the platen is raised and the vacuum pump is turned on. This removes the air from the chamber and pulls the HIPS around the former/mould.

Step 5: when cool, remove the HIPS and the formers/moulds.

Mould/Former		The item to be vacuum formed
Rasp		A coarse file with sharp, pointed projections to remove more material from wood or foam
Vacuum forming		Heating a piece of thermoplastic and then stretching it over a mould by a vacuum
Platen		Inside the vacuum former to put formers on. It is raised and lowered by the lever.

Year 8 Drama – Brecht and Political Theatre

Overview of topic: students will develop their knowledge and understanding of Brecht and political theatre.

Key content/ ideas/ concepts

WHO WAS BRECHT?

- Bertolt Brecht was born in Germany in 1898 and died aged 58 in 1956. He was a poet, playwright and theatre director. His influence is still present in much of theatre and many would argue that Brecht changed the face of modern theatre.
- Brecht made his theatre highly political. He wanted his theatre to spark an interest in his audiences' perception of the world. He did not want his audiences to sit passively and get lost in a show's story, but to make them think and question the world they live in. He encouraged them to be critical of society. His work was often mischievous, provocative and ironic.
- Brecht did not want the audience to have any emotional attachment to his characters, so he did various things to break it. Here are some of the techniques he used.

SOME OF BRECHT'S TECHNIQUES

Breaking the fourth wall- This is where the imaginary wall between the audience and actors on stage is broken. Rather than allowing the audience to sit passively and get lost in the show, the actors will sometimes directly address the audience with a speech, comment or a question.

Narration- Narration is used to remind the audience that they are watching a story. Sometimes the narrator will tell the audience what is about to happen in the story, before it happens, because if the audience knows the outcome then they may not get as emotionally involved.

Minimal set, costumes, props and lighting- Brecht believes the stage should be brightly lit at all times. That sets should not be realistic, just suggestive. And that actors should use minimal props, often only one per character. Also props can be used in several different ways, for example a suitcase may become a desk.

Using placards- A placard, or projection screen can be used to give the audience some extra factual information, for example it might say how many people have died in a particular war. Placards can also be used to introduce characters in generic ways, e.g. 'mum,' or 'dad.' Placards are also used to introduce a new scene, or to tell the audience when one has finished.

Freeze frames/tableaux- The actors may go into a freeze frame, so as to break the action. Sometimes it's done so that the audience can stop and think critically for moment. And sometimes it's done so that the narrator can speak, or so that an actor can come out of character and perhaps break the fourth wall.

Keywords/ Glossary

Verfremdungseffekt, or the 'estrangement effect,' was used to distance the audience from the play and is sometimes called the alienation effect.



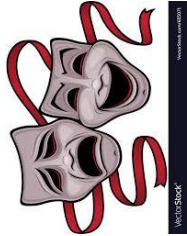
Wider reading

Wikipedia page has a wealth of information about the social/ political context of Brecht's life and why he created this form of theatre.

https://en.wikipedia.org/wiki/Bertolt_Brecht



Y8 Drama Knowledge Organiser



SEMIOTICS: Signs and Symbols in Drama (Definition)

This is what an actor uses to communicate to an audience (Explanation)

An actor will use their **Vocal Skills** and **Physical Skills**

Characterisation: Using a range of performance skills to create a character that is different to yourself.

Vocal Skills

(Skills that involve using your voice)

1. Projection	Ensuring your voice is loud enough for the audience to hear.
2. Clarity	Are you clear? Can the audience understand what you are saying?
3. Inflection	A change in the quality of your voice to communicate your emotions. (E.g. Angry, worried, joyous tone of voice)
4. Pace	The speed of what you say. (How quickly, how slowly)
5. Pause	The silence between words and/or sentences. Moments of pause can create tension , show that you are thinking or create emphasis .
6. Accent	Use of an accent tells the audience where your character is from .
7. Pitch	How high or low your voice is.
8. Emphasis	Changing the way a word or part of a sentence is said, in order to emphasise it. (Make it stand out.) Try emphasising the words in capital letters and see how it changes the meaning: “How could YOU do that?” “How could you do THAT ?”

Physical Skills

(Skills that involve using your BODY)

1. Proxemics	What does the use of the space and the positioning of the characters communicate about their relationships and the scene?
2. Posture/Stance	The position an actor holds their body when sitting or standing. For example, an upright posture or slouched.
3. Gait	The way an actor walks .
4. Facial Expressions	A form of non-verbal communication that expresses the way you are feeling, using the face. E.g. Raised eyebrows or pursed lips.
5. Gestures	A movement of part of the body , especially a hand or the head, to express an idea or meaning. E.g. Waving, pointing, thumbs up .
6. Pace	How quickly or slowly an actor moves.
7. Levels	Sitting, Standing, Lying - what does it show?
8. Touch	Physical contact or lack of it with other characters.

Year 8 English - 'The Merchant of Venice' by William Shakespeare



Plot Overview

1

Antonio is the 'Merchant'. He is depressed and has no idea why. His ships are out at sea and coming back with various treasures.

➔

His great friend Bassanio visits him and asks to borrow a large sum of money. He has borrowed from Antonio before and lost it all.



But this time he needs it in his attempt to win and marry Portia. Portia is an heiress and lives outside of Venice itself in Belmont. She is rich, beautiful and brilliant. Bassanio is in love with her and he thinks she is interested in him.

➔

There is a challenge for any man who wants to claim Portia. He must choose between three caskets. One is gold, one silver and the last is lead.

➔

Antonio feels for Bassanio - he would lend him the money if he had it but all his capital is tied up with the return of his ships. Antonio suggests that his credit might be good for a loan in town

2

Characters

Shylock:

- Bitter
- Cruel
- Victimised
- Stubborn



Antonio:

- Loyal
- Kind
- Prejudice
- Popular



Bassanio:

- Young
- Poor
- Resourceful
- Loyal

Portia:

- Clever
- Wealthy
- Brave
- Faithful to her father's wishes



3

HISTORICAL CONTEXT

HISTORICAL CONTEXT

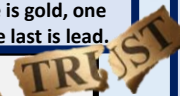
Like much of the rest of Europe, England severely restricted the rights of Jews. Jews were banished completely from England in 1290 by King Edward I, and were not officially allowed to return until 1655, when Oliver Cromwell allowed Jews to return. This exile was technically in effect during Shakespeare's time, but scholars believe that a few hundred Jews still lived around London in the guise of Christians. One of the reasons Renaissance Christians disliked Jews was the Jews' willingness to practice usury—this means they would lend money but would charge high rates of interest. Sometimes asking double the amount of money back in return. Christians were forbidden to lend money and charge interest.

ANTI-SEMITISM

Anti-Semitism, often called 'the longest hatred', is both an age-old problem and a current challenge. For centuries Jews have been accused of treacherous acts, including the murder of Jesus, poisoning wells, the ritual murder of Christian children, the Bubonic plague and controlling the media and the banks. Many of these falsities have roots in historical circumstances, and longstanding fear and misunderstanding. Certainly one of the most characteristic and troubling aspects of *The Merchant of Venice* is that the depiction of Shylock reinforces the stereotype of Jews as money-hungry and greedy.

SHAKESPEARE'S AUDIENCE

Elizabethan theatergoers would have recognised Shylock as a Jew immediately. His red wig, large nose and huge cape immediately label him as the other and as an 'outsider'. Even though Jews were not living in England (at least not openly), they represented a stereotype: evil, cunning, greed and at the very core, heartlessness. Throughout the play, Shylock is despised and insulted by the other characters. Shylock is spat upon by Antonio, detested even by his servants, abandoned by his daughter, Jessica, and ultimately undone by Portia. The characters continually mock him and it is hard to imagine that the theatergoers in Shakespeare's time would not have shared the feelings of disdain conveyed by the players in *The Merchant of Venice*.



Shylock does agree to a loan of three thousand ducats, but with one shocking condition. If his money is not returned within three months, then Shylock will reclaim his bond in the form of a pound of Antonio's flesh. He will be entitled to cut into whichever part of Antonio's body that he wishes to.

Bassanio is chilled by this violent request, but Antonio assures him that the money will be safely returned to Shylock as his ships are all soon coming in. That there is no danger. The bond is agreed upon.



All of Portia's suitors have chosen the wrong casket and she is very relieved. Bassanio arrives to view the caskets and read their riddles.

Antonio's certain his ships have in fact floundered at sea. His whole fortune has gone under. He has been arrested on account of his debt to Shylock.

But Shylock is adamant and the court has to concede that the law is on his side however brutal.

Shylock must now convert to Christianity. Shylock agrees, beaten, sick with the disgrace and humiliation.



REVENGE

4

Useful 'translations' from Shakespearean to modern English:

Thee and **thou** = you

Thy = your

('thee', 'thou' and 'thy' were more informal versions of 'you' in Shakespearean times. Characters are more likely to use 'you' and 'your' when they are being respectful or polite, e.g. when speaking to someone with a higher status than them.)

afear'd = afraid / scared

art = are (e.g. in 'We are less afraid to be drowned than thou art?')

cuckold = (mocking name) given to a man with an unfaithful wife.

false = to be disloyal, untrue, deceitful

gentle = well-born, honourable, noble

hath = has

humour = mood / temperament

o'er = over

oft = often

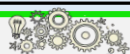
'twixt = between

wench = girl

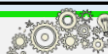
Tarry = wait



6



The Purpose and Function of Symbolism



What is symbolism?

Symbolism helps readers to visualise complex ideas and track their development easily. They often communicate big ideas in an efficient and artistic way. Symbols usually suggest the growth and changes within a character over the course of the story. Symbolic meaning is often given to simple/ordinary objects (usually of important/sentimental value) or colours which have a far deeper meaning or significance within the novel. For example, they may link to abstract emotions/traits/ideas (greed/guilt/freedom/love.) or they may be linked/ representative of time (past memories or future ambitions/goals).

Reasons why Writers use symbolism:

- To help readers grasp/ visualize complex ideas/themes.
- To make a text more emotive
- To allow writer's to communicate 'big ideas; more efficiently.
- To introduce controversial topics/ ideas in a subtle and sensitive way.

Where can we see symbolism in 'The Merchant of Venice'?

The Caskets made of lead, silver and gold. To win Portia, Bassanio must ignore the gold casket, which bears the inscription, "**Who chooseth me shall gain what many men desire**" (II.vii.5), and the silver casket, which says, "**Who chooseth me shall get as much as he deserves**" (II.vii.7). The correct casket is lead and warns that the person who chooses it must give and risk everything he has. The contest combines a number of Christian teachings, such as the idea that desire is an unreliable guide and should be resisted, and the idea that human beings do not deserve God's grace but receive it in spite of themselves. Christianity teaches that appearances are often deceiving, and that people should not trust the evidence provided by the senses—hence the humble appearance of the lead casket. Faith and charity are the central values of Christianity, and these values are evoked by the lead casket's command to give all and risk all, as one does in making a leap of faith.

8

What the Caskets symbolise



Lead could be used to represent:

- People prepared to take risks and make sacrifices
- People not easily fooled by appearances
- Spiritual, intellectual people
- People prepared to give more than they receive.



Silver could represent:

- People being cautious
- People who try to be something they are not
- People who take the less difficult route
- People who sacrifice spiritual health for material wealth.



Gold could be used to represent:

- Greed
- People taken in by flashy outward appearances
- Materialistic People
- People who take without giving.

9

Key Quotes Analysed

*'I hold the world but as the world, Gratiano—
A stage, where every man must play a part;
And mine a sad one.'*

Antonio presents the view that men occupy different roles in life. According to this personal perspective, every individual "**must play a part**"; some must win, some must lose. The world is "**but as the world**," a bland reality that lacks imaginative possibilities, and, every man has "**a part**." Antonio is an individual, but he is also interpreted in association with other parts and is made up of a combination of various social, racial, ethnic, and religious categories. Tensions between these categories will develop as the play continues.

*'Still I have borne it with a patient shrug,
For sufferance is the badge of all our tribe.
You call me misbeliever, cut-throat dog,
And spit upon my Jewish gaberdine,
And all for use of that which is mine own.'*

As in many other moments of *The Merchant of Venice*, Shylock here describes the type of prejudice and discrimination that he faces, and that "**all our tribe**" faces, in Venice. Yet here Shylock also explains that the very individuals who criticise him as a "**misbeliever**" or "**cut-throat dog**," also use him as a money-lender, borrowing his own funds -- "**that which is mine own**." Shylock exposes the unfortunate contradiction that Venetians mistreat the individuals whom they need, the money-lenders who fulfill an essential and respectable function in society. The injustices he lists here also serve to make Shylock a more complex character -- one who is portrayed as a stereotypical villain, but who has possibly been made that way by the prejudice of a "Christian" society.

7

Themes



PREJUDICE: The Venetians in *The Merchant of Venice* express extreme intolerance of Shylock and the other Jews in Venice. Shakespeare seems to criticise this prejudice and allows Shylock to vent his fury at being mistreated and abused.



REVENGE is a powerful, corrupting, and destructive force in the play. Shylock wants to hurt Antonio because of Shylock's desire for revenge against the entire Christian community, which he blames for persecuting and degrading him and also for stealing his daughter and the money she took when she ran away.

MERCY: The conflict between Shylock and the Christian characters comes to a head over the issue of mercy. The other characters acknowledge that the law is on Shylock's side, but they all expect him to show mercy, which he refuses to do.



FRIENDSHIP: The theme of friendship drives most of the action in *The Merchant of Venice*. Bassanio needs money and turns to Antonio, who has already offered him substantial financial support in the past. The importance of friendship is also displayed between Bassanio and Gratiano and between Portia and Nerissa. Gratiano and Nerissa show great loyalty to and trust in their friends, and they even fall in love with each other after being brought together by their friends.

THE BASICS:

Read the text – 5 mins

Section A

Q1 – List 4 things (4 marks)

Q2a- Identify and select information to prove a point. (2 marks)

Q2b – How does the writer use language to... (4 marks)

Q3a- Identify and select information to prove a point. (2 marks)

Q3b – How does the writer use language to... (4 marks)

Q4a – How does the writer shape and influence the thought of the reader... (1 marks)

Q4b – Explain your thoughts and ideas using a quotation from the text (3 marks)

Q5a – The opening: Select the correct structural feature (1 marks)

Q5b – Explain how structural features keep reader engaged?

Q5c – The middle: Select the correct structural feature (1 marks)

Q5ci – Explain how structural features keep reader engaged?

Q5d- The end: How does the writer choose to end the story and why? (4 marks)

Q6: [statement] To what extent do you agree? (8 marks)

Section B

Q5: Write a continuation of the story showing an understanding of what you have read. Stay true to the form and style of the original story and ensure a logical sequence (45 mins including planning time.)

2

**Section A:
Question 1**

Question stem: Write down four things you learn...

1. Read the question and highlight the key words, including the lines it asks you to focus on.
2. Draw a box around the lines you need to focus on in the insert.
3. Write in full sentences.
4. One point per line.
5. Keep it simple i.e. explicit inferences.

3

Question 2-4

Question stem: How does the writer use language to...

1. Read the question and highlight the key words to ensure you understand what the focus of your answer will be.
2. Re-read the section of text the question asks you to focus on.
3. Highlight key quotations which will help you answer the focus of the question. Consider the use of different language devices.



Spotting the device is not the important part: it's being able to say **why** it is used and what its **Impact** is upon the reader.

5

Question 6

Question stem: '[statement about the text]' To what extent do you agree?

1. Read the question and highlight the key words, including the section of the text if specified. Think carefully about how far you agree with the statement.
2. Draw a box around the section of the text specified.
3. Read through and highlight words/phrases/language devices you will use to argue FOR, and maybe against the statement.

4

Question 5

Question stem: How has the writer structured the text to interest you as a reader? (What goes where and why?)

1. Read the question and highlight the key words. This question is about how the text is put together and organised, rather than the language devices used.
2. Annotate where you see evidence of the following structural features:
 - * Dialogue
 - * Setting
 - * Shift in focus
 - * Time
3. Skim through the whole source again. Highlight and label where you see different features particularly focus on how the opening and ending are effective.

ENGLISH: YEAR 8- End of Year Exam- Explorations in Reading and Creative Writing.

6.

Write a continuation of the story. Planning (THIS IS REALLY IMPORTANT!) 1. Decide which elements of the original story you will include. 2. Plan using the structures below. 3. Write your story. **REMEMBER:** If you do not show your teacher you can do use a certain skill (e.g. use capital letters/ adventurous vocabulary/ paragraphs/ varied punctuation etc.) They are left to simply assume you can't. You do not have hours and hours, so quality is preferred over quantity.

-V.S.S The VERY SHORT SENTENCE

Deliberate use of a sentence consisting of no more than 5-6 words in total. Must be for effect and every word must count.

- Out went all light.
- Call me Ishmael.

Prepositional openers – used to show the relationship between the noun and other words in a sentence

- In a flurry ...
- Off in the distance ...
- Throughout ...
- Since last year ...

-ing or -ed openers. Use of a verb in its present or past form

- Frightened, the child backed away ...
- Singing softly, mum soothed my brother ...
- Having far too much fun, they decided to stay another hour ...

7.

How do I open a sentence without using an article or pronoun?

Transitional openers – to begin sentences with interruptions or to change the direction of your story / argument

- Pop! He sent small smoke-rings in to the air.
- Moreover, they did not realise there would be no phone signal here.

Clausal openers- use any of the clausal words to start a sentence (when, where, while, as, since although, if)

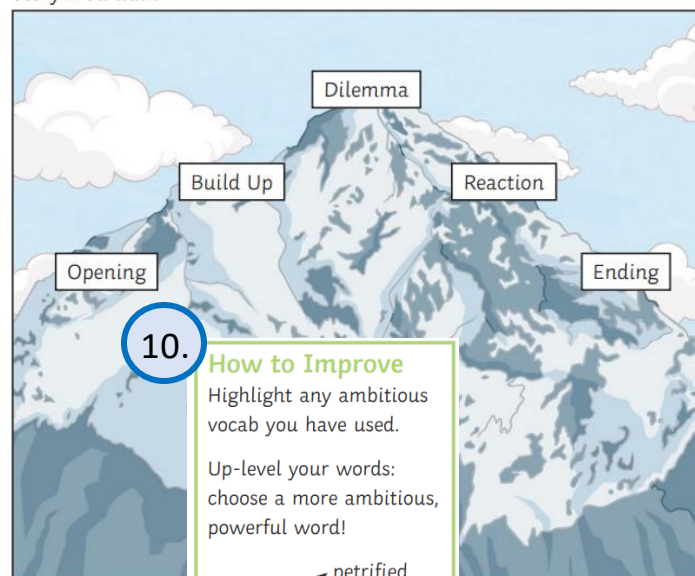
- When she demanded it back, Toby confessed that he had...
- If he had got here sooner, we wouldn't have had to queue

Adverb openers – a word or phrase that modifies the meaning of an adjective or other adverb expressing manner, place, time or degree

- Tentatively
- Confidently
- Slowly

9.

Story Mountain



10.

How to Improve

Highlight any ambitious vocab you have used.

Up-level your words: choose a more ambitious, powerful word!

- I felt scared
- petrified
 - terrified
 - traumatised
 - alarmed
 - frightened

8.

Double adverb

Slowly but surely, the darkness surrounded everything they loved and cherished.

Horror genre

Without warning, the candle vanished as if the flames had been suddenly nipped between a finger and thumb and darkness surrounded her once more, leaving her alone with the figure that no longer needed to lurk in the shadows.

Emotion comma sentence

Terrified, she froze instantly on the spot where she stood, the darkness surrounded her from every corner.

Make the reader feel hope

Although darkness surrounded humanity, they knew enduring the darkness would show them the stars and guide them back to the light.

...darkness surrounded...

Developing character

Darkness surrounded my thoughts, leaving me in this abyss of sadness and despair, unable to escape its pull.

A year ago. A month ago. A day ago. Today.

A year ago, Earth was vibrant and full of life. A month ago, we watched as the meteoroid soared towards our planet. A day ago, darkness surrounded the whole world, eliminating everything in its path. Today, I desperately seek other survivors.

Media res

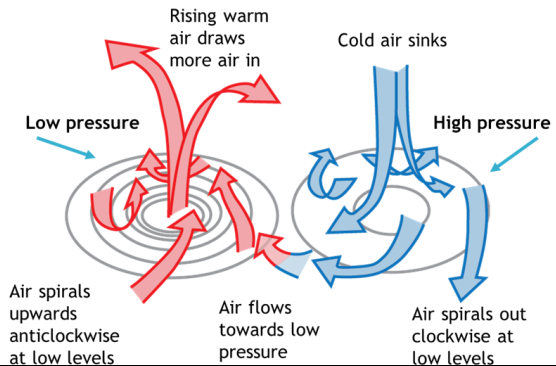
Darkness surrounded the battlefield as he fumbled over the top, trying his best to avoid staring at the fallen souls of the men he once called his friends.













The more, the more

The more he succumb to the forces of evil, the more the darkness surrounded him, extinguishing the last ray of light within him.

YEAR 8 GEOGRAPHY – WEATHER AND CLIMATE

1 KEY VOCABULARY		
Weather	This is the everyday description of what is happening outside. It is very changeable and the weather can often change many times in a day.	
Climate	This is decided when the weather is measured over 30 years and a pattern develops.	
Temperature	How hot or cold it is.	
Precipitation	Rain, hail, sleet, snow	
Evaporation	Liquid water turning into a gas (water vapour)	
Condensation	Water vapour turning back into a liquid to form clouds.	

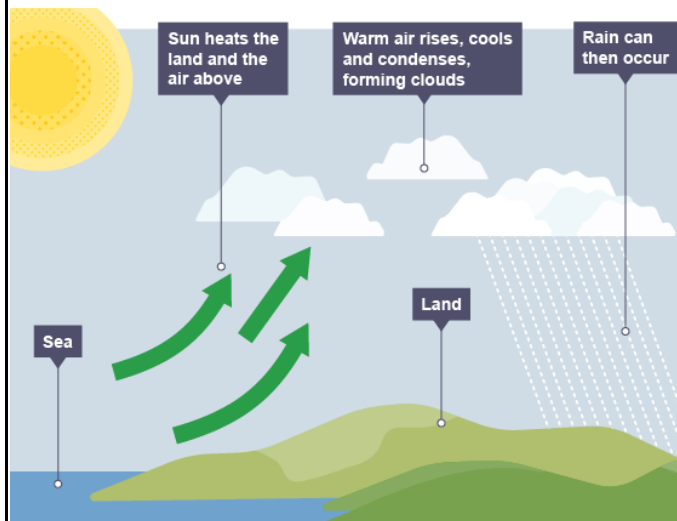
2 HIGH AND LOW AIR PRESSURE	
	<p>Low-pressure areas are created when air rises. It is called low pressure because the weight of the air above the Earth's surface is lower than average.</p> <p>High-pressure areas are created when air sinks. It is called high pressure because the weight of the air is above average when it sinks to the Earth's surface. The air that sinks is considered to be cold, as when air is cooled, it becomes denser and therefore heavier.</p>

3 HOW DOES THE WEATHER AFFECT UIS	
	<p>The weather outside affects what it is we can do. Whether we stay in or go out. Where we go, when we do go out and even our mood.</p> <p>Certain jobs require certain types of weather too.</p> <p>An ice-cream seller like hot weather A ski resort like cold but sunny weather.</p>
	<p>When we want to know what we can do, we watch weather forecasts and this tells us lots of information including the temperature and windspeed. Many types of weather are displayed as symbols as shown below/</p> <div><div><p>Sunny</p></div><div><p>Light Cloud</p></div><div><p>Sunny intervals</p></div><div><p>Heavy Cloud</p></div><div><p>Light Rain</p></div><div><p>Light rain with sunny intervals</p></div><div><p>Heavy Rain</p></div><div><p>Heavy Rain with sunny intervals</p></div><div><p>Snow</p></div><div><p>Sleet</p></div><div><p>Thunder storm</p></div><div><p>Fog</p></div></div>

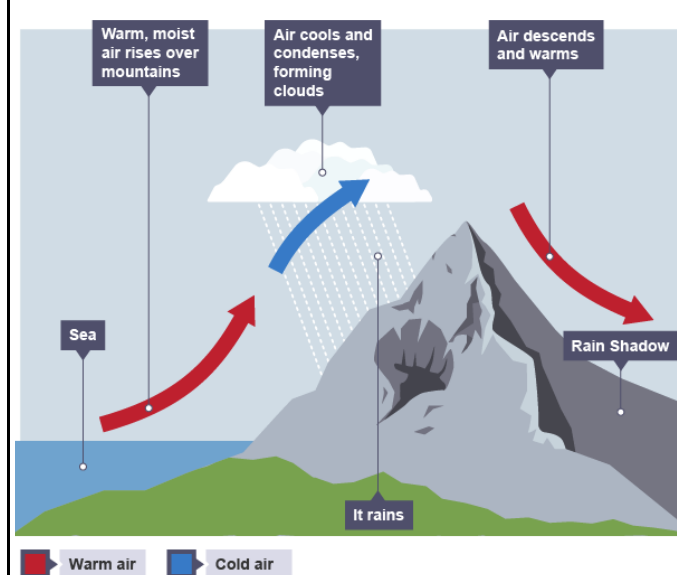
4 THE FORMATION OF A TROPICAL STORM	
	<ul style="list-style-type: none">• Warm air from several thunderstorms, and the warm ocean surface (above 27°), mix together and start to rise to create low pressure.• Trade winds at the Equator cause the storm to spin due to the Earth's rotation (Coriolis effect).• Air continues to rise and the pressure starts to decrease at higher altitudes.• Air rises faster and draws in more warm air from the sea surface whilst sucking cooler air downwards. Once the surface winds reach 119 km/h the storm is officially a tropical storm.• As the storm moves over the ocean (due to the prevailing winds), it picks up more warm moist air. The speed of its winds increases as more air is sucked in• It can take hours or days to fully form a hurricane. The eye has calm winds which are surrounded by a spinning vortex of high winds and heavy rain (the eyewall).

5 MEASURING THE WEATHER	
Rain gauge	Collects and measures how much rainfall has fallen
Thermometer	Measures how hot or cold a place is in degrees centigrade or Fahrenheit.
Anemometer	Measures windspeed in miles per hour.
Wind vane	Measures the wind direction.
Barometer	This measures air pressure.

6 CONVECTIONAL RAINFALL



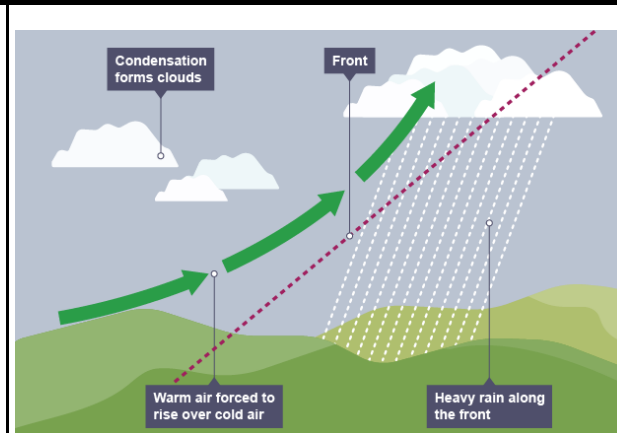
7 RELIEF RAINFALL



8 FACTORS THAT AFFECT CLIMATE

1	Latitude	Locations that are further North/South of the equator receive less heat energy from the Sun.
2	Altitude	Temperatures decrease with <i>altitude</i> . There is a 1°C drop in temperature for every increase of 100 m in height.
3	Prevailing winds	Prevailing winds are the dominant wind direction in an area. The temperature of the wind and the amount of rainfall partly depend on where the air has come from.
4	Distance from the sea.	Coastal areas are most affected by the sea. The sea takes longer to heat up and cool down than land.
5	Coastal currents	The effect that ocean currents have on the temperature depends on whether the ocean current is hot or cold.

9 RELIEF RAINFALL



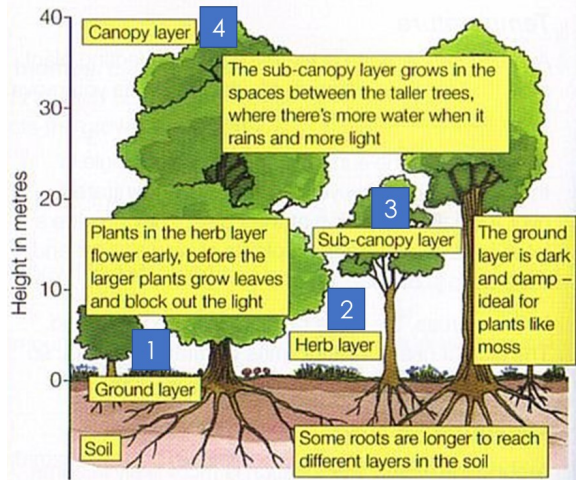
10 WEATHER MAPS

Depression	A low-pressure weather system associated with wet and windy weather
Warm front	When a warm air mass moves into an area of cold air.
Isobar	A line to show equal air pressure.
Air mass	A large area of air with the same temperature and humidity.
Cold front	When cold air pushes into an area that has warmer air
Air pressure	How heavy the air is. Measured in millibars.
Low pressure	When air is rising. Clouds form
High pressure	When air is sinking. No clouds form
Cloud cover	How much of the sky is covered by cloud. Measured in Oktas by eye.
Anticyclone	A high-pressure weather system associated with fine and calm weather.

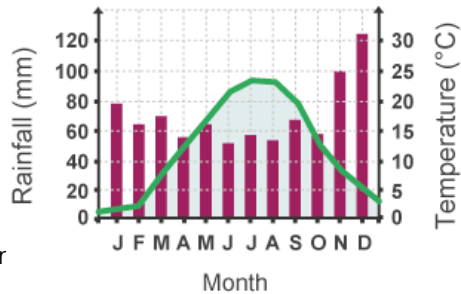
11

TEMPERATE DECIDUOUS FOREST

A



The climate of the temperate deciduous forest is seasonal. Winters are often cold and wet, whereas summers are warm and drier.



B

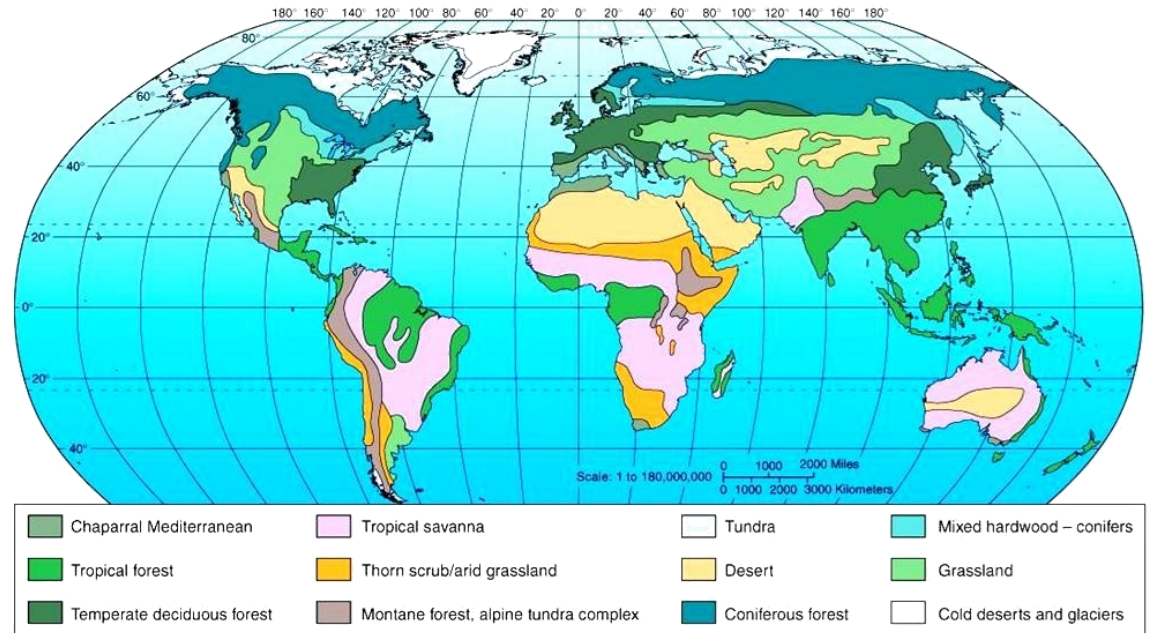
Plant and animal adaptations

Broad leaves can capture maximum sunlight as it is not close to the equator. Trees have thick bark to protect against the cold winters and trees lose their leaves and stop growing in winter.

Animals can have thick fur that they shed in the summer so that they can be cooler in summer. Animals such as squirrels will hibernate in winter as food is in short supply.

12

CLIMATE ZONES AND BIOMES ACROSS THE WORLD



13

HOT DESERT

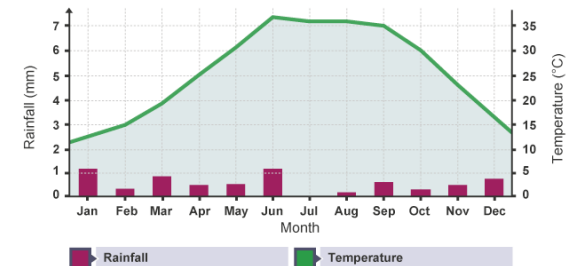
Deserts are located between 5° and 30° north and south of the Equator, around the Tropic of Cancer and the Tropic of the Capricorn.

They are usually found on the west coasts of continents.

Plant and animal adaptations

Camels store fat in their humps and have long eyelashes to remove sand. Many other smaller animals are nocturnal due to lower night time temperatures.

Plants such as succulents store water in their fleshy leaves. Cactus have spike to prevent their water being stolen by predators and many plants have shallow widespread roots to access large surface area of water when it falls.



YEAR 8 GEOGRAPHY – RUSSIA

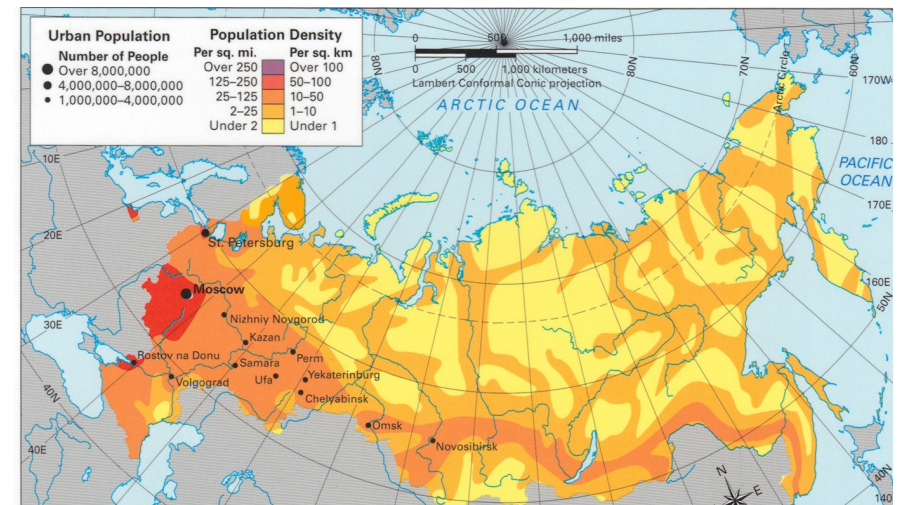
1 KEY VOCABULARY

Asia	The continent occupying the area between Japan in the East, Turkey in the west, India in the South and the Arctic in the North.
Biome	A large area with common flora, fauna and climate characteristics
Chemical Waste	Toxic chemicals released as a by product of industrial activity, often have negative effects on the environment
Dense Population	An area where many people are found per square km
Dzerzhinsk	The most polluted city on earth
Geopolitics	An politics, especially international relations, as influenced by geographical factors
Permafrost	Permanently frozen subsoil
Sparse Population	An area where few people are found per square km
Superpower	A country which exercises political, economic or military power over a large area beyond its own national borders
Toxicity	The level to which a substance is harmful to humans and wildlife

2 BIOMES OF RUSSIA



3 POPULATION DENSITY OF RUSSIA



4 CHERNOBYL NUCLEAR DISASTER

- In the early morning of the 26th of April 1986, engineers were running safety tests at the Chernobyl nuclear power station.
- There were four reactors at the station and they were testing reactor number four.
- During one of the tests something went wrong and there was a massive power surge which meant that the reactor gave out more power than normal.
 - The power output was 100 times more than what the reactor normally released.
- This sudden release of such a huge amount of power led to a massive and violent explosion and fire!
- The explosion was so powerful that the 1,000 tonne concrete top of the reactor was blown off!
- With no top on the reactor this meant that radioactive material from the reactor was blasted in the air (like a volcanic explosion) with huge chunks of radioactive material landing on the ground around the reactor and radioactive material going up into the atmosphere.

YEAR 8 GEOGRAPHY – RUSSIA

5 IMPACTS OF THE CHERNOBYL NUCLEAR DISASTER

- 2 people died when the reactor exploded, 29 people died of over exposure to radioactive material within 5 days of the explosion.
- It is not known for sure how many people have died as a result of the Chernobyl nuclear explosion.
- It is certain that statistics show that the accident at Chernobyl has had a devastating effect on the populations of nearby areas.
- It is unknown how many of the 600,000 people exposed to the radioactive material were later diagnosed with cancer.
- Since the accident the number of cases of thyroid cancer have risen dramatically.
- In 2014 there had been 12,000 cases of thyroid cancer diagnosed, most of those diagnosed where children or teenagers who were exposed at the time of the accident.
- It has been claimed that people who were exposed had issues with their DNA but this has never been proven by scientists.

6 SALISBURY NERVE AGENT ATTACK

On 4 March 2018 emergency services received a phone call from members of the public in Salisbury who had seen an old man and a young woman ill on a bench. It was a call that would set in motion a chain of events leading to a major crisis with Russia.

A few hours later, the next call went to Porton Down, home to Britain's biological and chemical research establishment. A rapid-response team was quickly deployed. Samples analysed in labs on-site identified A234, a military-grade nerve agent from the Novichok family developed by the Soviet Union in the Cold War.

7 THE MOST POLLUTED CITY IN THE WORLD

Located about 400 kilometres east of Moscow, the city has been given the title of the most polluted city in the World. Russia has two of the world's top ten most polluted cities, the other being, Norilsk.

- During the Soviet period, Dzerzhinsk was one of Russia's most vital sites for chemical manufacturing, including chemical and biological weapons.
- Production of various chemical weapons started in the 1940s, including mustard gas. In addition to arsenic-based weapons production, prussic acid and phosgene were also produced. Chemical weapons production at Dzerzhinsk ceased in 1965, the city, Until recently, officially closed to foreign visitors.
- The soils is contaminated, the river water full of chemicals, in short, the whole environment is contaminated.
- It is estimated that around 190 identified chemicals in the course of Dzerzhinsk's history have been released into the groundwater and when water samples were taken within the city they showed levels of dioxins and phenol thousands of times above recommended levels.
- Between 1930 and 1998, about 300,000 tons of chemical wastes were dumped in the surrounding areas.
- These sites include landfills, toxic waste burial grounds, and a so-called "white sea", composed of disposed chemical wastes.
- Today, modern-day Dzerzhinsk is still a significant center of the Russian chemical industry. There are currently 38 large industrial enterprises, which export their goods worldwide. About one thousand varieties of chemical products are produced in Dzerzhinsk.
- High concentrations of toxic phenol in the air have led to residents of Dzerzhinsk suffering from increased levels of diseases and cancers of the eyes, lungs, and kidneys. Sulfur dioxide in the air also remains a big problem.

8 RUSSIA ANIMAL ADAPTATIONS

Arctic Fox—thick fur that changes during summer and winter months. Summer thinner, brown coat and winter whiter thick coat. Paws are curved to push away snow when running. Tail acts as extra insulation to keep warm whilst sleeping. Short legs so they are close to the ground.



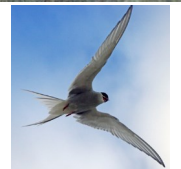
Arctic Ground Squirrels—hibernate for 8 months underground when it is coldest. They keep their body temperatures low. They slide along the ground to keep away from predators by doing the 'tundra glide'



Caribou— They have a thick double coat to keep them warm and dry. Their coat can trap air which makes them buoyant whilst swimming. They have a stocky body and a short tail. Their noses can retain heat and moisture.



Arctic Terns — Tend to migrate during Winter to warmer Locations. They nest with Other birds for protection And then have a higher metabolic rate than other birds to gain energy for long distance flights.





Section 3: Timeline of Britain's empire

Section 1: Key words	
Abolition	When something is abolished or banned, like the slave trade in 1807
Britannia	female figure used to symbolise British Empire
Colony	Country that is part of an empire.
Commonwealth	A group of countries that were once part of Britain's Empire
Compensation	Money paid to make up for injury or damage
Conquest	One country takes over another
Democracy	Political system where people have the right to vote
East India Company	Trading company that took control of India
Empire	Group of countries, people or land ruled by one single country referred to as "mother" country.
Immigration	People moving to another country
Imperialism	The act of building an empire.
Legacy	What someone or something leave
Migration	Movement of people from one place to another
Nationalism	Wanting your country to be the best or to be free from someone's empire
The Raj	Period of British rule in India after 1857. From the Hindi word for reign.
Trade	System of exchange of goods
Windrush	Organised migration people from West Indies

To get valuable raw materials from the colonies that could be used in Britain's growing industry and to get exotic products that could then be sold to people in Britain. America and the West Indies were very important because of the growing of cotton, sugar and tobacco.

So Britain could sell goods to the colonies to make money. India, Africa and Australia were very important colonies for this reason.

Section 2: Why did Britain want an empire?



To compete with rival countries for power like France, Holland, Spain and Portugal. This is one of the reasons why places like New York, Canada and Gibraltar were taken over.



To spread Christianity around the world. This is one of the reasons why parts of Africa are taken over in the 1800s. Many indigenous people in Australia, New Zealand and the Pacific Islands also converted to Christianity,

1745



1901



1492	Christopher Columbus 'discovers' the West Indies
1496	Henry VII gave John Cabot the permission to find land.
1497	Cabot sailed to America and discovered Newfoundland.
1560s	British traders begin to buy and sell African slaves in America
1583	Humphrey Gilbert claimed Newfoundland to be owned by Britain.
1600	British first start trading in India.
1607	First successful British colony is started in North America.
1642	Sugar is first grown in the British colony of Barbados.
1655	The British defeat the Spanish and take Jamaica.
1665	The British seized a town called New Amsterdam from the Dutch and renamed it New York.
1710	The British take over much of Canada.
1757	Victories by Robert Clive drive out the French and established British control in India
1769	1769 Captain James Cook claims New Zealand
1857	Rebellion in India (Indian Mutiny). British government took over India from the East India Company.
1890	Cecil Rhodes and his trading company took over a large area of Central Africa on behalf of the British Empire and called it Rhodesia

**KS3 History knowledge organiser:
Year 8 Spring term 1 When and why did Britain
end the Slave Trade?**

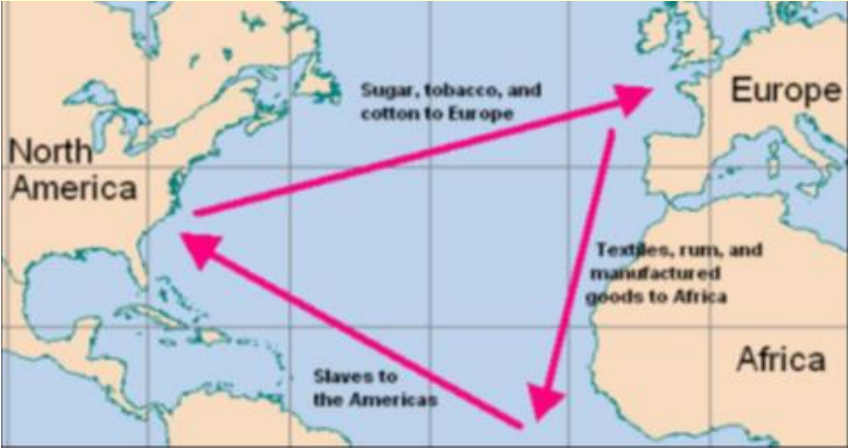
Section 1: Key words

Abolition	When something is abolished or banned, like the slave trade in 1807
Discriminate	To treat unfairly favourably or unfavourably, especially on the basis of race or gender
Homeward Passage	The third stage in the transatlantic slave trade with ships carrying items grown or made in the Caribbean or the Americas, such as sugar or tobacco, to Europe to sell (see also Triangular trade)
Middle Passage	The sea journey undertaken by slave ships from West Africa to America and the Caribbean.
Oppression	Domination by others in a harsh or unwanted way
Outward Passage	The first stage in the transatlantic slave trade with ships carrying goods from Europe to trade in Africa for captured Africans (see also Triangular trade)
Overseer	Person on a plantation paid a wage to organize the work of the enslaved people; manager
Plantation	A large area of farmland, or estate, planted with particular crops.
Racism	A belief that one group of people is inferior, or superior to another because to their race.
Resistance	To fight and protest against an authority or power that you think is wrong.
Return Passage	The third stage in the transatlantic slave trade with ships carrying items grown or made in the Caribbean or the Americas, such as sugar or tobacco, to Europe to sell (see also Triangular trade)

Section 2: Timeline of the Slave Trade and abolition in the British Empire

16th and 17th centuries	Portuguese traders took slaves from Africa to work in the Portuguese colony of Brazil and the Spanish colonies of South America. As many as 350,000 Africans were taken in this way as slaves to the Americas.
1562	First English slaving expedition led by Sir John Hawkins
1655	Jamaica is captured and also becomes part of the Empire with slaves being sold to plantation owners.
1672	The Royal African Company was set up to trade African slaves to the sugar plantations of the West Indies.
1778	Slavery made illegal in Scotland.
1787	A group of 12 Christian men led by M.P. William Wilberforce form a group with the aim of abolishing slavery, The Committee for the Abolition of the Slave Trade. The campaigners boycotted sugar, wrote letters and presented petitions. One member, Thomas Clarkson went on a speaking tour, showing people chains and irons and a model of a slave ship.
1789	Olaudah Equiano publishes The Interesting Narrative of the Life of Olaudah Equiano, or Gustavus Vassa, the African. He also forms the 'Sons of Africa' , a group of ex slaves who campaign against the slave trade.
1790	The first bill for the Abolition of the Slave Trade fails.
1791	Slave rebellion on the island of St Domingue (later Haiti) led by Toussaint L’Ouverture .
1792	House of Lords reject an Abolition Bill passed by the House of Commons.
1804	Slave rebellion on the island of St Domingue successful and the first independent black state outside Africa - Haiti - is established.
1807	On 25 March, transatlantic slave trade abolished by the British Parliament.
1833	The Abolition of Slavery Act is passed by the British Parliament, abolishing the practice of slavery in all British territories.

A diagram that shows how the Slave trade triangle worked.



Section 3: What was the Trade Triangle?

The slave trade began with Portuguese (and some Spanish) traders, taking mainly West African (but some Central African) slaves to the American colonies they had conquered in the 15th century. British sailors became involved in the trade in the 16th century and their involvement increased in the 18th century when the Treaty of Utrecht (1713) gave them the right to sell slaves in the Spanish Empire. The slave trade made a great deal of profit for those who sold and exchanged slaves. Therefore, they often ignored the fact it was inhuman and unfair.

At least 12 million Africans were taken to the Americas as slaves between 1532 and 1832 and at least a third of them in British ships.

For the British slave traders it was a three-legged journey called the 'triangular trade':

- ☐ West African slaves were exchanged for trade goods such as brandy and guns.
- ☐ Slaves were then taken via the ‘Middle Passage’ across the Atlantic for sale in the West Indies and North America.
- ☐ Finally, a cargo of rum and sugar taken from the colonies, was taken back to England to sell.

Section 4: What was the Middle Passage?

The voyage from Africa to the New World of the Americas was called the Middle Passage. Slave ships usually took between six and eleven weeks to complete the voyage. Slave ships made large profits by carrying as many slaves as possible across the Atlantic to sell at auction. There were two methods of loading the ship: It was expected that some would die but a large number would survive the voyage. A ship's hold was cramped - only five feet high, with a shelf running round the edge to carry yet more slaves. The slaves were loaded in so close together that one captain described them as being 'like books on a shelf'.

❑ Slaves were chained and movement was restricted.

❑ Slaves were unable to go to the toilet and had to lie in their own filth. Sickness quickly spread.

❑ Slaves were all chained together. If a slave died, the body could remain in the hold for hours, still chained to other living slaves.

❑ The state of the hold would quickly become unbearable – dark, stuffy and stinking. The heat and the foul air were so bad that a candle would not burn.

❑ African slaves were often unable to digest the food carried by the European crew, making the sickness worse. Many weakened quickly and died.

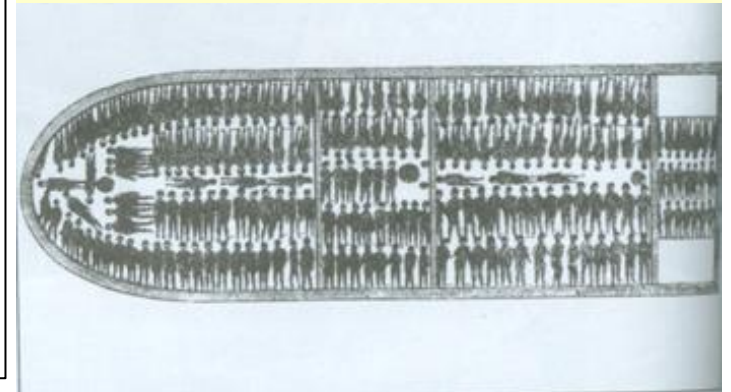
❑ Sick slaves were often denied food and left to die.

❑ The crew often mistreated the slaves – women could be subject to rape.

❑ Slaves were usually forced to dance on deck for an hour a day to keep them fit. Any resistance was dealt with harshly

❑ Some slaves became suicidal. There are accounts of slaves drowning by throwing themselves overboard rather than enduring any more.

A plan from the slave ship, *the Brookes* showing how slaves were packed onto it.



Section 5: A life of Slavery

- When enslaved Africans arrived in the Americas, they were often alone, separated from their family and community, unable to communicate with those around them.

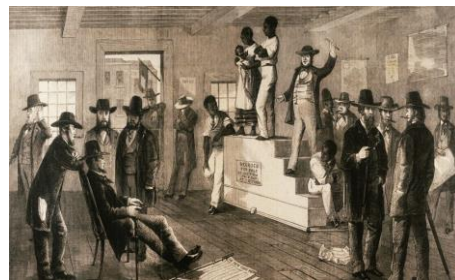
- The following description is from '**The Interesting Narrative of the Life of Olaudah Equiano**': "*When we arrived in Barbados (in the West Indies) many merchants and planters came on board and examined us. We were then taken to the merchant's yard, where we were all pent up together like sheep in a fold. On a signal the buyers rushed forward and chose those slaves they liked best.*"

- Depending on where they had arrived, the enslaved Africans were sold through agents by public **auction** or by a '**scramble**', in which buyers simply grabbed whomever they wanted. Sales often involved measuring, grading and intrusive physical examination.

- Life expectancy was **short**, on many plantations only 7-9 years.
- It was a life of endless labour. They worked up to 18 hours a day, sometimes longer at busy periods such as harvest. There were no weekends or rest days.

- The dominant experience for most Africans was work on the **plantations**

A Poster from 1861 advertising a slave auction



Slaves working on a sugar plantation in Jamaica in the 1800s.



Section 6: When and why was Slavery abolished?

There were 4 main reasons why Slavery was abolished in the British Empire:

1. Slavery wasn't making as much money:

- The price of sugar decreased in the 1770s forcing plantation owners out of business meaning demand for slaves was reduced.
- Some people said that slaves did not work hard enough to make plantations profitable.

2. Slaves helped end slavery:

- **Toussaint L'Ouverture's** slave rebellion in St Domingue in 1790 resulted in slavery being outlawed and the island being renamed Haiti.
- The rebellion proved that slaves could resist their owners and run a country successfully.

3. Black people proved the racists wrong:

- Slaves successfully persuaded judges in courts to free them.
- Oloudah Equiano tirelessly campaigned to convince the people of Britain that slavery was wrong.

4. The anti slavery campaigners:

- 12 Christian men including **William Wilberforce** formed a group to abolish slavery. Wilberforce made lots of speeches in Parliament.
- This helped the slave trade to be abolished in 1807 and slavery in the British Empire was abolished in 1833.



Toussaint L'Ouverture



Oloudah Equiano



William Wilberforce

KS3 History knowledge organiser:
Year 8 Summer term 2: How far should Britain be proud of the history of its Empire?

Section 1: Timeline of the decline of the British empire

1880-1900	Over 80% of Africa is divided up among European countries and part of their empires.
1907	1907 Australia and New Zealand given 'dominion' (self-governing) status
1914	Indians fought alongside British soldiers in WW1
1919	British soldiers massacred a peaceful gathering at Amritsar, India
1919-21	Ireland rebellion,. Leads to an independent Irish Free State but Northern Ireland remaining as part of Britain.
1926	British government agree Canada, Australia, New Zealand & South Africa independent countries
1931	Commonwealth formed of all former & current colonies. Today this is 54 countries, 1.3 billion people.
1935	After protests led by Gandhi, a Government of India Act gave Indians the right to control nearly everything except the army.
1939-1945	As in WW1, many Indians fought alongside British soldiers in the Second World War. 2.5 million Indians fought in the largest volunteer army in history.
1947	Britain stopped ruling India. It was replaced by two independent countries: India for the Hindus and Pakistan for the Muslims. The million Sikhs in India would have to decide where they live. It led to many problems that still go on today.
1948	Nationality Act passed giving UK citizenship to everyone in Commonwealth
1950s	Sudan; Gold Coast becomes independent, re-named Ghana
1960s	1960s Cyprus, Somalia, Sierra Leone, Uganda, Gambia become independent states
1980	1980 Rhodesia becomes independent state, re-named Zimbabwe.

Section 2: How 'great' was the British Empire?

The impact and **legacy** of empire is one of the most controversial and passionately debated topics in British history. In the past people were strongly encouraged to celebrate the idea of the British empire and the countries that were part of it. This picture from the early 1900s is a typical example of this:



- ✓ Established English as global language
- ✓ Gave common law and democracy to colonies (eventually...)
- ✓ Infrastructure - Britain gave its colonies better roads and railways
- ✓ Brought about a modern, global economy (though Britain mostly benefitted)
- ✓ Three of richest largest countries are former colonies (America, Canada and Australia)
- ✓ Helped to abolish slavery
- ✓ Built school and universities in Africa
- ✓ Led to formation of Commonwealth which now brings over 50 former colonies together and has led to diverse population of Britain
- ✓ Sports – helps bring together nations through shared sports



One example of historians who highlighted the positive impact of the British Empire was **Lawrence James** who wrote : ' *At first the British Empire was about making money, but during the nineteenth and twentieth centuries the British Empire improved the lives of millions of people.* '



Other historians like **Denis Judd** have offered an alternative view: *'When Imperialists boasted that 'the sun never set on the British Empire', critics said that this was because God didn't trust the British in the dark. Much of what the British got up to in their empire was selfish and destructive.'*

As a historian yourself you need to make consider the evidence and make your own judgements about the impact and legacy of the British Empire. When judging how great the British Empire really was you should consider:

- Who did it affect?
- How did it affect them
- Did it affect some people differently to others
- Did its effects on people vary at different points over the 400 year history of it?

There is a huge range of evidence to choose from and this cannot all be covered in lessons but below are a few examples of evidence for both sides of the argument :

- X Much culture and resources ruined or taken from Africa, including people as slaves
- X Countries could not rule themselves.
- X Many British politicians, businessmen and traders were simply concerned with making money
- X British first to use concentration camps in South Africa against the Boers
- X Europeans created new countries in Africa that cut through tribal regions
- X Religion - missionaries sent with Empire forced Christianity to colonies, stop other religions
- X Former colonies not always helped to become self-governing and this allowed corrupt leaders to take power and former colonies suffer from war, famine and genocide
- X Colonies had to provide soldiers who fought and died for Britain WWI and WWII.

1. Finding percentages of amounts (with a calculator)

We can use decimals to help find a **percentage of** something.

Calculate 42% of 500

Convert the percentage to a decimal.

Divide by 100: $42\% = 42 \div 100 = 0.42$

Multiply 500 by 0.42: $500 \times 0.42 = 210$

Calculate 87% of 94

Convert the percentage to a decimal.

Divide by 100: $87\% = 87 \div 100 = 0.87$

Multiply 94 by 0.87: $94 \times 0.87 = 81.78$

2. Percentage increase

A bank pays 15% interest per year.

How much will I have if I invest £20 for one year?

What percentage of the original have you now got?

$$100\% + 15\% = 115\%$$

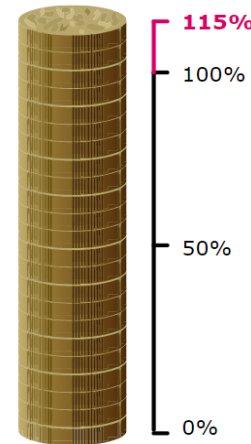
What is 115% as a decimal?

115% is equivalent to 1.15.

1.15 is the multiplier.

To increase an amount by 15% we multiply by 1.15.

$$£20 \times 1.15 = \text{£}23$$



3. Percentage decrease

A woman goes out to buy a scarf for £20.

The shop is having a 35% off sale.

How much did the woman pay for the scarf?

What percentage of the original have you now got?

$$100\% - 35\% = 65\%$$

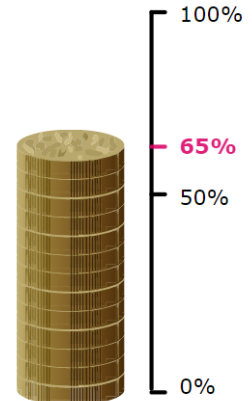
What is 65% as a decimal?

65% is **0.65** as a decimal.

0.65 is the multiplier.

To decrease an amount by 35% we multiply by 0.65.

$$£20 \times 0.65 = \text{£}13$$



Maths, Y8 - Percentages (Calculator)

4. Percentage change

Billy has had a pay increase from £9.48 per hour to £9.83 per hour.

Write the increase as a percentage.

actual increase in hourly pay: $£9.83 - £9.48 = \text{£}0.35$

$$\text{increase as a percentage: } \frac{0.35}{9.48} \times 100\%$$

$$\text{using a calculator: } \frac{0.35}{9.48} \times 100 = \text{3.7\% (1 d.p.)}$$

$$\text{percentage change} = \frac{\text{actual change}}{\text{original amount}} \times 100\%$$

The number of workers at a factory is reduced from 721 to 684.

Calculate the percentage reduction.

actual reduction: $721 - 684 = 37$

$$\text{percentage reduction: } \frac{37}{721} \times 100\%$$

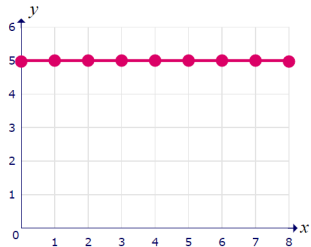
$$\text{using a calculator: } \frac{37}{721} \times 100 = \text{5.1\% (1 d.p.)}$$

1. Horizontal and vertical lines

Linear graphs are straight line graphs, you can plot (x,y) coordinates to draw them

A. Horizontal lines

Draw the graph of the line $y = 5$

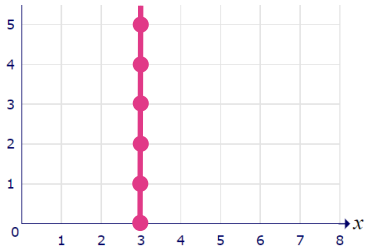


$(0, 5)$
 $(1, 5)$
 $(2, 5)$
 $(3, 5)$

The y coordinate is always 5.

B. Vertical lines

Draw the graph of the line $x = 3$



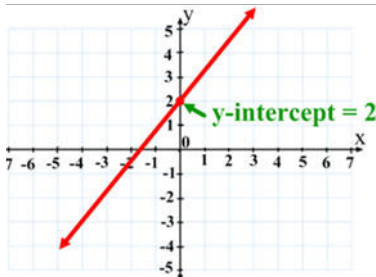
$(3, 0)$
 $(3, 1)$
 $(3, 2)$
 $(3, 3)$

The x coordinate is always 3.

Maths Y8 - Graphs

3. Intercept

Where the line crosses the y axis.
 It can be written as a coordinate $(0, 2)$



2. Plotting straight line graphs using a table

Draw the graph of the line $y = 2x + 1$

To get the y coordinate given the x:

$x \rightarrow \boxed{\times 2} \rightarrow \boxed{+ 1} \rightarrow y$

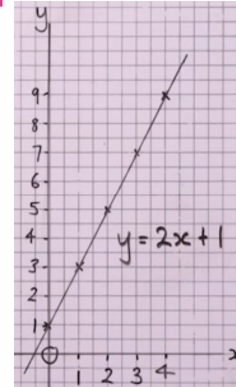
x	0	1	2	3	4
y	1	3	5	7	9

Plot the coordinates from the table

$(0, 1)$ $(1, 3)$ $(2, 5)$ $(3, 7)$ $(4, 9)$

Your points should form a straight line.

Join the points with a ruler.



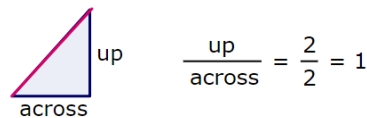
4. Gradient

How steep the line is, the steeper the line the bigger the gradient.

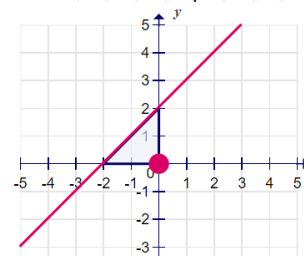
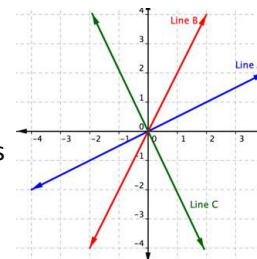
If the line goes up from left to right it has a **positive** gradient.

If the line goes down from left to right it has a **negative** gradient.

We draw a triangle under the line, and calculate the value of:



It doesn't matter where you draw the triangle.

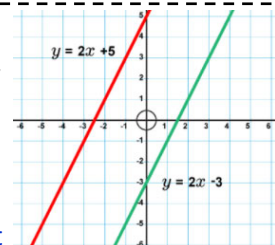


6. Parallel lines

Parallel lines are like train tracks they stay the same distance apart and never meet.



Parallel lines have the same gradient



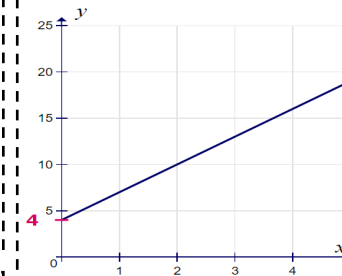
5. The equation of a straight line

$$y = mx + c$$

m = gradient of the line

c = y intercept
 (where the line crosses the y axis)

Find the equation of this line



It is always easiest to find the intercept c .

This line intercepts the y axis at 4.

$$c = 4$$

$$y = mx + 4$$

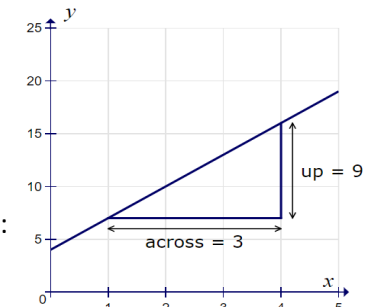
The gradient is:

$$\frac{\text{up}}{\text{across}} = \frac{9}{3} = 3$$

$$m = 3$$

The equation of this line is:

$$y = 3x + 4$$



7. Solving simultaneous equations graphically

Solve these simultaneous equations by drawing their graphs.

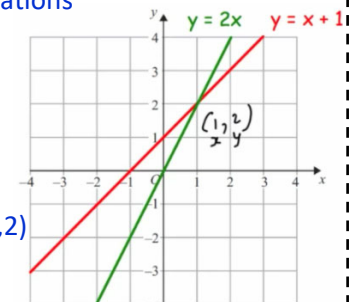
$$y = 2x \quad \text{and} \quad y = x + 1$$

The point (x, y) where the graphs intersect lies on both graphs.

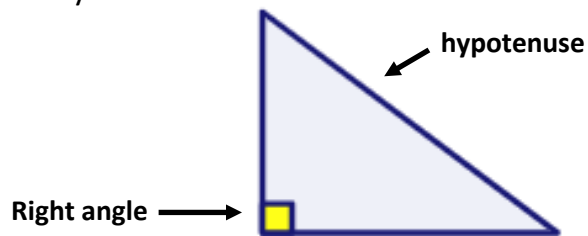
The point of intersection is $(1, 2)$

$$x = 1 \quad \text{and} \quad y = 2$$

The coordinates of the **point of intersection** are the solution of the simultaneous equations.



1. Keywords



An 90° angle is called a **right angle**.

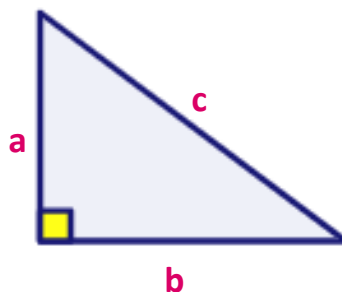
A triangle with a right angle is called a **right angled triangle**.

The longest side is always opposite the right angle.

It is known as the **hypotenuse**.

3. Labelling the sides

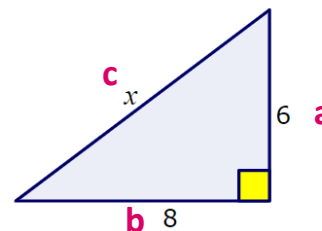
The hypotenuse is usually labelled as **c**, and the shorter sides as **a** and **b**.



4. The formula

$$a^2 + b^2 = c^2$$

5. Finding a missing side (hypotenuse)



$$a^2 + b^2 = c^2$$

$$6^2 + 8^2 = c^2$$

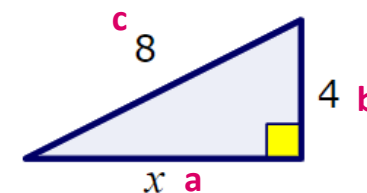
$$36 + 64 = c^2$$

$$c^2 = 100$$

$$c = \sqrt{100}$$

$$c = 10$$

6. Finding a missing side (shorter side)



$$a^2 + b^2 = c^2$$

$$a^2 + 4^2 = 8^2$$

$$a^2 + 16 = 64$$

$$a^2 = 64 - 16$$

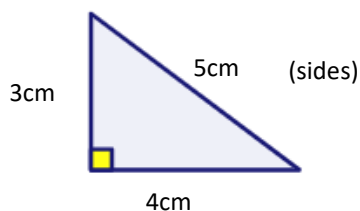
$$a^2 = 48$$

$$a = \sqrt{48}$$

$$a = 6.93 \text{ (1d.p.)}$$

Maths, Y8—Pythagoras

2. Pythagoras' theorem explained



"For any given right angled triangle. The area of the two smaller squares add up to the area of the largest square."

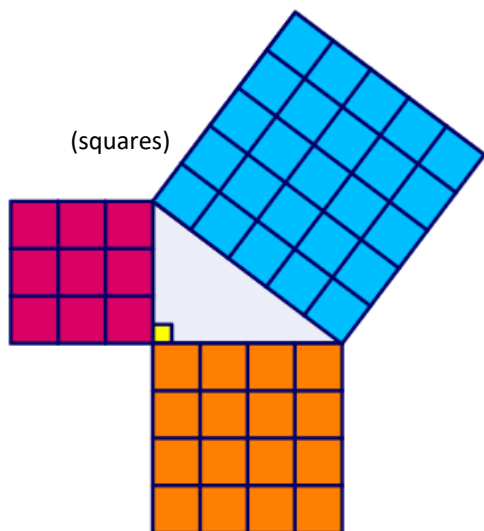
In this case we can see that;

- 1) The square made from the 3cm side has an area of 9cm^2 (9 boxes)
- 2) The square made from the 4cm side has an area of 16cm^2 (16 boxes)
- 3) The square made from the 5cm hypotenuse has an area of 25cm^2 (25 boxes)

Therefore

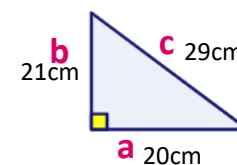
$$3^2 + 4^2 = 5^2 \text{ (sides)}$$

$$9 + 16 = 25 \text{ (squares)}$$



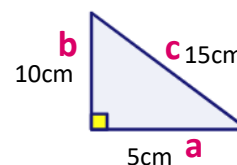
8. Proving a triangle is right angled.

Is $a^2 + b^2$ is equal to c^2 ?



$$20^2 + 21^2 \text{ is equal to } 29^2$$

The triangle is right angled.



$$5^2 + 10^2 \text{ is NOT equal to } 15^2$$


The triangle is NOT right angled.

7. Pythagorean Triples

A set of three whole numbers where $a^2 + b^2 = c^2$

Examples;

a	b	c
3	4	5
6	8	10
5	12	13
7	24	15
8	15	17

<p>J'adore (I love)</p> <p>J'aime (I like)</p> <p>Je n'aime pas (I don't like)</p> <p>Je déteste (I hate)</p> <p>Je préfère (I prefer)</p> <p>Mon repas préféré, c'est... (My favourite meal is...)</p> <p>Ma nourriture préférée, c'est... (My favourite food is...)</p>	<p>le pain (bread)</p> <p>le jambon (ham)</p> <p>le poisson (fish)</p> <p>le fromage (cheese)</p> <p>le chocolat (chocolate)</p> <p>le coca (coke)</p> <p>le poulet (chicken)</p> <p>le pâté (pâte/meat paste)</p> <p>le riz (rice)</p> <p>la pizza (pizza)</p> <p>la salade (salad)</p> <p>la confiture (jam)</p> <p>la viande (meat)</p> <p>la soupe (soup)</p> <p>l'eau (water)</p> <p>les fruits (fruit)</p> <p>les oeufs (eggs)</p> <p>les légumes (vegetables)</p> <p>les hamburgers (burgers)</p> <p>les gateaux (cakes)</p> <p>les chips (crisps)</p> <p>les céréales (cereals)</p> <p>les frites (chips)</p> <p>les pâtes (pasta)</p> <p>les saucisses (sausages)</p>	<p>parce que (because)</p> <p>car (because)</p> <p>mais (but)</p> <p>cependant (however)</p> <p>par contre (on the other hand)</p>	<div data-bbox="1285 181 1711 580"> <p>Grammaire p. 167 WB p.13</p> <p>Negative forms</p> <p>Remember ne ... pas goes around the verb to make it negative:</p> <p><i>J'aime les chips. → Je n'aime pas les chips.</i></p> <p><i>I like crisps. → I do not like crisps.</i></p> <p>The same goes for ne ... jamais:</p> <p><i>Je ne mange jamais de poisson.</i></p> <p><i>– I never eat fish.</i></p> </div> <p>c'est (it is)</p> <p>ce n'est pas (it's not)</p> <div data-bbox="1433 1066 1733 1474"> <p>https://quizlet.com/ca/591768935/la-nourriture-food-flash-cards/</p>  </div>	<p>aigre (sour)</p> <p>amer (bitter)</p> <p>bon (nice, good)</p> <p>dégoûtant (disgusting)</p> <p>délicieux (delicious)</p> <p>épicé (spicy)</p> <p>fade (bland)</p> <p>rafraîchissant (refreshing)</p> <p>gras (greasy, fatty)</p> <p>malsain (unhealthy)</p> <p>sain (healthy)</p> <p>salé (salty, savoury)</p> <p>savoureux (tasty)</p> <p>sucré (sweet, sugary)</p>
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Year 8 French Summer Aïe, Aïe, Aïe je vais changer mon style de vie!

<p>je bois (I drink)</p> <p>tu bois (You drink)</p> <p>il/elle boit (He/she drinks)</p> <p>on boit (We drink)</p> <p>nous buvons (We drink)</p> <p>vous buvez (You drink)</p> <p>ils/elles boivent (They drink)</p>	<p>du café (coffee)</p> <p>du chocolat chaud (hot chocolate)</p> <p>du jus de fruits (fruit juice)</p> <p>du lait (milk)</p> <p>du thé (tea)</p> <p>de l'eau (water)</p>
<p>Manger (to eat)</p> <p>je mange (I eat)</p> <p>tu manges (You eat)</p> <p>il/elle mange (He/she eats)</p> <p>on mange (We eat)</p> <p>nous mangeons (We eat)</p> <p>vous mangez (You eat)</p> <p>ils/elles mangent (They eat)</p>	<p>du chocolat (chocolate)</p> <p>du fromage (cheese)</p> <p>du pain (bread)</p> <p>du poisson (fish)</p> <p>du riz (rice)</p> <p>de la pizza (pizza)</p> <p>de la salade (salad)</p> <p>de la viande (meat)</p> <p>des hamburgers (burgers)</p> <p>des œufs (eggs)</p> <p>des légumes (vegetables)</p> <p>des fruits (fruits)</p>

Grammaire p. 166
WB p.26

Partitive articles

Use **du**, **de la**, **de l'** or **des** in front of food items to say 'some'.

	singular	plural
masculine	du pain	des œufs
feminine	de la salade	des chips

Use **de l'** for a singular word starting with a vowel: *de l'eau*.

To form the **near future tense**, use the present tense of the verb *aller* (to go) and an infinitive verb:

I am going	je vais	prendre,
you are going	tu vas	manger,
he/she is going	il/elle va	jouer ...

Je vais prendre mon frisbee. –
I am going to take my frisbee.

Il faut (you must)			boissons gazeuses (fizzy drinks) bonbons (sweets) café (coffee) desserts (puddings) eau (water) fritures (fried foods) fruits (fruit) gâteau (cake) légumes (vegetables) huit heures (8 hours) sport (sport) exercice (exercise)
Il ne faut pas (you must not)	boire (drink) manger (eat) faire (do) dormir (sleep) fumer (smoke)	plus de/d' (more)	
Je vais (I am going to)		moins de/d' (less)	
Je ne vais pas (I am not going to)			



<http://www.telsup.com/gd/2137825/allen-1-unit-2-flash-cards/>

[illegible]

Year 8 French Summer Half Term 6 Vive les vacances !

D'habitude (Usually) En général (Generally) Pendant les vacances (During the holidays) Pendant les grandes vacances (During the summer holidays) Quelquefois (Sometimes)	je vais (I go) je pars (I go- literally 'I leave') il/elle va (he/she goes) il/elle part (he/she goes) on va (we go) on part (we go)	à Paris en France (to Paris in France) à Rome en Italie (to Rome in Italy) à Londres en Angleterre (to London in England) à Edimbourg en Écosse (to Edinburgh in Scotland) à Barcelone en Espagne (to Barcelona in Spain)	à Berlin en Allemagne (to Berlin in Germany) à Sydney en Australie (to Sydney in Australia) à Lisbonne au Portugal (to Lisbon in Portugal) à Tokyo au Japon (to Tokyo in Japan) à New York aux États-Unis (to New York in the USA)	avec ma famille (with my family) avec mon père (with my dad) avec ma mère (with my mum) avec mes grands-parents (with my grandparents) avec mes copains/copines (with my friends) avec ma classe (with my class)
	je reste (I stay) on reste (we stay)	chez moi (at home) ici (here)		

Je loge (I stay) il/elle loge (he/she stays) On loge (we stay)	dans un hôtel (in a hotel) dans un camping (at a campsite) dans une caravane (in a caravan) dans un gîte (in a rented house) dans un villa (in a villa)	dans une tente (in a tent) dans une maison de vacances (in a holiday home) dans une auberge de jeunesse (in a youth hostel) chez ma famille (at family's house) chez des amis (at friends' house)	au bord de la mer (by the sea) au bord d'un lac (by a lake) à la campagne (in the countryside) à la montagne (in the mountains) en forêt (in a forest) en ville (in a town) à l'étranger (abroad)
Je fais du camping (I go camping)		On fait du camping (We go camping)	

Où passes-tu les vacances?



<https://quizlet.com/gb/727097971/y8-ou-passes-tu-tes-vacances-flash-cards/>

Grammaire p. 167

Saying 'in' for countries and cities

In Unit 1 you met *en*, *au* or *aux* to say 'in' a country:
Je vais en vacances **en** France.

However, to say 'in' a city, you need to use *à*:
Cette année je vais en vacances **à** Paris.



la energía	energy
la grasa	fat
el mineral	mineral
el nutriente	nutrient
la porción	portion
lo proteína	protein
diario/a	daily
grasiento	fatty
lácteo	dairy
nutritivo/a	nutritious
poco sano/a	unhealthy
saludable	healthy
sano/a	healthy
el aceite	oil
el caramelo	sweet
la comida rápida	fast food
derivado/a de	derived from
la dieta	diet
las fajitas	fajitas
las hamburguesas	hamburgers
el helado	icecream
el huevo	egg
la manzana	apple
el pan	bread
las sardinas	sardines



es aconsejable...	it is advisable
es esencial...	it is essential
es ideal...	it is ideal
es importante...	it is important
es recomendable...	it is recommendable
variado/a	varied

Aa Gramática

p.111; WB p.57

Forming the near future

By using the verb *ir* and following it with the preposition *a* and an infinitive, you can say what you or others are *going* to do.

voy
vas
va + a + infinitive
vamos
vais
van

- *Voy a visitar a mi primo.*
I am going to visit my cousin.
- *Van a escuchar música.*
They are going to listen to music.

Aa Gramática

Using future expressions

The following future expressions are all followed by the infinitive:

- *Tengo la intención de...* I intend to...
- *Espero...* I hope...
- *Quisiera...* I would like...
- *Me gustaría...* I would like...
- *Me encantaría...* I would love...

Use them with these time phrases:

- *En el futuro...* In the future...
- *El curso/año que viene...* Next year...
- *Pronto...* Soon...
- *Dentro de poco...* Shortly...

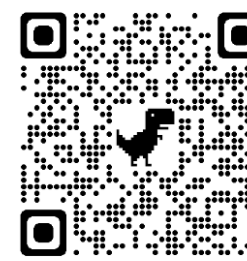
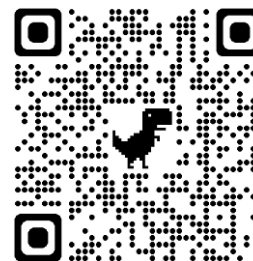
Para llevar una vida sana To have a healthy lifestyle

Voy a ...	I am going to
comer/beber más...	eat/drink more...
comer/beber menos...	eat/drink less...
hacer ejercicio	do exercise
comer bien	eat well
dormir ocho horas	sleep for 8 hours
evitar el estrés	avoid stress
mantenerme en forma	stay in shape

No voy a...	I am not going to
fumar	smoke
drogarme	take drugs
tomar mucha comida basura	have lots of junk food
tomar bebidas azucaradas	have sugary drinks
acostarme tarde	go to bed late

<https://quizlet.com/424597484/claro-2-unit-14-mi-dieta-sana-flash-cards/>

<https://quizlet.com/424598910/claro-2-unit-15-ay-que-dolor-flash-cards/>





Me duele(n)	My... hurts
el brazo	arm
la cabeza	head
el codo	elbow
el cuello	neck
el dedo	finger
el dedo de pie	toe
la espalda	back
el estómago	stomach
el hombro	shoulder
la mano	hand
la nariz	nose
el pie	foot
la pierna	leg
la rodilla	knee
los oídos	ears
los ojos	eyes
el tobillo	ankle

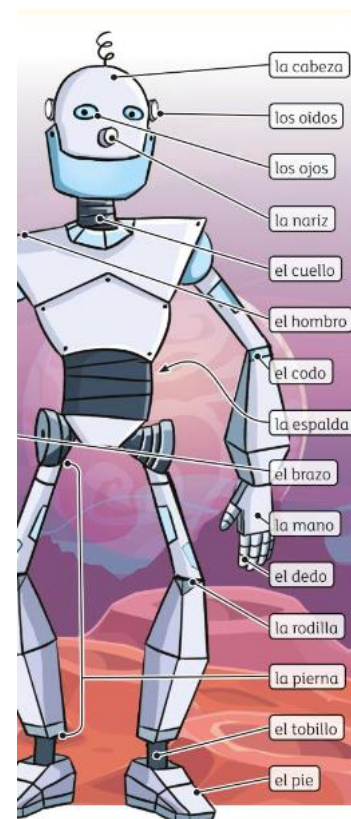
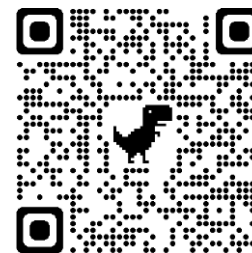
Aa Gramática p.23; WB p.13

Doler in the present tense

The verb *doler* ('to hurt') works like *gustar*.

<i>me duele</i>	it hurts me
<i>te duele</i>	it hurts you
<i>le duele</i>	it hurts him/her

- me duele la cabeza* my head hurts
- le duele la espalda* his/her back hurts
- te duelen las piernas* your legs hurt



Tengo...	I have...
un brazo roto	a broken arm
gripe	flu
una picadura	a bite
una pierna rota	a broken leg
una quemadura de sol	a sunburn
tos	a cough
vómitos	sickness (vomiting)

Estoy...	I am...
Cansado/a	tired
mal	bad/ill
mareado/a	dizzy

tengo...	I have...
un brazo roto	a broken arm
gripe	flu
una picadura	a bite
una pierna rota	a broken leg
una quemadura de sol	sunburn
tos	a cough
vómitos	sickness (vomiting)
estoy...	I am...
cansado/a	tired
mal	ill
mareado/a	dizzy
la crema	cream
el jarabe	cough syrup
la leche con miel	milk with honey
las medicinas	medicines
las pastillas	tablets, pills
la tirita	plaster
el zumo de limón	lemon juice

↑ ¡Arriba, arriba!

Add detail by using *desde hace* to explain how long you have been in pain:

- Me duele la mano desde hace dos días.*
My hand has been hurting for two days.

You can use this structure in other scenarios:

- Vivo en Madrid desde hace un mes.*
I have been living in Madrid for a month.

<https://quizlet.com/424600923/claro-2-unit-16-ponte-esta-crema-flash-cards/>



SAMBA

Samba is a musical genre and dance style with its roots in Africa via the West African slave trade and African religious traditions. Samba is an expression of Brazilian cultural expression and is a symbol of carnival. Samba schools formed and compete bringing people together.



A. Key Words and Terms in Samba Music

- CALL AND RESPONSE** – one person plays or sings a musical phrase, then another person/group responds with a different phrase or copies the first one.
- CYCLIC RHYTHM** – a rhythm that is repeated over and over again.
- IMPROVISATION** – making up music as you go along, without preparation.
- OSTINATO** – a repeated pattern. Can be rhythmic or melodic; usually short.
- PERCUSSION** – Instruments that are mostly hit, scraped or shaken to produce sound. Samba uses many percussion instruments which together are called a **BATERIA**.
- POLYRHYTHM** – the use of several rhythms performed simultaneously, often overlapping each other to create a thick texture.
- PULSE** – a regular beat that is felt throughout music
- RHYTHM** – a series of notes of different lengths that create a pattern. Usually fits with a regular beat or pulse.
- SYNCPATION** – accenting or emphasising the weaker beats of the bar (often a half beat (quaver) followed by a full beat (crotchet)) giving the rhythm an **OFFBEAT** feel.
- SAMBISTA** – the leader of a Samba band or ensemble, often signalling cues to the rest of the band or when to change sections within the music with an **APITO** (Samba whistle)

B. Form and Structure of Samba

Samba music often starts with an **INTRODUCTION** often featuring **CALL AND RESPONSE RHYTHMS** between the Samba Leader and ensemble. The main Ostinato rhythm of Samba is called the **GROOVE** when all the instruments of the Samba Band play their respective rhythms over and over again (**CYCLIC RHYTHMS**) forming the main body of the piece. The **GROOVE** is broken up by **BREAKS** - 4 or 8 beat rhythms providing contrast and **MID SECTIONS** – one or two instruments change the rhythm of their ostinato and the others stay the same or stop. Sometimes **BREAKS** and **MID SECTIONS** feature a **SOLOIST** who “shows off” their rhythms. The **SAMBISTA** must signal to the group when to change to a different section which is normally done with an **APITO** (Samba Whistle – loud!). A piece of Samba can end (this section is called the **CODA**) with either a **CALL AND RESPONSE** pattern or a pre-rehearsed ending phrase of rhythm. The **FORM AND STRUCTURE** of a piece of Samba may look like the following:

Intro	Groove	Break	Groove	Mid-Section	Groove	Mid-Section	Groove	Break	Groove	Coda
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C. Texture of Samba Music

Texture varies in Samba music, often **MONOPHONIC** where a single rhythm is heard as in **CALL AND RESPONSE** sections, sometimes **POLYPHONIC** where sections of the Samba band play different rhythms (**OSTINATOS**) creating **CROSS-RHYTHMS** (when two rhythmic patterns that “conflict” with each other occur simultaneously) creating a thick texture of interweaving and interlocking rhythms – a **POLYRHYTHM** or a **POLYRHYTHMIC TEXTURE**.

D. Dynamics of Samba Music

The dynamics of Samba music are normally **VERY LOUD** – it is music designed to be performed outdoors at carnivals and is played by large numbers of instrumentalists and to accompany dancers and processions with large audiences watching and listening. Sometimes, a **CRESCENDO** is used at the end of a piece of Samba music for dramatic effect.

E. Tempo of Samba Music

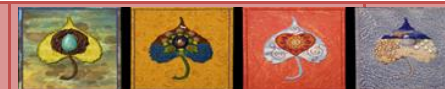
Samba music is generally **FAST** at around 104 bpm and keeps a constant tempo to assist the dancers or processional nature of the music. Sometimes the **SAMBISTA** (Samba leader) uses **(TEMPO) RUBATO** – tiny fluctuations in tempo for expressive effect.

F. Instruments, Timbres and Sonorities of Samba

SURDO	REPINIQUE	TAMBORIM	CHOCOLO	RECO-RECO	APITO	AGOGO BELLS	CAIXA DE GUERRO
							

VARIATIONS

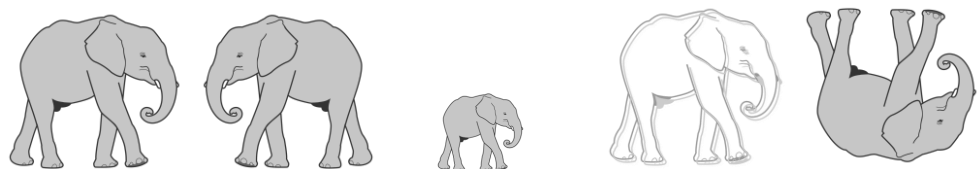
Exploring ways to develop musical ideas



A. Theme and Variations Key Words

MELODY – A tune or succession of notes, varying in pitch, that have an organised and recognisable shape. Often called the main **TUNE** or **THEME** of a piece of music or song and easily remembered.

VARIATION – Where a **THEME** is altered or changed musically, while retaining some of the primary elements, notes and structure of the original. **VARIATION FORM:**



A (Theme) A1 (Variation) A2 (Variation) A3 (Variation) A4 (Variation)

B. Augmentation and Diminution – Note Values and Duration

AUGMENTATION – the process of **DOUBLING** the note values (**DURATION**) of a theme as a means of variation.



DIMINUTION – the process of **HALVING** the note values (**DURATION**) of a theme as a means of variation.

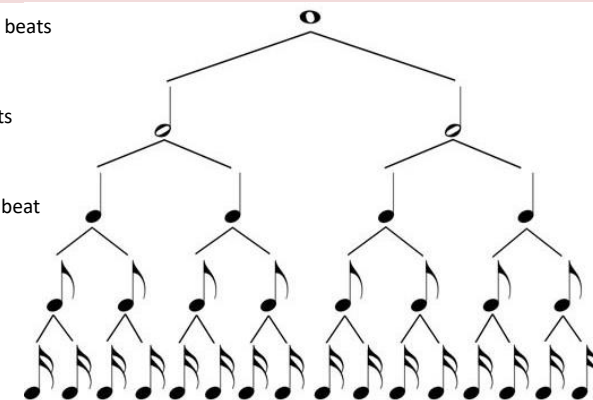
SEMIBREVE = 4 beats

MINIM = 2 beats

CROTCHET = 1 beat

QUAVER
= ½ beat

SEMIQUAVER
= ¼ beat



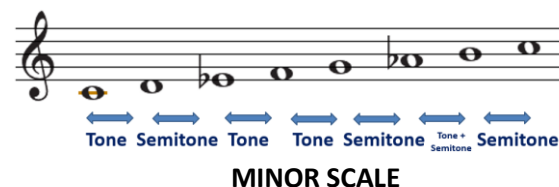
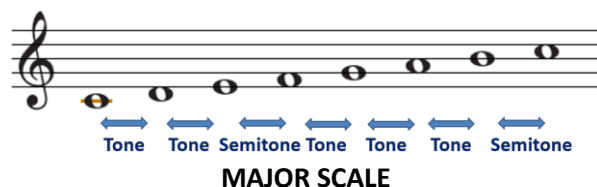
C. Variation Techniques

PITCH – Change the highness or lowness of the theme – play the same notes, but at different pitches e.g. in different OCTAVES .	TEMPO – Change the speed of the theme – play it faster or slower.	DYNAMICS – Change the volume of the theme – play it louder or softer.	TEXTURE – Change the amount of sound we hear – play as a SOLO , add an ACCOMPANIMENT or CHORDS , add a COUNTER-MELODY (an 'extra' melody that is played or sung at the same time as the main melody, often higher in pitch and sometimes called a DESCANT).	TIMBRE AND SONORITY – Change the SOUND of the theme – play it on a different instrument.	ARTICULATION – Change the way the theme is played – smoothly (LEGATO – shown by a SLUR) or short, detached and spiky (STACCATO – shown by a dot).	PEDAL – A long (often very long!) note in the bass line of the music over which other parts, including the theme or a variation of the theme can be played. Also called a PEDAL NOTE or PEDAL POINT and often the TONIC note (but can be the DOMINANT or other notes).	DRONE – A long or series of repeated (often long) notes using the TONIC and DOMINANT notes together (a FIFTH).	MELODIC DECORATION – Adding extra notes or embellishments to the theme such as trills, turns, mordents (ORNAMENTS) or PASSING NOTES (extra notes between the main melody notes).	OSTINATO – Adding a repeated musical pattern (rhythmic or melodic) to the main theme as a form of variation.	CANON/ROUND – A song or piece of music in which different performers sing or perform the same THEME starting one after the other.	GROUND BASS – A repeated musical pattern in the bass part upon which chords, and melodies can be performed and varied "over the top" of.
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D. Tonality – Major and Minor



TONALITY refers to whether a **THEME** or **MELODY** is in a **MAJOR** or **MINOR** key. Changing the tonality from major to minor or minor to major is one way of providing a variation on the theme of melody. Major and minor scales follow a certain pattern of tones and semitones:



E. Inversion and Retrograde

INVERSION – Changing the **INTERVALS** between the notes of a theme so that they are upside down from the original.

RETROGRADE – A variation technique created by arranging the main theme backwards.

RETROGRADE INVERSION – Arranging the "inverted" variation of the theme backwards!



1.Track

Sprint – 100m, 200m and 400m. The aim is to finish in the quickest time. 100m is a straight run. 200m includes a bend and you have a staggered start. 400m is one full lap of an official sized track and you have a staggered start. For all sprints you **MUST** stay in your lane.

Sprinting technique – Keep your body straight and your head still. Keep the shoulders low and relaxed. Run tall with high hips and knees. Drive the elbows back hard. Drive the knees forward. Cycle the foot quickly under your body. Drive the foot down to the ground and pick it up fast. In the 200m and the 400m allow your body to naturally lean in to the curve.

Sprint crouch start

‘ON YOUR MARKS’ – Place your hands slightly wider than shoulder width apart, behind the line. Elbows straight but not locked. Form a bridge with your hands. Place the knee of the back foot level or just in front of the toe of the front foot. Place the toe of the front foot 30-50cm back from the line. To mark it out – make an ‘L’ make a ‘T’ and place the knee in line with the heel.

‘SET’ – Shoulders should be above or slightly ahead of the hands. Raise your hips slightly higher than the shoulders. Bend the legs – front leg about 90 degrees, rear leg about 120 degrees. Keep still.

‘GO’ – Drive the rear knee forward, keep low. Bring the foot quickly down to commence the second stride. Drive the arms hard in opposition to the legs. Fully extend your driving leg and hip, knee and ankle.

Distance Running – **Middle** 800m and 1,500m

Long distance – 3000m 5000m and 10,000m

Running technique – Swing your arms in a balanced, relaxed and symmetrical manner. Run with rhythm and relaxation. Run with hips high. Look ahead, keeping your head aligned with your body.

2.Field

Jumping – Long jump, triple jump, high jump, pole vault. The aim is to jump as high or far as possible.

Long Jump – The toe of the jumper’s shoe, must be behind the leading edge of the take-off board. Long jumpers are measured from the forward edge of the take-off board made by any part of the body of the jumper. **Take-Off** – Sprint as fast as you can towards the marker. Keep your hips high at take-off. Fully extend hips, knee and ankle. Keep your body upright. Drive the free knee up and forwards. Drive the take-off foot down and back.

Flight – Bring arms above head. Keep body upright. Hold the thigh **parallel** to the ground during flight.

Landing – Arms reach for toes just before landing. Reach legs out in front at landing. Bring legs forward and together. Land with heels first, bend knees to absorb momentum. Collapse body forward or sideways.

Triple jump– Use a **Hop**, a **step** and a **Jump**. The triple jump has 5 phases – Approach, hop, step, jump and landing. Throughout the jump keep the head and hips high, and your body upright. Aim for an active flat foot landing. Feel a fast bouncing action. Keep an even rhythm throughout each jump phases.

High Jump – The objective of the high jump is to clear a bar supported on uprights having taken off from one leg. Aim to achieve maximum height at take-off.

Technique – Scissor jump – Progress to Fosbury flop.

A jumper taking off from their left leg should approach from the right. A jumper taking off from their right foot should approach from the left.

Scissors – **Approach** – run in an angle of 30 degrees as fast as you can towards the bar.

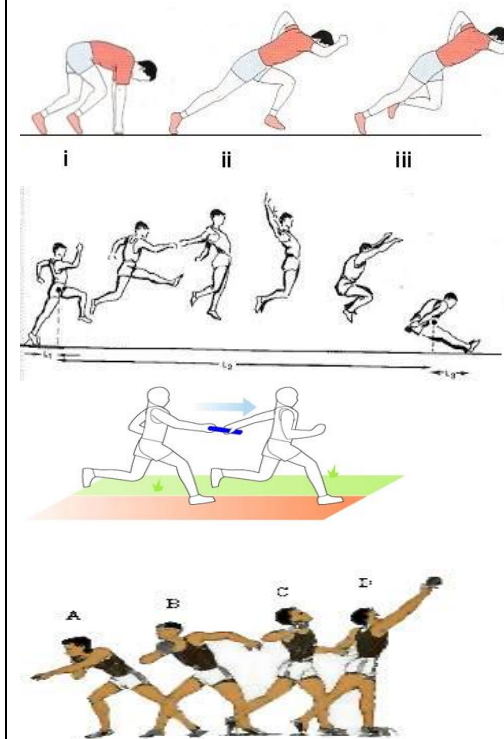
Take-off – Drive the leg closest to the bar up and over the bar, keep it bent. Keep the head and upper body upright. Fully extend the take-off leg at the hip, knee and ankle.

Landing – Take-off leg follows to complete the jump.

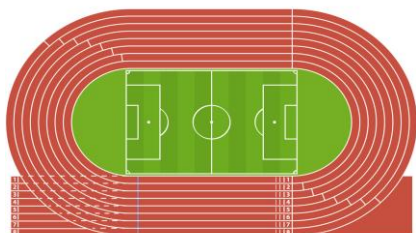
6. Glossary

Take-off Landing Approach Putt
Reaction Speed Fosbury Flop
Drive Vortex Balance Co-ordination
Baton Hurdles Sprint Endurance
Steeplechase Relay Change-over
Power Hurdles Rotation Discus
Javelin Shot Glide Stride Posture

Pictures



3. Where we compete



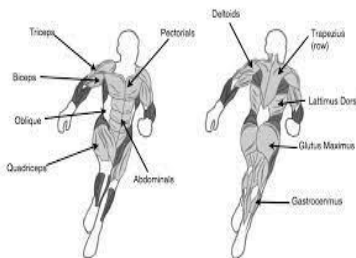
Athletes compete on a standard 400m Tarten track. Athletes sometimes compete on the road or cross country.

The events are broken up to categories.

Track: Running

Field: Jumping and throwing.

4. Key muscles and bones



Quadriceps - Legs

Gastrocnemius -Legs

Hamstrings - Hamstring

Biceps - Arms

Triceps –Arms

Speed

Acceleration

Hurdles

Reaction Time

Track

Field

Endurance

Power

Breathe naturally, keeping your shoulders relaxed. Keep your shoulders and hips as relaxed as possible. Pick the heel up and swing the knee forward.

Start – Standing start is used. Foot up to the line. Start in a lane but then cut in (move) to the inside lane (lane 1) after the first bend.

Relay

4x100m – 4 runners, who each run 100m

4x400m – 4 runners, who each run 400m

Runner 1 starts with the baton who runs to runner 2 where the baton is exchanged, who runs to runner 3 and exchanges the baton, who runs to runner 4 and exchanges the baton, who finishes the race. The passing of the baton is called the 'changeover'. If you drop the baton or move out of your lane at any point during the race your team is disqualified. You must complete the changeover in the changeover box.

How to pass the baton

1. **Up-Sweep** – the incoming runner passes the baton **up** into the outgoing runner's hand.
2. **Down-Sweep** – receiving arm extended, but the hand level is just above hip height. Hand is almost like a 'V', and the baton is ready for landing between the thumb and first finger.
3. **Push Pass** – The arm is extended out parallel to the ground and the hand is open with the **thumb pointing down**

Change over – If the **first runner** has the baton in their right hand, they must stay on the inside of the lane at the exchange. **2nd runner** takes the baton on the left hand and stays on the outside for the exchange. The **3rd runner** takes the baton on the right hand. **Runner 4** takes the baton on the left hand and stays on the outside of the lane when receiving. You are allowed to switch hands after receiving the baton.

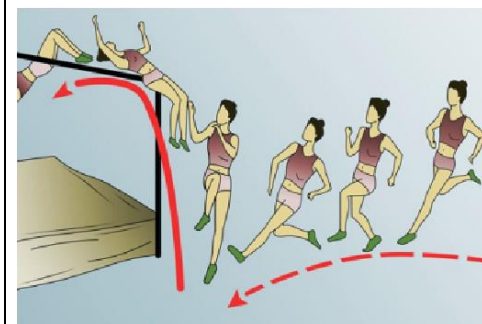
Fosbury Flop – **Approach** – use a J shaped run up as fast as you can. Run tall with the trunk upright. **Take-off** – drive the inside knee upwards – keep it high after take-off. Drive vertically at take-off. At take-off extend fully at hip, knee and ankle. **Landing** – Push hips upwards to 'arch' over the bar. Lift the legs clear of the bar and land safely with the mid-upper back touching down first. Clearance should occur over the middle of the bar.

Throwing – Shot, discus, javelin and hammer. The objective is to throw each implement as far as possible.

Grip – clean palm dirty neck – Rest the shot at the base of the first 3 fingers of your throwing hand. Hold the shot under the chin, against the neck with the elbow raised. Keep the wrist firm. Keep the throwing elbow high throughout the movement. Turn the shoulders away from the direction of the throw. Split stance. Front foot's heel should be in line with the back foot's heel. Both legs bent with the weight on the ball of the front foot. Drive the hips forwards and upwards before release. Throwing arm pushes long and high after a full extension of the legs and trunk.

Javelin – Standing throw (see pictures) – Hold the javelin back with an extended arm and palm high. Extend the right leg at the knee and ankle to drive the hip forward over a straightened left leg. After the hip drive pull the javelin through with the elbow close to the ear. Opposite foot forward (left foot forward for right handed thrower). Stand with feet shoulder width apart, the left foot pointing forward.

Discus – Standing throw – **Grip** – Rest the discus across the finger pads, spread fingers. **Preparation** – Swing the discus back behind the right hip and behind the right leg. The toe on the left foot is in line with the heel of the right. Stand side on to the direction of the throw, with feet just over shoulder width apart. Keep the weight over the rear leg as long as possible. **Release** – keep the hand on top of the discus. Keep the arm long and relaxed. After the hip drive pull the arm through fast and last. Lead with the thumb, drive the hips forward.



THE AMERICAN GRIP
The thumb and the first two joints of the index finger are behind the cord.



THE FINNISH GRIP
The thumb and the first two joints of the index finger are behind the cord, while the index finger supports the shaft. The extended finger assists the rotation of the javelin during delivery.



THE "V" GRIP
The javelin is held between the index and middle fingers behind the cord. The position of the fingers assists the throwing arm in staying at shoulder height during the approach.



Stander, 2006

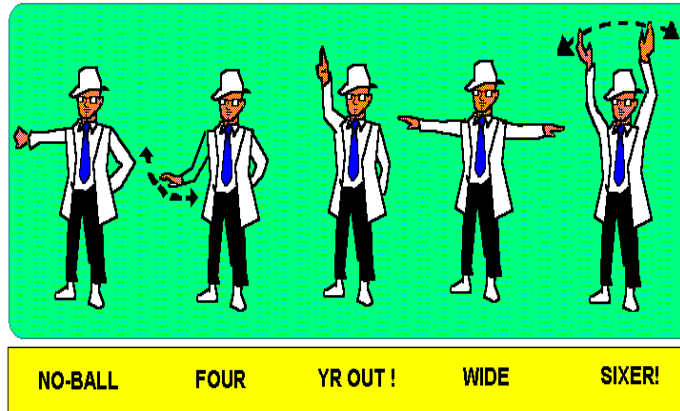
Year 8 PE: Cricket

1. Key Words

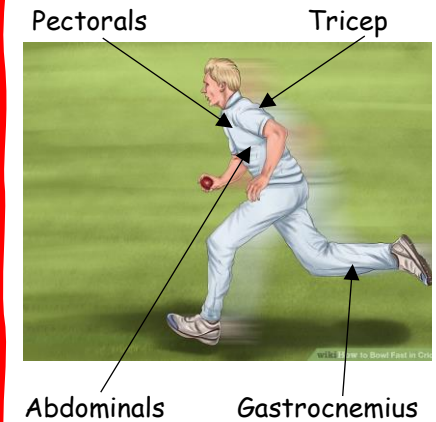
Run Out - When a batsman is attempting a run but does not get into their crease before the wickets are hit.

Beamer - A bowler deliberately bowling the ball at the batsman's head without it bouncing

2. Umpire Signals



3. Muscles Used In Cricket



4. Basic Rules

1. 11 a side
2. 6 balls in an over, must bowl over arm
3. Can be out by being bowled, caught, run out, LBW or stumped
4. Most runs wins
5. To be caught out the ball cannot hit the floor
6. To be out LBW the ball must be hitting the wickets when it hits the leg first
7. You must bowl from behind the bowling crease
8. At the end of each over you bowl from the opposite end.

5. Batting Technique - the off drive and pull shot



Spot the ball is full and outside off stump (to your right)



Take good stride forward to ball (inside where it will bounce)



Bend front leg to give stable position to play shot

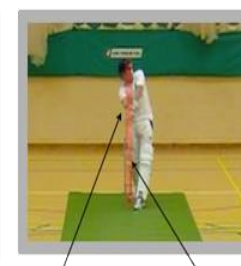
Strike ball into the ground Use the top hand to generate all power



Shift weight onto Back foot

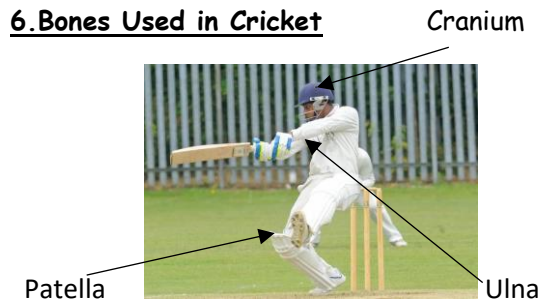


Prepare bat to strike ball horizontally



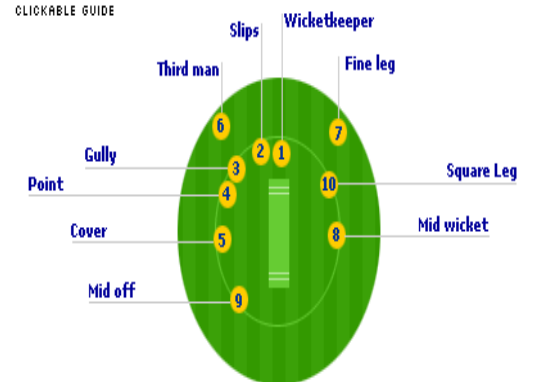
Swing bat through the ball (flat bat) Ball contact should be below eyes

6. Bones Used in Cricket



8. Fielding Positions

CLICKABLE GUIDE



YEAR 8 PE: ROUNDEERS

1. Match: A match usually consists of two innings. Both teams bat and field twice, the winning team is the one with the most rounders at the end of the game. An innings can consist of a set number of good bowls or until the fielding team have fielded all the batting team out.

2. Pitch layout:



The rounders pitch is rectangular in shape with areas marked out for the batter and bowler to stand. There are four posts which batters must run around to score a rounder.

3. Scoring: A rounder is scored by the batting team when a player hits the ball and runs around all 4 posts. A half rounder is scored if the batter hits the ball and runs to the second post. A half rounder can also be scored if the batter does not hit the ball but runs around all four posts.

4. Rules: Rounders games are played between two teams. Each team has a maximum of 15 players and a minimum of 6 players. No more than 9 players may be on the field at any one time. One team bats while the other team fields and bowls. The bowler bowls the ball to the batter who hits the ball forward on the Rounders Pitch. The batter then runs to as many posts as possible before the fielders return the ball to touch the post the batter is heading for. If the batter reaches the 2nd or 3rd post in one hit, the batting team scores $\frac{1}{2}$ a Rounder. If the batter reaches 4th post in one hit, the batting team scores a Rounder. Games are usually played over 2 innings with the aim of the game to score the most Rounders.

5. A batter is out when:

- The post a batter is running to is stumped.
- The batter is caught out.
- A batter overtakes another batter on the track.
- A batter deliberately drops or throws their bat.
- The batter misses or hits the ball and their foot is over the front or back line of the batting square.
- A batter runs inside the posts (unless obstructed).



6. Skills/ techniques (technical & tactical):

BATTING – A skill which allows the bat to contact the ball.

THROWING – A technique to field the ball to the correct position at the correct pace and direction (over-arm & under-arm).

BOWLING – A technique to deliver the ball in the correct position for the batter to hit.

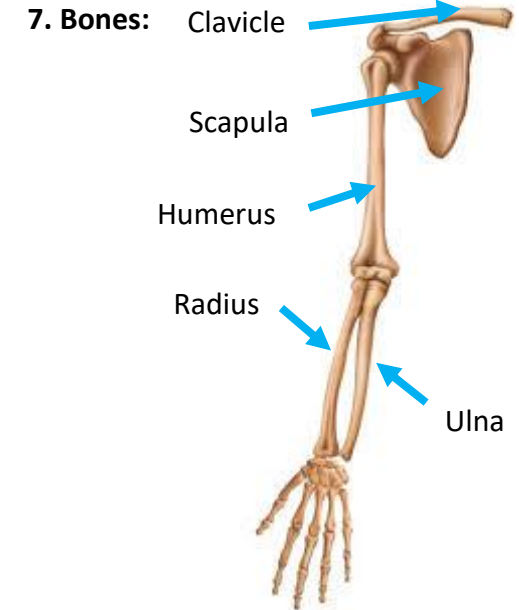
LOW CATCH –



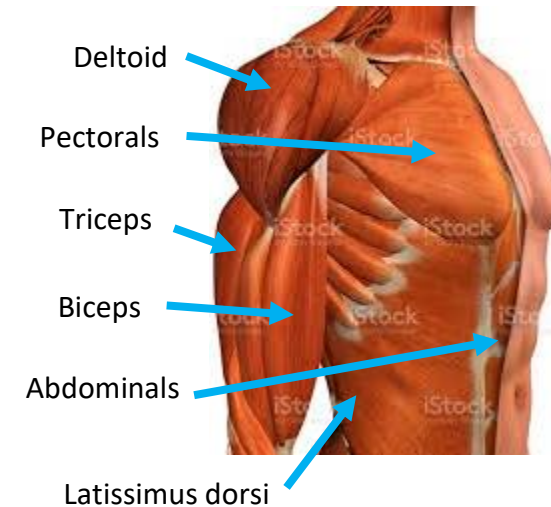
TIMING

DECISION MAKING

HIGH CATCH –



8. Muscles:



9. Components of fitness:

CO-ORDINATION – The ability to use different (two or more) parts of the body together smoothly and efficiently

REACTION TIME – The time taken to initiate a response to a stimulus

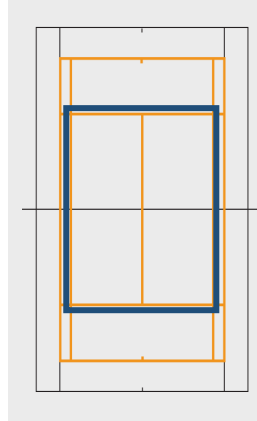
AGILITY – The ability to move/ change direction quickly (at speed) whilst maintaining control

YEAR 8 PE: TENNIS

1.

Rules of the game:

1. Aim is to strike the ball with the racket so it lands over the net within the boundaries of your opponents side
2. Ball can only be hit once
3. Serve underarm by bouncing the ball on the floor before striking
4. Let the ball bounce before you strike the ball
5. If the ball hits the net (and doesn't go over), or lands outside of the court marking this is a foul
6. Players cannot make contact with the net
7. You will use the dimensions of the court shown within the highlighted area in the image on the right



2.

What components of fitness are used in tennis?

Fitness Component	Why is it important?
Muscular endurance	So that the muscles contract for long periods of time so that the player can keep moving and striking the ball for the whole game
Reaction time	To quickly respond and move to a ball that has been dropped to a place away from where the performer is standing
Agility	To quickly change direction to move to an area of the court where the ball has landed

3.

Serve:

1. Stand behind the back line
2. The toss: throw the ball straight up above the height at which you can reach up with your arm
3. With that bring your racket arm up in the swing
4. Make contact with the ball at the highest point
5. Follow through for more power



Role Model

Tennis is accessible to those with disabilities with adapted wheelchairs in order to move around the court.

Esther Vergeer is the most decorated wheelchair tennis player with 7 Paralympic titles and 48 grandslams!

Tennis has wiped away stereotypes for disabled athletes.



4.

Volley:

A shot which involves hitting the ball out of the air before it bounces.

Usually used when you have approached the net and are near the front of the court.

1. Ensure you are in the ready position with racket raised
2. This makes it quicker to move the racket into the line of the strike you need to return
3. Ensure the face of your racket is facing the area in which you want your strike to go
4. Allow the ball to hit your racket rather than you swing at the ball for a more accurate shot.



5.

Moving the ball around the court.

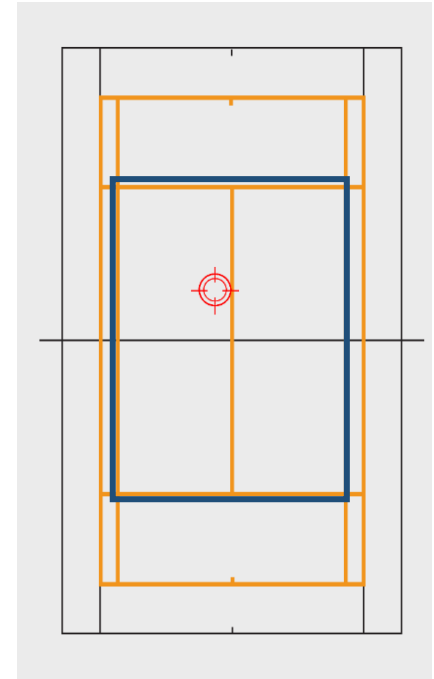
In order to score points, it is vital that you strike the ball so it lands in different areas of the court.

Look up to where your opponent is stood on the court.

Ask yourself, where is the space? Ensure that you are aiming to strike the ball into areas both on the left, right, front and back of the court.

Move your body to the side of the ball quickly and ensure your body and the racket is facing in the direction you want to hit the ball. Then strike the ball to this area.

In the image on the right, if the opponent is stood at the target, where could you place the ball? Where would you go next if they returned the shot?



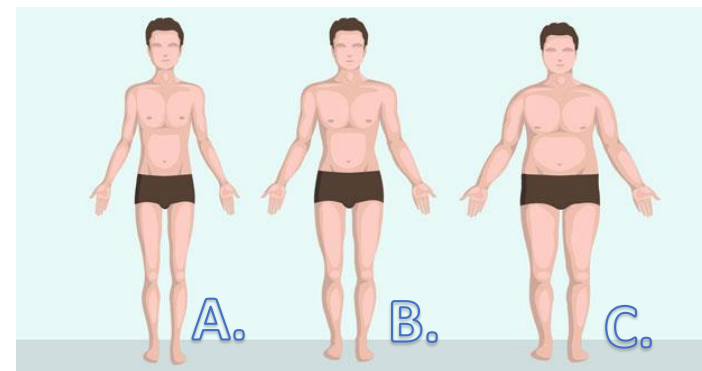
Ethics of the game

Gamesmanship: bending the rules to gain an advantage over an opponent.

- Maintain pace of the game at all times – no time wasting!
- Ensure that you are not making exaggerated noises when you are striking the ball.

6.

Somatotypes: What body type is most suited to tennis? Why?



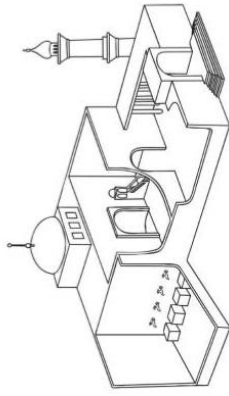


Key words:

1. Qiblah	The direction of Salat
2. Qur'an	The Muslim Holy Book
3. Allah	A Divine name of God
4. Minaret	A tower from which someone calls Muslims for prayer
5. Hajj	The Islamic pilgrimage to Mecca, one of the 5 pillars of Islam
6. Zakat	Charity to others, one of the 5 pillars of Islam
7. Sawm	Fasting (abstaining from food or drink, or other activities), one of the 5 pillars of Islam
8. Salat	The compulsory prayers, one of the 5 pillars of Islam
9. Mecca	A Holy city in Arabia
10. Shahadah	Muslim profession of faith, one of the 5 pillars of Islam
11. Prophet	A Messenger sent by Allah to humans

Features of a Mosque

- 12. Minbar** The Imam delivers his sermon from here
- 13. Wudhu Room** A wash room for ritual cleansing so Muslims can prepare for prayer
- 14. Minaret** A tower where the 'call to pray' is sent from
- 15. Shoe Rack** This helps keep the Mosque clean as a sign of respect to Allah
- 16. Dome** This keeps the Mosque cool and is a form of decoration and represents Heaven
- 17. Mihrab** A niche in the wall that shows the direction of Mecca



18. Adhan

The "call to prayer" that is recited at certain times to remind Muslims to pray. It is called from the Minaret. It contains the phrase "Allah is the greatest"

14. Misbaha

This is a string of prayer beads and is a tool for Muslims to use to recite the names of Allah. There are 99 names for Allah that include "The Creator" and "The Light" and "The Guide"



14. Eid al Fitr

This is the celebration of the breaking of the fast at the end of the month of Ramadan.

14. Compulsory prayers

Fajr – the dawn prayer.
Dhuhr – the noon prayer.
Asr – the afternoon prayer.
Maghrib – the sunset prayer.
Isha'a – the night prayer.

14. Taqwa

This is a term that means 'knowledge of God', or 'love of God' and is shown through self restraint. Therefore it is commonly associated with Sawm at Ramadan. The Qur'an states: "Fasting is prescribed for you, that you may attain Taqwa"

14. Zakat Muslims are required to give a certain amount of money to charity. It literally means 'to cleanse' and reminds Muslims to be cleansed from greed and selfishness. Muslims are asked to give 2.5% of savings to charity

14. Purposes of Ramadan

- Fast during daylight hours
- Focus on spirituality
- Practice self-discipline
- Show devotion to God
- A time to get close to God
- Eid al Fitr celebration

14. Ihram This describes the changing of the focus in a persons mind towards God. During Hajj, outside of Mecca there is an imaginary boundary called "Meeqat" where Muslims pass through and are reminded to focus their intentions towards God.

14. Mecca The Prophet Muhammad was born in Mecca and it contains the Ka'aba, a cube shaped building said to have been build by Abraham. The Prophet Muhammad cleansed the city of worshipping other Gods and dedicated it to the Islamic faith



14. Prayer Mats

Prayer Mats are used to give a clean and holy space in which to Pray. They are often elaborately decorated with images of Mosques, but never living things or God as this is forbidden in Islam. They will always have one small imperfection in them.



14. Mina and Arafat These are two important features of Hajj. Mina is a valley where pilgrims stay in tents during Hajj. Mount Arafat is a small mountain where the Prophet Muhammad delivered his final sermon. On the second day of Hajj pilgrims make their way there and pray until sunset and it is considered the most holy day of Hajj.

14. The Prophet Muhammad Muhammad was born in Mecca in 570AD and was an orphan. He left Mecca to live a life of meditation, where he received a revelation from Allah; the Qur'an. He then spent his life spreading the message that Allah had given him and the Muslim faith quickly spread.

24. Take it Further:

Why do you think a true *focus* on God is so important for religious people?
What effects do you think Hajj has?
Why should someone pray at set times?
Why is it beneficial to live close to the Mosque?

24. Think about:

Do objects/ buildings improve your faith?
Which do you think is the most important of the pillars of Islam?
How does the Mosque help develop faith?
Which of titles of God mean more to you?

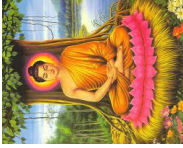
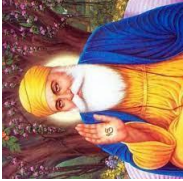


You should be aiming for these skills on every assessment page	
Knowledge and understanding skills	S K
	I
	L L
	S
Show Knowledge and understanding of facts/ information/ points of view through detailed explanations and development	
Influence on actions or belief	
Lots of Language that is topic specialist and/ or religious in nature	
Sources of wisdom/ authority that <i>explain</i> or <i>support</i>	
Evaluative skills	P
	A
	G
	E
Points of view and alternative reasons	
Analysis (detailed explanation of features and key points of arguments)	
Good Judgements made on what the answer to the question is	
Evaluation of which points are more convincing	



RE

8.6 Eastern Religions Knowledge Organiser



Keyword	Definition
1. Avatar	a God in human or animal form
2. Brahman	the Hindu word for God
3. Brahmin	priest/teacher
4. Diwali	the festival of lights
5. Guru	Meaning teacher in Hinduism and Sikhism
6. Karma	the law of cause and effect
7. Meditation	the practice of stilling the mind and focusing on God with the aim of gaining wisdom
8. Reincarnation	being reborn into a new body

9. **Beliefs about God**
Hindus believe in a universal soul or God called Brahman. Brahman takes on many forms that some Hindus worship as gods or goddesses in their own right. Hindus believe that there is a part of Brahman in everyone and this is called the Atman

10. **Creator** For Hindus the **universe was created by Brahma**, the creator who made the universe out of himself. After Brahma created the world, it is the power of Vishnu which preserves the world and human beings. As part of the cycle of birth, life and death it is Shiva who will ultimately destroy the universe.



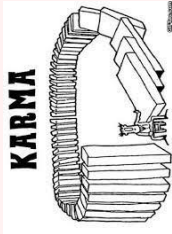
11. **Place of worship** A Hindu temple is called a **mandir**. It is a **sacred** place for Hindu worship. In India, where most Hindus live there are temples in almost every village. Temples often honour the gods and goddesses whose **muris** live inside them with beautiful decoration, sculpture and lighting. Hindu worship can also happen in open-air **shrines**



13. **Sacraments** Hindu sacraments are called 'sanskars' and the sacraments performed at the time of a wedding are called 'Vivah Sanskar'. This sanskar marks the start of the second and the most important stage of life called the 'Grihastha Ashrama' which involves setting up of a new family unit.

12. **Birth** Once the child enters the world, Jatakarma is performed to welcome the child into the family, by putting some honey in the child's mouth and whispering the name of God in the child's ear.

14. **Reincarnation** – Rebirth
Karma – Spiritual results of actions.
Moksha – Liberation, salvation, goal.



15. **Cremation:** Ideally, Hindu cremation takes place as soon as possible – within 24 hours after death. Friends and family come to the home to offer their sympathy. Mourners recite prayers during this time to honour the deceased.

16. Khalsa Sikhs wear five symbols – called the **five Ks**, or Panj Kakka – to show their devotion to Sikhism. The boys outline the 5 Ks and what they signify. They are Kara, Kachera, Kirpan, Khalsa, Kesh and Kanga.



17. **The Guru Granth Sahib** is not just the holy scripture of Sikhism. It is also considered as the living Guru. Before Guru Gobind Singh died, he declared that there would be no more human Gurus and that the Guru Granth Sahib would be the Eternal Guru.

19. Sikhs celebrate the birth of a child through a naming ceremony called **Naam Karan**. This is a special ceremony that happens at the gurdwara around two weeks after the birth of the child. The Mool Mantar is said to thank God for the precious gift of life.

20. The **mariage** ceremony takes place at a gathering in the holy presence of Guru Granth Sahib. Shabads (Sikh hymns) are sung and the boy and the girl sit side by side facing Guru Granth Sahib. The girl sits on the left side of the boy.

22. Buddhism is an offshoot of Hinduism. Its founder, **Siddhartha** Gautama, started out as a Hindu. It is through this meditation that Buddhists feel Gautama reached true enlightenment

24. Take it Further/ Think About:

What similarities are there?

What are the main religious *practices*?

How does belief affect action?

What is important about places of worship?

How do people gain a deeper spirituality?

18.The Golden temple is located in the holy city of the Sikhs, Amritsar. The Golden temple is famous for its full golden dome, it is one of the most sacred pilgrim spots for Sikhs. The Mandir is built on a 67-ft square of marble



21. **Diwali** symbolises the spiritual “victory of light over darkness, good over evil, and knowledge over ignorance”. The festival is widely associated with Lakshmi, goddess of prosperity. Diwali itself is the third day of the festival, and falls on the darkest day of the Hindu lunar month, Kartik



23. Buddhists can worship both at home or at a temple. It is not considered essential to go to a temple to worship with others.

You should be aiming for these **skills** on every assessment **page**

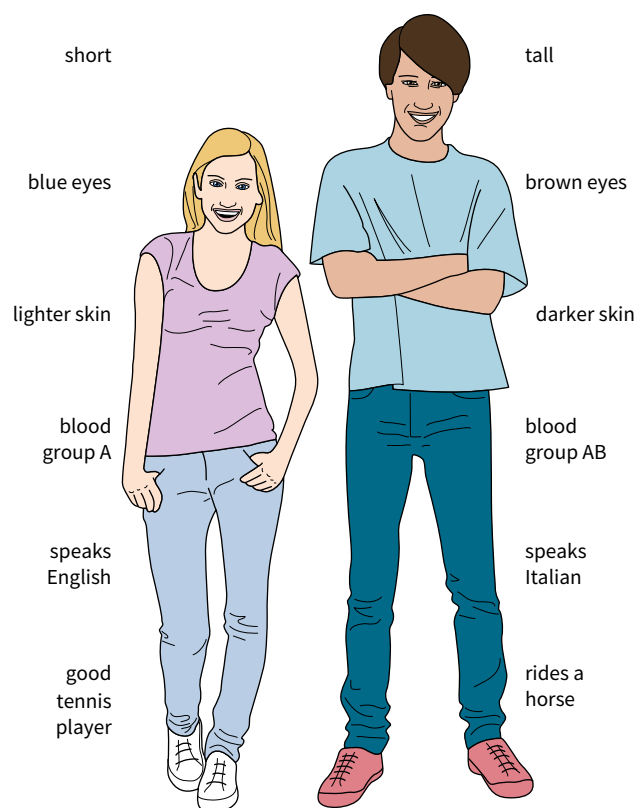
Knowledge and understanding skills	S	Show <u>Knowledge</u> and <u>understanding</u> of facts/ information/ points of view through detailed explanations and development			
	K	I	L	L	S
Evaluative skills	P	Points of view and alternative reasons			
	A	Analysis (detailed explanation of features and key points of arguments)			
	G	Good Judgements made on what the answer to the question is			
	E	Evaluation of which points are more convincing			



Variation

Variation is the difference in characteristics of individuals of the same species. Variation can be:

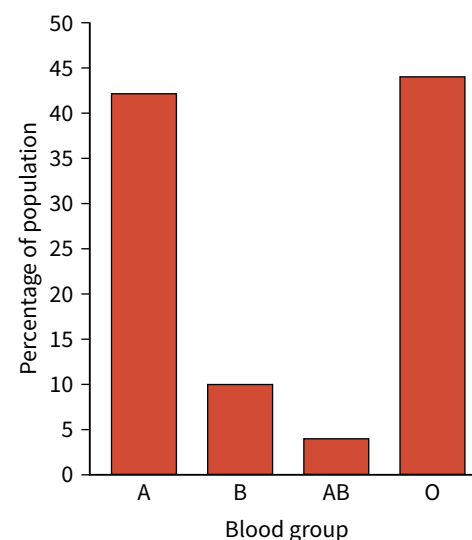
- **Inherited** – passed on from parents to offspring by genes e.g., eye colour.
- **Environmental** – caused by the surroundings and what has happened to you in your life e.g., getting a tattoo.



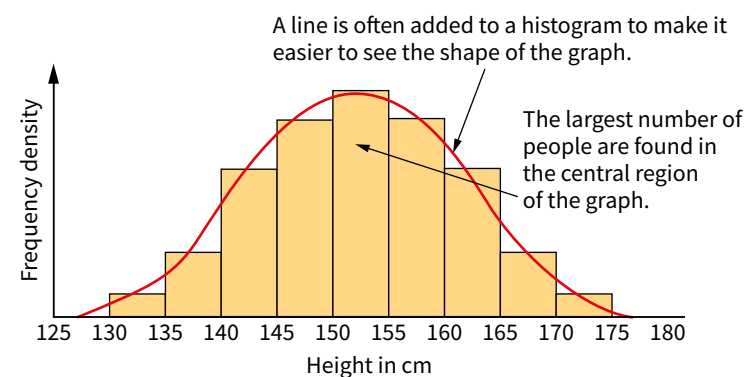
Many characteristics are affected by both inherited and environmental variation. For example, somebody may inherit the characteristic to be tall from a biological parent, but if they eat a poor diet their rate of growth may be reduced.

Displaying data

- **Discontinuous variation** – Fixed number of values e.g., Blood group. Display data in tables, pie charts, and bar charts.



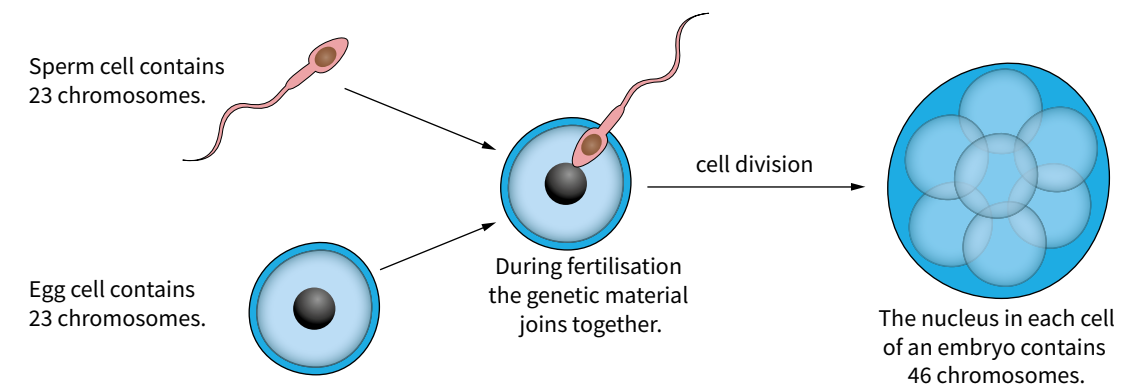
- **Continuous variation** – Any value within a range e.g., height. Display data in tables, scatter graphs, histograms, and bar charts.



How are genes inherited?

DNA (deoxyribonucleic acid) is genetic material stored in the **nucleus** of your cells. The structure of DNA was discovered by Crick, Watson, and Wilkins, who won the Nobel Prize for medicine in 1962. Their discovery was underpinned by the X-ray images from Rosalind Franklin.

The DNA is organised into **chromosomes**; different species have different numbers of chromosomes. Each section of a chromosome is called a gene.



What causes species to change?

Natural selection is when individuals that are best adapted survive and have offspring of their own and pass on the successful genes. This causes a gradual change in a species over millions of years and is called evolution. Fossils give evidence to this theory.

If all the organisms in a species die before reproducing the species will become **extinct**. This can happen due to:

- changes to the organisms' environment
- destruction of habitat
- outbreak of a new disease
- introduction of new predators and competitors.

Key words

Make sure you learn the definitions for these key terms:

adaptation biodiversity chromosome continuous variation discontinuous variation DNA endangered environmental variation extinct fossil gene gene bank inherited variation evolution natural selection nucleus species variation.



Chapter 3: Metals and acids

Knowledge organiser

Metals and acids

- If a metal reacts with an acid, it produces a **salt** and hydrogen gas.
- All acid compounds have hydrogen in them.
- When the hydrogen is replaced by a metal, the compound is called a salt.

For example, sulfuric acid has the formula H_2SO_4 . Copper sulfate has the formula CuSO_4 – it is a salt because the copper has taken the place of the hydrogen in sulfuric acid.

The three main acids are hydrochloric acid, sulfuric acid, and nitric acid. Metals can react with all of these acids to produce a salt and hydrogen gas.

copper + hydrochloric acid → copper chloride + hydrogen

iron + sulfuric acid → iron sulfate + hydrogen

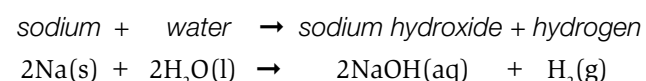
magnesium + nitric acid → magnesium nitrate + hydrogen

Testing for hydrogen gas

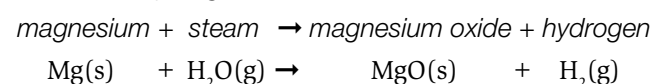
The gas produced when reacting a metal and a salt can be collected in an upturned test tube, and a test performed to check that the gas is hydrogen. Insert a lit splint into the upturned test tube – if the gas is hydrogen, there will be a 'pop' sound.

Metals and water/steam

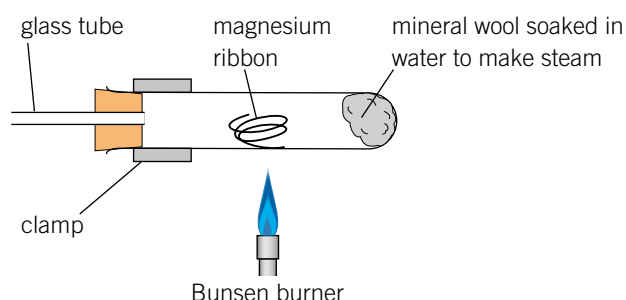
- Very reactive metals like sodium will react with cold water to produce a metal hydroxide and hydrogen gas.



- Other metals like magnesium only react with steam, and produce a metal oxide and hydrogen.



Magnesium can be reacted with steam using the following experimental set-up.



Metals and oxygen

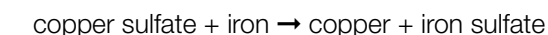
- Many metals will react with oxygen from the air to produce a metal oxide.
- Often, they will need to be heated before they can react.

Metal	Reaction with oxygen
magnesium	burns vigorously
zinc	burns less vigorously
iron	burns
lead	do not burn; when heated, form layer of oxide on surface
copper	do not burn; when heated, form layer of oxide on surface
gold	no reaction

Metal displacement reactions

- A **displacement reaction** occurs when a more reactive element takes the place of a less reactive element in a compound. In metals, this means that the more reactive metal will become a compound, and the less reactive one an element.

For example, iron is more reactive than copper so:



The iron has displaced the copper from its compound. The solution changes from blue to pale green and the metal changes from grey to rose coloured, indicating that a chemical reaction has happened.

The reactivity series

Increasing reactivity	most reactive
	potassium
	sodium
	lithium
	calcium
	magnesium
	aluminium
	zinc
	iron
	lead
	copper
	silver
	gold
	least reactive

State symbols

- Symbol equations have letters in brackets after each substance.
- These tell you the state of matter of each substance, and are called **state symbols**:

(s) = solid, (l) = liquid, (g) = gas, (aq) = dissolved in water

For example, $\text{H}_2\text{O(s)}$ is ice, $\text{H}_2\text{O(l)}$ is water, $\text{H}_2\text{O(g)}$ is steam, and NaCl(aq) is sodium chloride (table salt) dissolved in water.

Materials

A **ceramic** is a hard, brittle material that is made by firing a material, such as clay, at a high temperature. Ceramics also have similar chemical properties to each other. They do not react with water, acids, or alkalis.

A **polymer** is a substance with very long molecules. There are many polymers. Different polymers have different properties. Their properties make them suitable for their uses. Natural polymers include wool and rubber. Synthetic polymers include polyester and nylon.

A **composite** is a mixture of materials. Each material has different properties. The composite has properties that are a combination of the properties of the materials that are in it.

Metal extraction

Only very unreactive metals like gold and platinum are found as their metals themselves in nature. Most metals are found in compounds called minerals. Chemical reactions can be used to extract the metal element from its compound. Minerals that have enough metal in them to make it financially worthwhile to extract the metal are called ores.

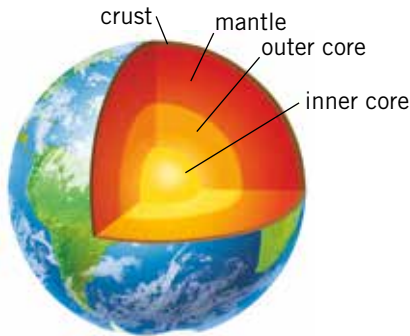
Key words

Make sure you can write definitions for these key terms.

acid ceramic composite displacement reaction hydrogen material metal polymer reaction reactivity reactivity series salt state symbol



The Earth

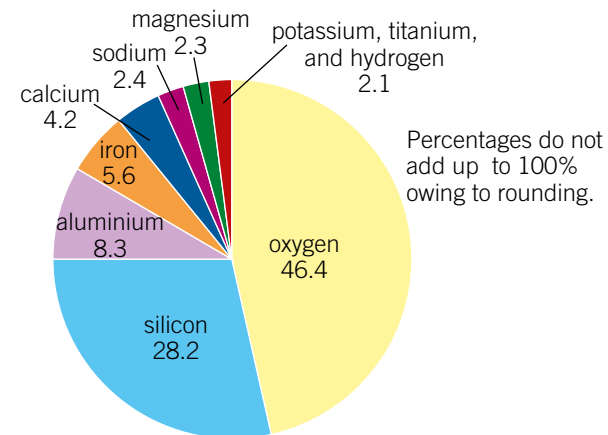


The Earth is made of several layers:

- The **crust** is rocky and solid.
- The **mantle** is solid rock but can flow.
- The **outer core** is liquid metal and the **inner core** is solid metal.

The crust

The Earth's crust contains many naturally-occurring elements in different proportions.

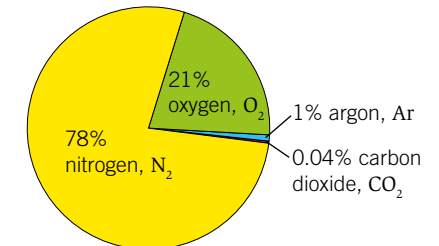


Types of rock

There are three types of rock that make up the Earth's crust. These are formed by different processes in the **rock cycle**, and have different properties.

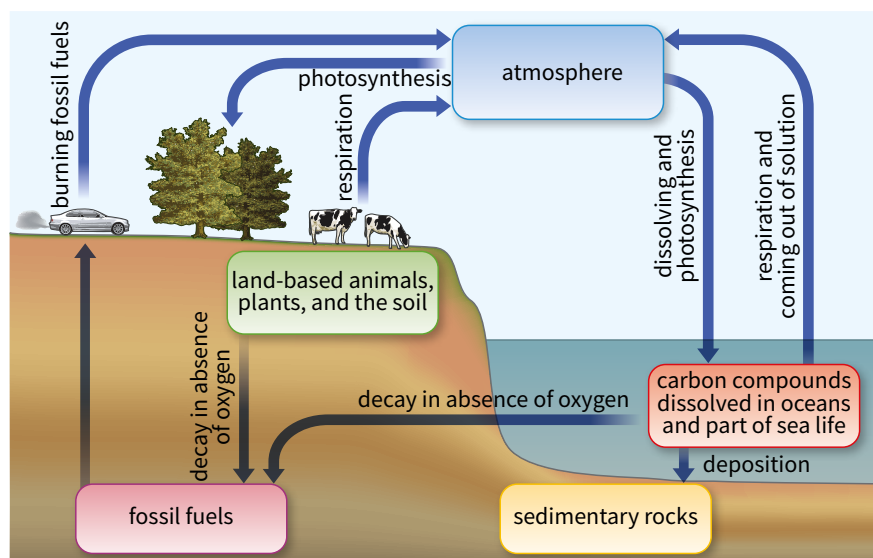
The atmosphere

The **atmosphere** is a layer of gas surrounding the Earth. It is mainly composed of nitrogen and oxygen.



The carbon cycle

The carbon cycle shows how carbon atoms move between carbon dioxide in the atmosphere, and carbon compounds on Earth.



Climate change

Greenhouse gases like carbon dioxide trap energy in the Earth's atmosphere. Humans are adding more of these gases and this is causing global heating. This causes:

- melting of glaciers and polar ice
- changes to local weather patterns.

Long-term changes to weather patterns are called climate change. Climate change has led to the extinction of some plant and animal species. Climate change makes it harder for people to grow food.

Recycling

Earth's resources are limited and come from the ocean, crust or atmosphere. To make sure there are enough resources to live our lives as we wish we can:

- **Reuse:** you or someone else uses an object again, either for its original purpose or for a different purpose.
- **Recycle:** collecting and processing used objects so that their materials can be used again.

Type of rock	How it is formed	Properties	Uses
sedimentary rock	<ul style="list-style-type: none"> • sediment piles up in one place and over many years stick together by compaction or cementation • compaction: weight of sediments above squeeze them into rocks • cementation: another substance sticks the sediments together 	<ul style="list-style-type: none"> • porous: made of small grains stuck together so there are holes that water can pass through • soft: easy to break apart the sediments 	building materials (e.g., sandstone and limestone)
igneous rock	<ul style="list-style-type: none"> • when liquid rock cools it turns into igneous rocks these are made of crystals locked tightly together • Magma: liquid rock underground – cools slowly and forms large crystals. • Lava: liquid rock above the ground – cools quickly and forms small crystals. 	<ul style="list-style-type: none"> • Durable and hard (difficult to damage): the crystals are locked tightly together • Not porous: there is no space between crystals 	pavement rail tracks
metamorphic rock	<ul style="list-style-type: none"> • other rocks under the Earth are heated and put under pressure • over time, these rocks become metamorphic 	<ul style="list-style-type: none"> • Not porous: there is no space between crystals 	marble used for kitchens slate used for roofing tiles

Key words

Make sure you can write definitions for these key terms.

atmosphere cementation climate change compaction crust Earth global heating global warming greenhouse effect greenhouse gases igneous rock inner core lava magma mantle metamorphic rock outer core porous recycle resource reuse rock cycle sedimentary rock



Speed

Speed is how far something moves in a certain time.

$$\text{speed (m/s)} = \frac{\text{distance travelled (m)}}{\text{time taken (s)}}$$

- Speed is measured in **metres per second (m/s)**.
- Convert distances to metres and times to seconds to calculate the answer.

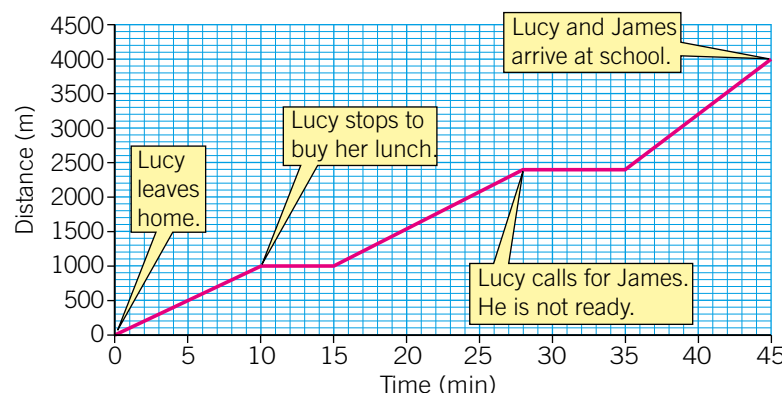
Relative motion

- Compares how fast one object is moving to another.
- If two objects are moving at the same speed in the same direction then their relative speed is zero.

Motion graphs

Distance–time graph

These graphs show the distance something travels over a certain time.



To calculate the average speed from a distance–time graph you find the distance covered, and divide it by the time taken.

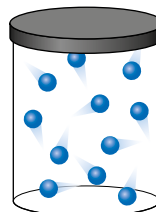
Pressure in solids

- Pressure is the force exerted on a surface because of weight, and is measured in **newtons per metre squared** or **Pascal (Pa)**. Where $1 \text{ N/m}^2 = 1 \text{ Pa}$.
- For small areas you can use centimetres instead.
- Pressure explains why studded boots help you grip grass, or why snowshoes help you walk in snow.

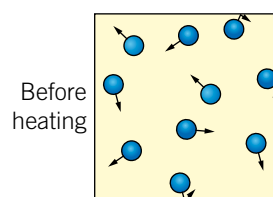
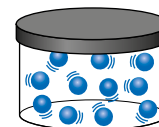
$$\text{pressure (N/m}^2\text{)} = \frac{\text{force (N)}}{\text{area (m}^2\text{)}}$$

Pressure in gases

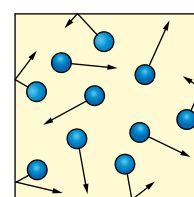
Collisions between gas particles and their container produce **gas pressure**.



If you **compress** (squash) a gas into a smaller volume there will be more collisions, and so a higher pressure.



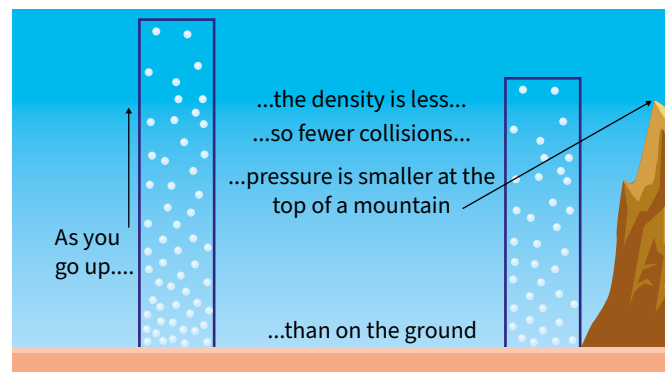
Before heating



If you heat a gas, the particles will have more energy. This means they will move more quickly and collide with the container more often, so the pressure will be greater.

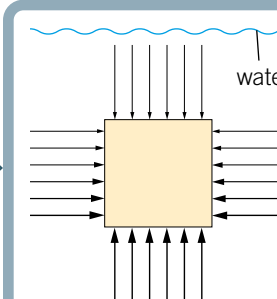
Atmospheric pressure is the pressure acting on us from the air around us.

- The higher above sea level the lower the atmospheric pressure.
- This is because the air is less dense the higher you go above sea level, so there are fewer collisions between air particles.



Pressure in liquids

- Solids and liquids are **incompressible**, because all the particles are touching already. This means they pass pressure on.
- The pressure at the bottom of a liquid is bigger than at the top, because the weight of the water pushing down increases with depth.



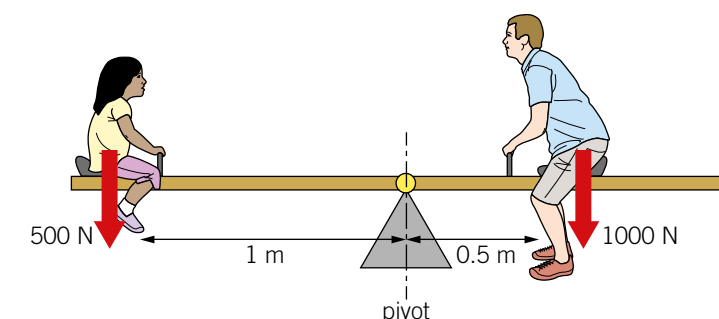
Objects float because of **upthrust**. Liquid pressure produces this upthrust. In the example, the object floats because the upthrust acting on the bottom of it is stronger than the forces acting on the top.

Turning forces

- Moments** are the turning effect of a force.
- The unit for the moment is **newton metres (Nm)**.
moment (Nm) = force (N) × perpendicular distance from the pivot (m)
- To calculate the moment you multiply the force applied by the distance from the **pivot**.
- The bigger the force, or the further the distance, the bigger the moment.

The law of moments

When the forces are balanced, all the clockwise moments added together must equal all of the anticlockwise moments added together.



$$\begin{aligned} \text{clockwise moment} &= \text{force} \times \text{distance on the right} \\ &= 1000 \text{ N} \times 0.5 \text{ m} \\ &= 500 \text{ Nm} \end{aligned}$$

$$\begin{aligned} \text{anticlockwise moment} &= \text{force} \times \text{distance on the left} \\ &= 500 \text{ N} \times 1 \text{ m} \\ &= 500 \text{ Nm} \end{aligned}$$

The moments in the example above are the same. This is how see-saws balance. All the weight of an object seems to act through a point called the **centre of gravity** (or **centre of mass**). If the centre of gravity is above the pivot there is no turning force.

Key words

Make sure you can write definitions for these key terms.

atmospheric pressure centre of gravity centre of mass compress distance–time graph gas pressure incompressible law of moments liquid pressure moment motion newton metres
newtons per metre square pressure pivot speed

