



# Bishop Ullathorne Catholic School Knowledge Organiser


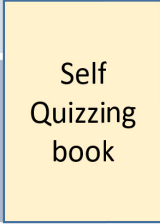
**Year 8**  
**Spring Term**  
**2023-2024**



*"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 <b>MUST</b> 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. <b>You do not need to bring this to school.</b></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><b>Step 1</b> Check Class Charts for what section your teacher has set you to learn for your Home Learning.</p> <p><b>Step 2</b> Write the title of the section in your Self Quizzing Book .</p> <p><b>Step 3</b> Write out the section that you have been asked to learn.</p> <p><b>Step 4</b> 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><b>Step 5</b> Cover up the section and write from memory in your Self Quizzing book.</p> <p><b>Step 6</b> Check your answers and correct where required. Repeat steps 4 to 6 until you are confident.</p>

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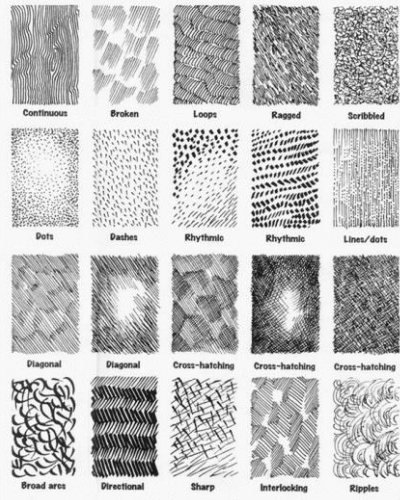
# Knowledge Organiser – Year 8 War and Conflict- German Expressionists

## a. Art key words

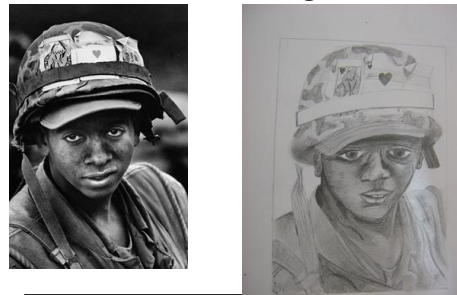
Formal Elements	The parts used to make a piece of artwork.
Analogous colours	Colour next to each other on the colour wheel.
Mark making	describes the different lines, dots, marks, patterns, and textures we create in an artwork.
Monochrome	Light and dark tones of a singular colour.
Hatching and cross 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

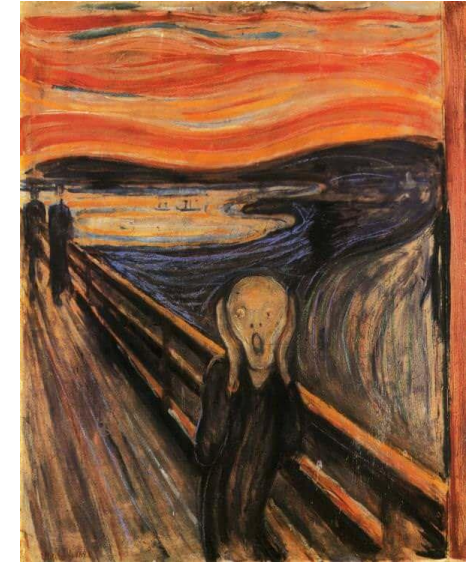


**Artists: Max Beckerman  
Ernest Barlack  
Otto Dix  
Käthe Kollwitz  
Franz Marc**

**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

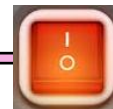


Test Yourself

## 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)



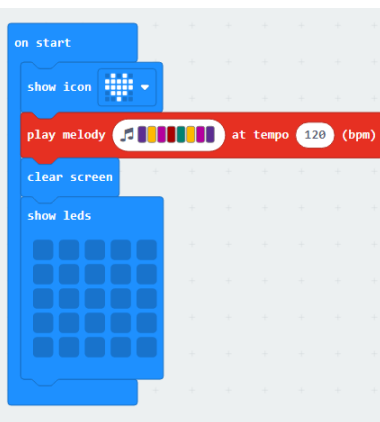
Test Yourself

## 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

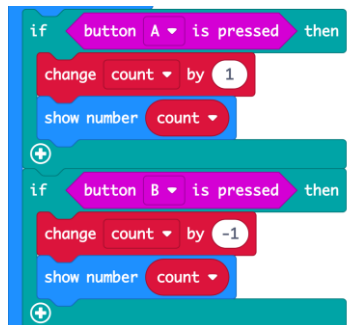
## Sequence

A program which is executed line by line



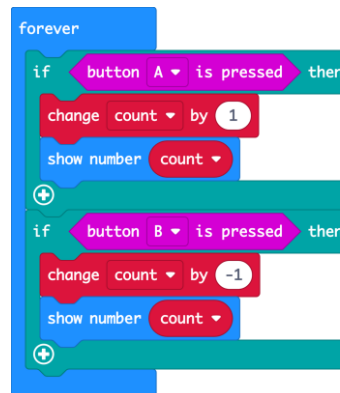
## Selection

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



## Iteration

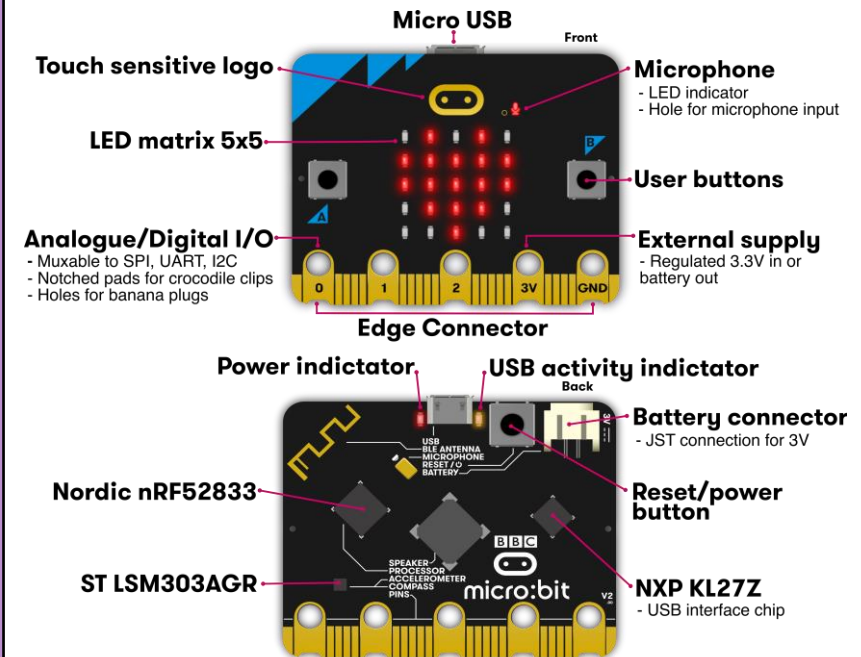
A program which repeats a number of times or until a condition is met



## Micro:bit Hardware

**Definition:** The micro:bit is a tiny computer.

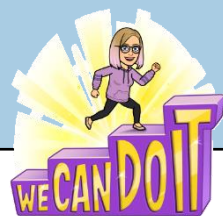
You can write programs for the micro:bit on your computer and then transfer them to the micro:bit to be run.



## 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

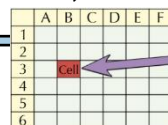
## Spreadsheet Basics

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 used 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



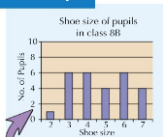
The red cell is in Column B and Row 3 — so its cell reference is B3.

## Charts

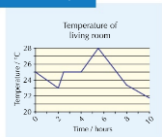
How to create a chart:

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

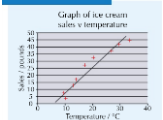
Bar Graph



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



VLOOKUP

## 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.

## Lesson overview

First aid

Drugs

Alcohol

Gambling

Keywords	Definitions
CPR	CPR stands for cardiopulmonary resuscitation. It's a life saving medical procedure which is given to someone who is in cardiac arrest. It helps to pump blood around the person's body when their heart can't.
First aid	First aid is the first and immediate assistance given to any person suffering from either a minor or serious illness or injury, with care provided to preserve life, prevent the condition from worsening, or to promote recovery.
Drugs	A drug is a substance that affects the way the body functions. If a drug is classified as 'illegal', this means that it is forbidden by law.
Alcohol	Alcohol is a colourless liquid that is found in drinks such as beer, wine, and whisky.
Gambling	It can be said to cover various forms of entertainment involving gain and loss based upon risk. 'Gaming' is the playing of a game (being a game of chance or a game that combines skill and chance) for a prize.

## FIVE WAYS YOU CAN SAVE SOMEONE'S LIFE

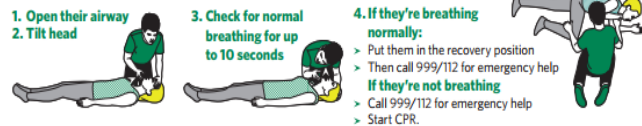
### WHAT TO DO IF SOMEONE IS CHOKING



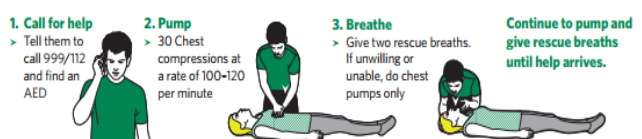
### WHAT TO DO IF SOMEONE IS BLEEDING



### WHAT TO DO IF SOMEONE IS UNRESPONSIVE



### WHAT TO DO IF SOMEONE IS UNRESPONSIVE AND NOT BREATHING NORMALLY



### WHAT TO DO IF SOMEONE HAS HAD A HEART ATTACK



Make sure you always have life saving knowledge at your fingertips. Download our free first aid app from your app store today.

Learn first aid.  
Help save lives.  
Be the difference.

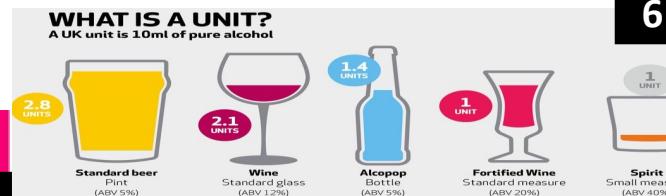
## HOW TO TAKE CONTROL OF PROBLEM GAMBLING



5

**Steps to CPR**  
Less than 1 in 10 people in the UK survive an out-of-hospital cardiac arrest. And every delay reduces a person's chance of survival. A cardiac arrest is the ultimate medical emergency. Follow these steps to save a life.

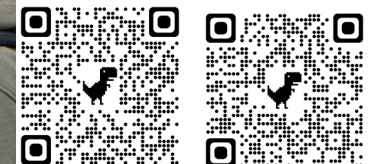
**CALL PUSH RESCUE**  
To learn life saving CPR visit [bhf.org.uk/cpr](http://bhf.org.uk/cpr)



7

#kooth  
#childline

8





## Year 8 CPSHE Spring Term 2

### Rights of Young People

#### Lesson overview

1

Rights of Young People—Legal age in the UK

Rights of Young People—Criminal responsibilities

Rights of Young People— UNICEF



The age of criminal responsibility in England and Wales is 10 years old.

This means that children under 10 cannot be arrested or charged with a crime.

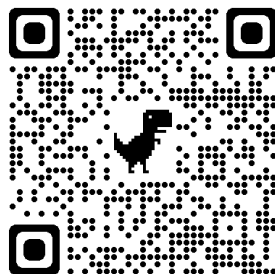
There are other punishments that can be given to children under 10 who break the law (they can be given a Local Child Curfew or a Child Safety Order).

Children between 10 and 17 can be arrested and taken to court if they commit a crime. They are treated differently from adults and are:

- Dealt with by youth courts
- Given different sentences
- Sent to special secure centres for young people, not adult prisons.

3

Keywords	Definitions
Rights	That which is morally correct, just, or honourable.
Legal	Something connected to law or a government's system of rules. An example of legal is the type of action that will be decided by a court.
Criminal	A person who has committed a crime.
UNICEF	UNICEF, also known as the United Nations Children's Fund, is a United Nations agency responsible for providing humanitarian and developmental aid to children worldwide.
CEIAG	CEIAG (Careers Education, Information, Advice and Guidance) is designed to prepare students for life in modern Britain by providing the knowledge, understanding, confidence and skills that they need to make informed choices and plans for their future learning and career.



#### CAREERS EDUCATION, INFORMATION, ADVICE AND GUIDANCE (CEIAG)

Careers education and guidance helps students gain the knowledge and skills needed for their future career choices and gives them the information they will need to get there.

#### What does UNICEF do?

- UNICEF provides child protection to children all around the world by enforcing laws that protect children's rights
- Some laws that UNICEF may help to enforce are laws against poor working conditions or laws that help children from being forced to become soldiers
- UNICEF also helps children meet their basic needs and strive to reach their full potential
- UNICEF provides help to children in 156 countries
- UNICEF helps children in developing countries by providing them with health and nutrition, education, child protection, water supply and sanitation



6	Legal ages in England
	ENG
Leave school	16
Drink alcohol	18 (16 in bars)
Have consensual sex	16
Be charged with a crime	10
Vote	18 (UK elections)
Get married	16 (with parental consent until 18)
Work	13 14 School leaving age
Bet, gamble and play lotteries	18

## Year 9 CPSHE Spring Term 1

### CEIAG

#### Lesson overview

CEIAG—Careers session with Mrs Bellingham

CEIAG—My learning journey

CEIAG—Future learning

CEIAG—Skills for life

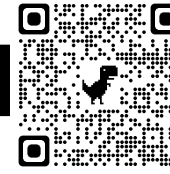
Personal safety—Safer Internet Week

Keywords	Definitions
CEIAG	CEIAG (Careers Education, Information, Advice and Guidance) is designed to prepare students for life in modern Britain by providing the knowledge, understanding, confidence and skills that they need to make informed choices and plans for their future learning and career.
Future	Time which is still to come.
Skills	Train to do a particular task.
Personal Safety	Your personal safety is a general recognition and avoidance of possible harmful situations or persons in your surroundings.



Careers Education, Information, Advice and Guidance

3



Safer  
Internet  
Day 2024

7

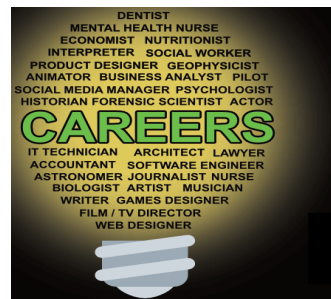
Tuesday  
6 February

Coordinated by the UK Safer Internet Centre

saferinternetday.org.uk

## CAREERS EDUCATION, INFORMATION, ADVICE AND GUIDANCE (CEIAG)

Careers education and guidance helps students gain the knowledge and skills needed for their future career choices and gives them the information they will need to get there.



5

### ASK YOURSELF

What do you enjoy?

What sort of person are you?

How do you like to learn?

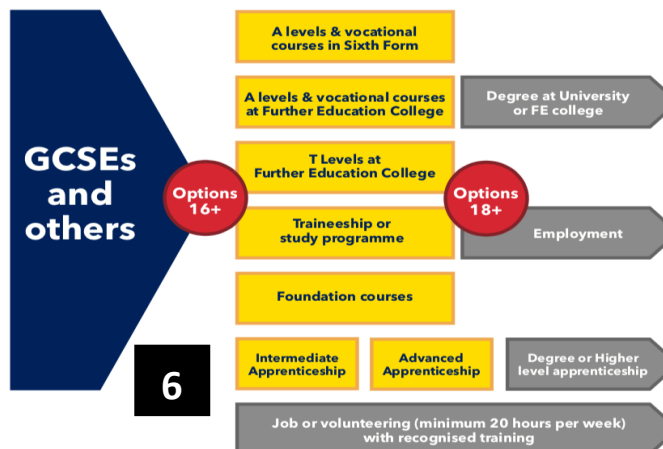
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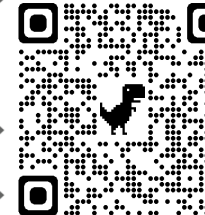
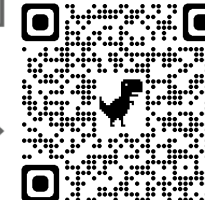
KEY STAGE 4

KEY STAGE 5

18+



6



## TOP TIPS For Internet Safety

8

### Stay anonymous!

- Use another name or a nickname
- Keep your address a secret
- Don't say where you go to school
- Only give your phone numbers to people you actually know
- Make sure you don't give ANY clues about yourself

### Privacy!

- Always make sure your settings really ARE private so YOU choose who can see your account
- Don't give out any personal details
- Don't discuss your problems online
- If you think your account's been hacked, report it and change it

### Think before you post

- Don't post before thinking CAREFULLY and ask:
  - Is it offensive?
  - Could it affect your future employment?
  - Would you be happy for your parents or family to see it?

### Passwords

- Keep your password secure and change it regularly
- Don't use your name or anything easy to guess
- Don't share it with ANYONE, even your friends
- Use a mixture of capitals, numbers and special characters
- If in doubt CHANGE IT!

### Remember...

- NOTHING is private
- Don't say anything you wouldn't say in real life
- Don't post other people's photos
- NEVER post invitations unless you are absolutely sure they will only be seen by a closed group
- Do REPORT people if necessary

### Are they real?

- Do you know this 'friend' in real life?
- Are you REALLY sure it's their account, not someone pretending to be them?
- Remember: some people are VERY clever at pretending to be someone they're not!

### Feeling uncomfortable

- DON'T reply to trolls or people making unkind comments
- Don't be afraid to 'unfriend' or block people who upset you
- Do REPORT people if necessary

### Believe ..... NOT!

- Don't fall for it - things aren't ALWAYS what they seem!
- Everyone exaggerates - you probably do it as well!
- Remember: most people only tell you the good bits!
- Don't be fooled by 'free' offers!

### 9 Walking Home?

Stick to busy, well-lit routes

Try not to walk alone if you can help it

Trust your instinct

Have some money or card with you in case you need a taxi or bus

Make sure your phone is charged & with you

Try not to wear headphones - or just have one in on low!

Call someone while you walk, let them know where you are

Wear footwear you can move quickly in if needed e.g. trainers

Let someone know - what time you are leaving, how long you should be & which way you go!

#suzyamlplugh



## Year 9 CPSHE Spring Term 2

### Criminal Justice System

#### Lesson overview

Punishment and reform

Case studies in crime

Racism and the law

#### Keywords

#### Definitions

Punishment

A penalty inflicted for an offence

Reform

To cause a person to abandon wrong ways of life or conduct.

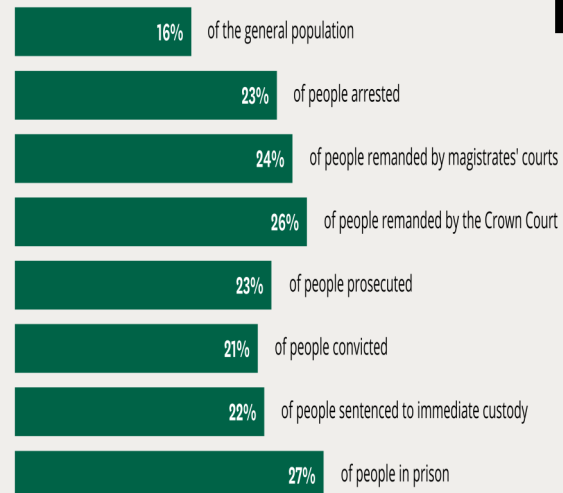
Probation

Means you are serving your sentence but you are not in prison. This could include serving a community sentence or if you have been released from prison on licence or on parole.

Racism

Prejudice, discrimination, or antagonism by an individual, community, or institution against a person or people on the basis of their membership of a particular racial or ethnic group, typically one that is a minority or marginalised.

In 2019, people from a BAME background made up...



Source: Ministry of justice, Criminal justice statistics quarterly December 2019, Outcomes by offence data tool  
Notes: BAME stands for Black, Asian or Minority Ethnicity

When someone is hostile to another person because of their

DISABILITY, NATIONALITY, RACE, RELIGION,  
SEXUAL ORIENTATION OR TRANSGENDER IDENTITY

and they show their hostility by



cps.gov.uk | @cpsuk | #hatecrimematters

## Components of the Criminal Justice System

### Law Enforcement



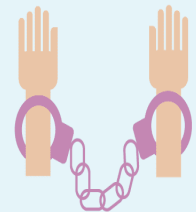
Police patrol communities to help prevent crimes, to investigate incidences of crime, and to arrest people suspected of committing crimes.

### Courts System



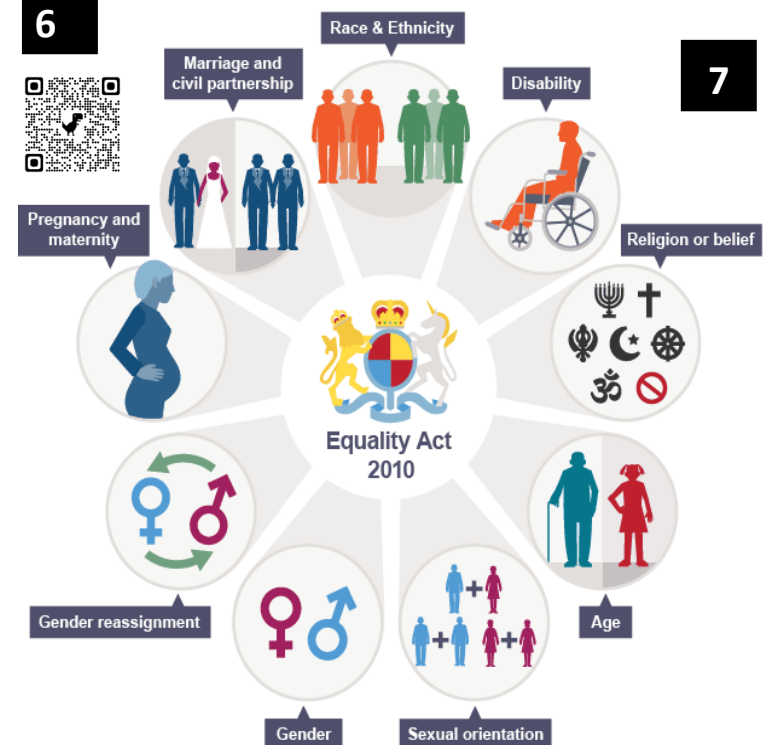
The court system consists of attorneys, judges, and juries, as well as ancillary staff. The guilt or innocence of a suspect is determined in court.

### Corrections System



The corrections system incorporates all forms of sentencing and punishment. It includes incarceration and probation.

6

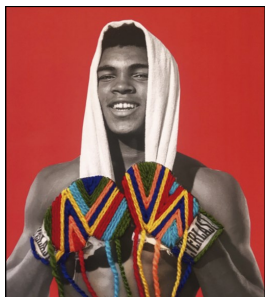


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# Year 8 Art Textiles - Portraits

## 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.



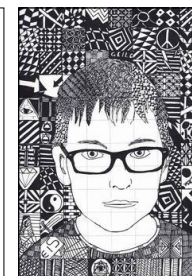
## 3. Techniques

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

Mono Printing

Hand Embroidery

Collagraph Printing

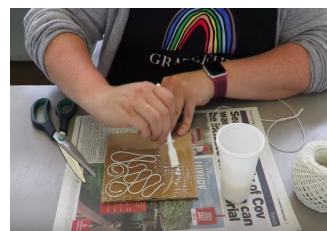


## 4. Mono Printing

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

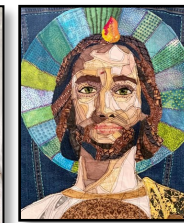
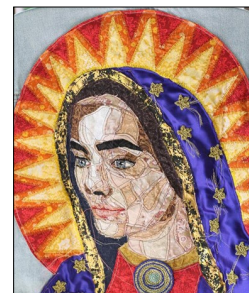
## 5. Hand Embroidery

A way of creating decorative stitching on fabric. Using a variety of stitches and threads to create embellished surfaces. The techniques 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 techniques 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.

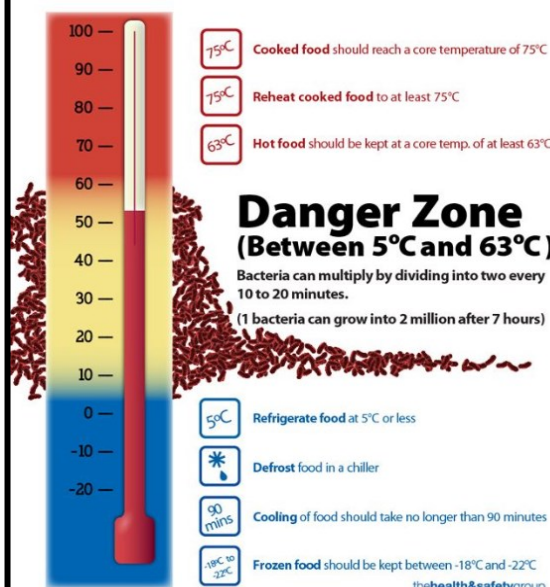
Most of our energy should come from complex starchy foods.

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



## 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

3

Microorganisms need five conditions to grow and multiply:



Time



pH



Moisture



Temperature



Food

5


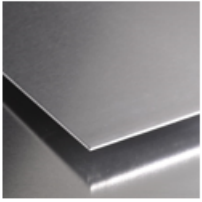

**Biological contamination** - bacteria which might lead to food poisoning. Symptoms of food poisoning can include diarrhoea, vomiting, headaches and fever.

**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.



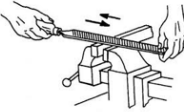



Nutrient	Function and food source
Vitamin A	Keeps the eyes and skin healthy. Found in milk, liver, carrots, red peppers
Vitamin B Group	Releases energy from food. Bread, fish, broccoli, milk, peas, rice
Vitamin C	Keeps connective tissue healthy. Helps the body absorb iron. Oranges, blackcurrants, red 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

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

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

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

## Year 8 Product Design

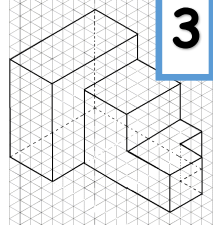
**Top tips for isometric drawing:**

Use the grid

Start with the corner

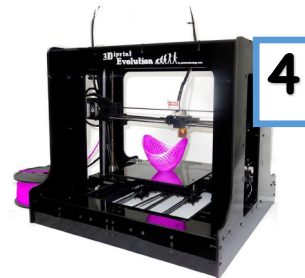
You must have vertical lines (no horizontal)

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.

<b>5</b> E.g. oak, beech <b>Hard-woods</b> E.g. ash, mahogany		Timbers from deciduous trees that lose their leaves in winter. They produce expensive, close grained woods.
<b>Soft-woods</b> E.g. cedar, pine		Timbers from coniferous trees that have needles and cones. They produce cheaper woods with lots of knots.
<b>Manufac-tured Boards</b> 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

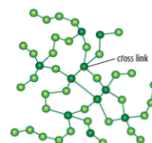
Examples: acrylic, HIPS, PVC



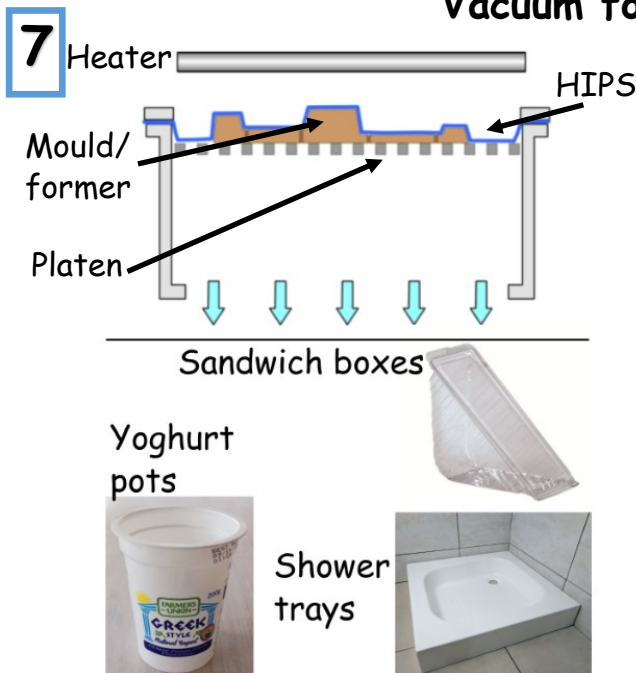
### Thermosetting polymers

- 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.

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



## Performance

A piece that is presented to an audience.



# Year 8 DRAMA COMEDY January - April

## Dramatic convention

Techniques used to communicate to the audience.



## Performance Skills

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



**2. Dark Comedy:** Also known as black comedy, this subgenre focuses on the incongruity of comedic elements and morbid subjects like war, death, and crime.

**4. Parody:** Parodies spoof existing works through imitation and exaggeration.

**6. Farce:** Farce centres around exaggerated characters dealing with improbable situations caused by miscommunication or mistaken identity.

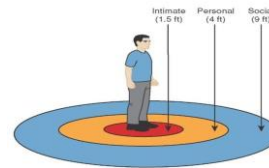
**15. Farce:** Tragicomedies combine comedic elements with serious subjects to explore different aspects of the human experience.

**7. Proxemics:** Where a character stands in relation to other characters and/or the audience.

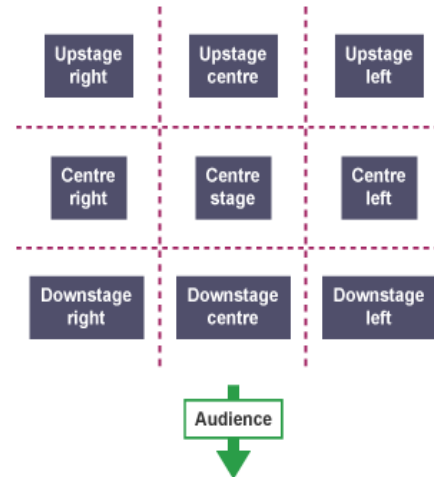
**8. High comedy:** This highbrow form of comedy is exemplified in works like Oscar Wilde's *The Importance of Being Earnest* (1895). Sometimes known as comedy of manners, high comedy typically uses satirical wit in the context of upper-class societies.

**3. Romantic Comedy** This genre of comedy combines themes of romantic love with humour.

**5. Levels:** Using different heights to communicate meaning or to add visual interest.



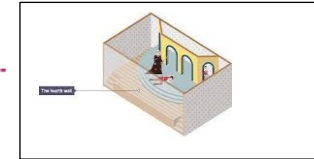
## Areas of the Stage



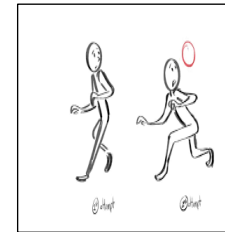
**11. Remember:** The stage is always from the **actor's** point of view, as they are the ones standing on the stage. Demonstrate good **spatial awareness** by using all areas of the stage, where appropriate.

## DRAMATIC CONVENTIONS

**9. 4<sup>th</sup> Wall:** An imaginary wall between the actors and the audience.



**10. Exaggeration:** Making your voice and physicality as 'big' as you can. Being over the top (OTT) creating comedy.



## 12. GENRE: COMEDY

A sketch or storyline that it is intended to make the audience laugh.

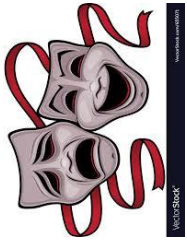
**13. SLAPSTICK COMEDY:** A performance that uses fake violence to make the audience laugh.



**14. Technical SEMIOTICS:** Signs and symbols in drama (Definition) Props, Costume, Lights, Sound, Music, Scenery, Set, Hair, Make-up, Backdrop...



## Y8 Drama Knowledge Organiser



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

## 3. Physical Skills (Skills that involve using your BODY)

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



# Year 8 Poetry- 'Songs of Innocence and Experience by William Blake.

1

**William Blake** – William Blake (1757-1827) was an English poet and painter. He is known as being one of the leading figures of the Romantic Movement, as well as for his personal eccentricities. Blake rejected established religious and political orders for their failures, particularly in how children were made to work – this was one of many things that he viewed as being a part of the 'fallen human nature.' He lived in London for his whole life, barring three years in which he resided in Felpham.



2

**London in 1792** – London was already a large city with nearly a million people. The Industrial Revolution had brought new machinery that saved time, making some very rich, however it put many out of jobs. Machinery was often hazardous to operate, and those working with it were paid poorly. There was no government support for these people, so many lived in total poverty. For every 1,000 children born, almost 500 died before they were 2. Most children couldn't go to school, and had to work.



3

## **Songs of Innocence and Experience**

Published in 1794, these two sets of poems were created by Blake with the aim of showing the 'Two Contrary States of the Human Soul.' The Songs of Innocence collection contains poems that are uplifting, celebrating childhood, nature, and love in a positive tone. The Songs of Experience section (of which London was one of the poems) offered a contrasting tone towards these ideas. Some of the topics covered in these poems were the dangerous working conditions, child labour, and poverty.



4

**Romanticism** – Romanticism was an artistic, literary, musical, cultural and intellectual movement that originated in Europe in the latter half of the 18th Century, peaking in the mid-19th Century. Romanticism is characterised by its emphasis on emotions – glorifying nature and past events – memories and settings are often imaginatively described using vivid imagery. Although Blake struggled to make a living during his lifetime, his ideas and influence were later considered amongst the most important of all the Romantic Poets.



6

## POETRY DEVICES – LANGUAGE

<b>Abstract</b>	An idea rather than a real thing	<b>Internal rhyme</b>	Rhyme that is on the same line
<b>Alliteration</b>	Repeated first letter	<b>Irony</b>	Sarcasm
<b>Antagonist</b>	Evil main character	<b>Metaphor</b>	Something is described as being something else
<b>Assonance</b>	Repeated vowel sound	<b>Mood</b>	Atmosphere
<b>Authentic</b>	Seems genuine/truthful	<b>Onomatopoeia</b>	A verb sounds like what it does
<b>Cliché</b>	Over-used phrase	<b>Personification</b>	A non-human thing is given human qualities
<b>Consonance</b>	Repeated consonant sound	<b>Plosive</b>	Letters p/t/k/b/d/g
<b>Concrete</b>	A solid/real example	<b>Protagonist</b>	Good main character
<b>Colloquial language</b>	Local/casual language	<b>Question</b>	Asks something
<b>Emotive</b>	Makes you feel emotional	<b>Rhyme</b>	Words that sound the same
<b>Euphemism</b>	Alternative words to make something nasty sound okay	<b>Semantic field</b>	Words that are about the same thing
<b>Extended metaphor</b>	A series of metaphors all relating to each other	<b>Sibilance</b>	A repeated s sound
<b>Half rhyme</b>	Nearly rhymes	<b>Simile</b>	Something is described as being like/as something else to describe it
<b>Hyperbole</b>	Exaggeration	<b>Symbol/ symbolism</b>	Something that represents something else
<b>Imagery</b>	Something used to describe something else	<b>Tone/Voice</b>	Emotion

## POETRY DEVICES – FORM

<b>Auto-biographical</b>	About the poet
<b>Ballad</b>	Story poems– often 4 lines stanzas
<b>Blank verse</b>	Verse with no rhyme – usually 10 syllables
<b>Dramatic monologue</b>	A character speaks to the reader
<b>Epic</b>	Tragic/heroic story poems
<b>First person</b>	'I'
<b>Free verse</b>	No regular rhyme/rhythm
<b>Haiku</b>	3 lines, syllables 5/7/5. Often about nature
<b>Lyrical</b>	Emotional and beautiful
<b>Narrative</b>	A story
<b>Ode</b>	Lyrical poem often addressed to one person
<b>Phonetic spelling</b>	Written like it sounds
<b>Rhetoric</b>	Persuasive
<b>Sonnet</b>	14 lines, ababcdcdefefgg, Often love poem
<b>Shape poem</b>	Poem is in shape of the main subject
<b>Third person</b>	He/she/they

5

Blake's quotes:

*'Tiger, tiger, burning bright In the forests of the night, What immortal hand or eye, Could frame thy fearful symmetry?'*

*'To see the world in a grain of sand, and to see heaven in a wild flower, hold infinity in the palm of your hands, and eternity in an hour'.*

*'If the doors of perception were cleansed everything would appear to man as it is, infinite'.*

# Year 8 Poetry- 'Songs of Innocence and Experience by William Blake.

7

## Key Themes



### Authority:

Questioning of authority (church, state, education or commercial) and the need to raise awareness of unacceptable conditions and challenge/rebel against the status quo in the interests of greater freedom and fairness.



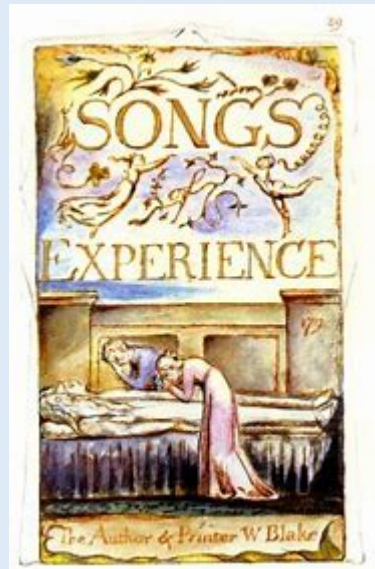
**Childhood:** the purity and sweetness of children in an unspoiled state, and their vulnerability to the harsher experiences of life; the ways in which parents, custodians and society can protect or fail to protect their innocence; the idea of drawing attention to the unheard voices of children, who were one of the most disenfranchised groups in society, as a way of offering new perspectives for the reader as well as exposing the difficulties faced by the young



**Corruption of innocence:** Blake does not favour innocence nor experience: they are "two contrary states". The corruption of innocence when used for the ends of others, was unacceptable to Blake.



**Traps and constrictions:** Blake is deeply concerned with the idea of enslavement and the constrictions placed on ordinary people, particularly the vulnerable and disenfranchised. It could be a condemnation of the Enlightenment's emphasis on the rational and scientific mind at the expense of attention paid to spiritual concerns, or even humanitarian ones like the tackling of social injustice.



8

## First impressions

### William Blake: The Lamb

1. Who is the speaker of the poem?

2. What do you think he is asking the lamb?

3. What do you think the meaning of the poem is?

Why did Blake write it?

Little Lamb who made thee  
Dost thou know who made thee  
Gave thee life & bid thee feed.  
By the stream & o'er the mead;  
Gave thee clothing of delight,  
Softest clothing wooly bright;  
Gave thee such a tender voice,  
Making all the vales rejoice!

Little Lamb who made thee  
Dost thou know who made thee

Little Lamb I'll tell thee,  
Little Lamb I'll tell thee!  
He is called by thy name,  
For he calls himself a Lamb:  
He is meek & he is mild,  
He became a little child:  
I a child & thou a Lamb,  
We are called by his name.  
Little Lamb God bless thee.  
Little Lamb God bless thee.





# Year 8- '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 must now convert to Christianity. Shylock agrees, beaten, sick with the disgrace and humiliation.

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

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.

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.

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

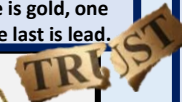
**'twixt** = between

**wench** = girl

**Tarry**= wait



5



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.



REVENGE



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

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.

## 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.

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.



**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.

## YEAR 8 GEOGRAPHY— FLOODING

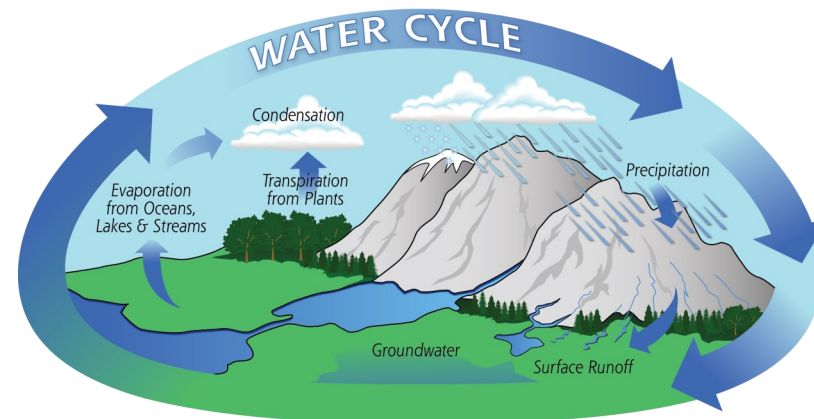
### 1 KEY VOCABULARY—WATER CYCLE

Water cycle	The movement of water in the Earth and atmosphere.
Evaporation	The change of water from a liquid to a gas—happens due to heating.
Transpiration	Loss of water from inside the leaves of plants.
Condensation	The change of water from a gas to a liquid—happens due to cooling.
Precipitation	Any form of water falling from the sky—rain, snow, hail etc.
Surface water	Any water sitting on or moving across the surface of the Earth.
Groundwater	Water held below the ground at the water table (saturated rock)
Impermeable	A material that will not allow water to pass through it.
Permeable	A material that will let water flow through it

2

### THE WATER CYCLE

The water cycle shows the continuous movement of water within the Earth and atmosphere. It is a complex system that includes many different processes. Liquid water evaporates into water vapour, condenses to form clouds, and precipitates back to earth in the form of rain and snow. Water in different phases moves through the atmosphere (transportation). Liquid water flows across land (runoff), into the ground (infiltration and percolation), and through the ground (groundwater). Groundwater moves into plants (plant uptake) and evaporates from plants into the atmosphere (transpiration). Solid ice and snow can turn directly into gas (sublimation). The opposite can also take place when water vapour becomes solid (deposition).

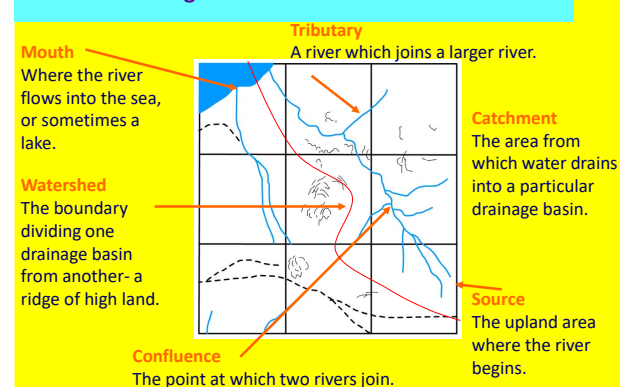


3

### RIVER FEATURES IN THE DRAINAGE BASIN

A river is a method by which the PRECIPITATION is collected and drained off the land. The river begins collecting rainfall on high ground at its SOURCE. It flows downhill due to gravity, other smaller rivers (TRIBUTARIES) join on at CONFLUENCES to create a bigger CHANNEL. The river will get wider and flatter with greater chance of FLOODING until it reaches the MOUTH where it enters the sea. The whole area that the river collects the water from is known as the CATCHMENT AREA or DRAINAGE BASIN.

#### What is a drainage basin?





## YEAR 8 GEOGRAPHY – FLOODING

4

### CAUSES OF FLOODING

Physical causes of flooding	Human factors increasing flood risk
heavy rainfall	urbanisation, because towns and cities have more impermeable surfaces
steep slopes	deforestation, because removing trees reduces the amount of water intercepted and increases run-off
snowmelt	Converting front gardens to
impermeable rock (doesn't allow	Poor land management
very wet, saturated soils	
compacted or dry soil	

5

### BOSCASTLE FLOODING 2004

Boscastle is a small coastal settlement in the south west of England. It flooded in August 2004, washing cars and buildings into the sea and putting peoples' lives in danger.

#### Causes of flooding in Boscastle

Heavy localised rainfall - 89 mm of rain fell in an hour.

Saturated ground from previous rainfall.

Topography of the land. The landscape upstream of Boscastle, a steep-sided valley, acted as a funnel directing vast volumes of water into the village.

Narrow river channels in the village itself.

#### What has Boscastle done to prevent flooding in the future?

£4.5 million has been spent on a flood defence scheme.

The scheme stretches along the valley, incorporating drainage, sewerage systems and land re-grading.

Boscastle car park has been raised in height, which will stop the river from bursting its banks so easily.

New drains allow water to run into the lower section of the river quickly.

The river channel has been made deeper and wider so that it can accommodate more water.



6

### KEY VOCABULARY—RIVERS

Mouth	The point where the river enters the sea or ocean
Tributary	A smaller river or stream joining the main river
Confluence	The point at which a tributary joins
Watershed	The edge of the drainage basin (an area of high ground)
Catchment area/ drainage basin	The area from which a river collects its water
Source	The beginning of a river
Environment Agency	The government organisation responsible for protecting us from flooding
Boscastle	A Cornish village that experienced a huge flash flood in 2004
Bihar	A region in India that experienced a wide scale flood
Embankments	A method of building up the sides of a river to prevent it from flooding
Channelisation	Changing the river bed and banks to allow the river to hold more water and prevent flooding.

- Bihar is located in North East India
- It is one of the poorest regions of India
- Life expectancy of 67 years
- GDP per capita (average earnings) of \$5800
- Seasonal climate meaning the ground is baked dry for months of the year
- Literacy rate (% of adults who can read and write) of 70%



### Causes

During the months of August and September in 2008 there was a long period of heavy rainfall along the foothills of the Himalayas.

Bihar is located in the north east of India, to the south of the Himalayas bordering Nepal.

In Bihar, 42% of the population lives below the poverty line

It is one of the poorest states in India

The monsoon brought heavy rainfall to the foothills of the Himalayas and dramatically increased the discharge of the Kosi.

The lack of vegetation cover meant that rain water wasn't intercepted and easily flowed into the river via surface runoff

the defences were defective or poorly maintained

### Effects

The rainfall ultimately led to widespread floods in Bihar, an Indian state, that made millions homeless and claimed the lives of hundreds of people.

The flood killed 500-2000 people

70% of Bihar's population are farmers most of their food was destroyed.

3 million people were made homeless and sent to refugee camps.

The disaster ended up costing nearly \$542 million

The flood will have washed sewage and pollutants into the Kosi River, polluting it and killing off some wildlife.

The river was forced to flow into a channel that it hadn't flown through in over 100 years. In doing so, it flooded a large portion of Bihar.



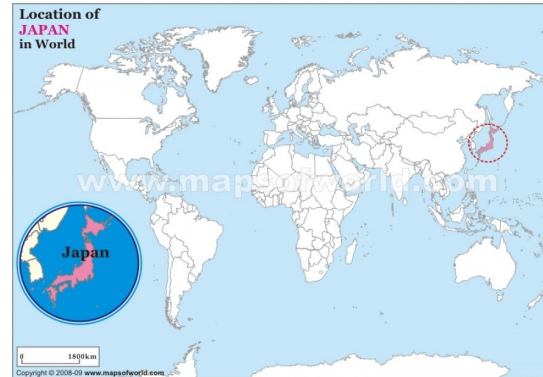
## YEAR 8 GEOGRAPHY – JAPAN

### 1 KEY VOCABULARY

Perceptions	A feeling people have about a place without having visited it.
Stereotypes	An unfair representation of people or a place often based on a perception.
Location	Where a place is in the world.
Tokyo	The capital city of Japan, one of the largest cities in the world with 38 million people living there.
Honshu	The largest inhabited island in Japan, home to the Capital city.
Hokkaido	The most Northerly of the four main islands.
Kyushu	The most southerly of the four main islands.
Shikoku	The smallest of the main inhabited islands.
Climate	The average weather over a period of 25 years.
Minamata disease	A Fishing town that suffered a chemical poisoning of its seas leading to deaths
Nintendo	One of the most successful technology gaming companies.
Bullet train	The high speed rail network covering Japan.

### 2

### LOCATION OF JAPAN



Located in East Asia, with the Sea of Japan to the West and the Pacific Ocean to the East. Japan has over 2000 islands of which there are four main inhabited ones

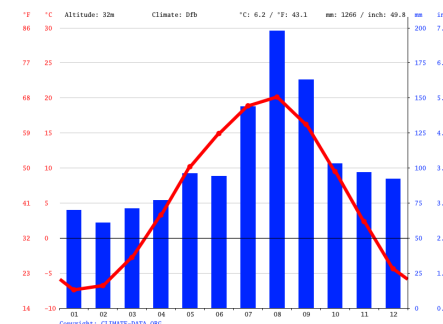


### 3

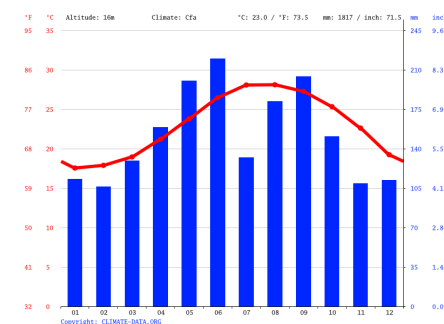
### CLIMATE OF JAPAN

Climate graph one shows Sapporo in the North of Japan, it has a very seasonal temperature change, with very cold sub zero temperatures in the winter months. This makes it excellent for skiing as precipitation falls as snow. In summer months the temperature is mild but that can lead to evaporation and higher levels of rainfall. Climate graph two shows Naha in the South of Japan. It is sub-tropical in climate, meaning it is warm all year round and hot in the summer. The warm temperatures mean that there is a lot of rainfall all year. This means that the farming conditions are good, although due to the high population Japan still has to import much of its food.

Graph 1—Sapporo (North Hokkaido)



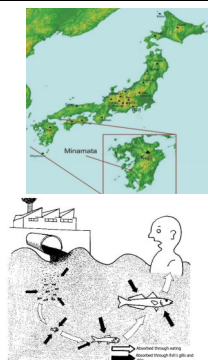
Graph 2—Naha (South Kyushu)



## YEAR 8 GEOGRAPHY – JAPAN

### 4 MINAMATA DISEASE—HUMANS IMPACTING ON THE ENVIRONMENT.

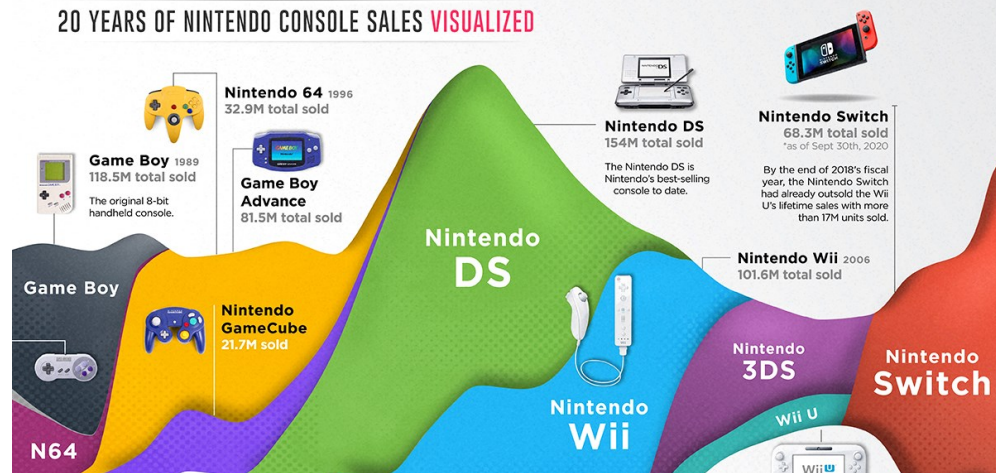
In the 1930's a chemical factory called Chisso were unknowingly releasing Mercury into the seas, this was being eaten by the fish and then when the fish were caught for sale they were passing the Mercury into humans. This led to birth defects and poisonings. After the second world war Japan's economy was devastated and the government tried to get factories up and running as quick as possible. Chisso warned that their process was damaging but the government felt that the economy was more important than the environment.



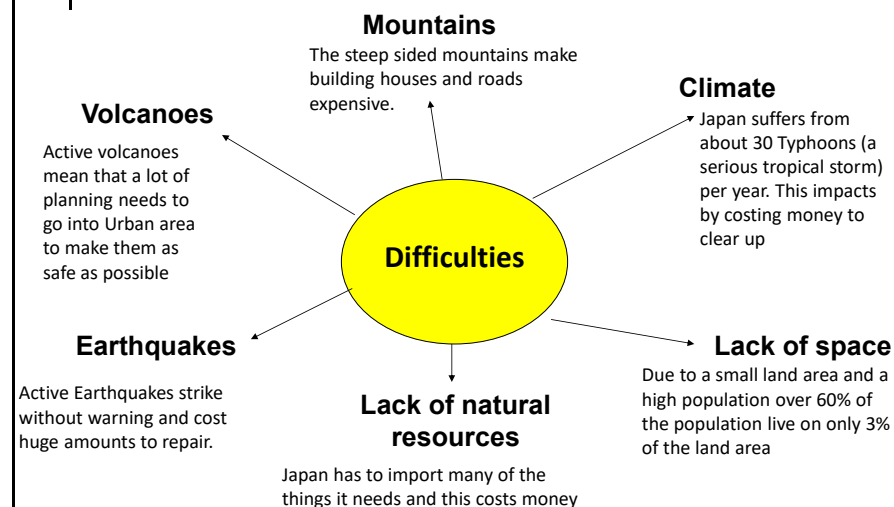
### 5 NINTENDO AS A GLOBAL COMPANY.

Nintendo is one of the technological success of Japan. Started in 1889 as a playing card company, Nintendo has constantly joined up with other manufacturers to be able to offer exciting games. In the 1960's it worked with Disney, then in the 1970's it worked with Mitsubishi to develop the first electronic game, using donkey kong. In 1986 they developed a games console to plug into your TV at home. In 1989 they developed the first hand held games console and in 2004 Nintendo introduced touch screen technology. In 2006 the Wii was the first motion sensitive game. By constantly using hi-tech inventing technology Nintendo have remained one of the most profitable companies in Japan.

#### 20 YEARS OF NINTENDO CONSOLE SALES VISUALIZED

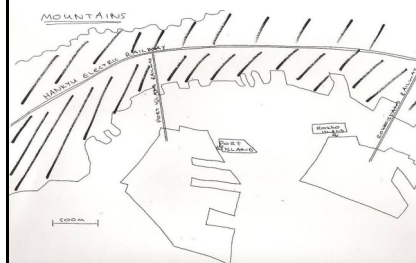


### 6 PROBLEMS AND SOLUTIONS OF LIFE IN JAPAN



#### Solutions to the lack of land.

Japan has created new land in Osaka bay by removing material from mountainous regions inland and then transporting the material by conveyor belt to the sea. The material is then transported by boat and dumped in the ocean. Having done this many times over the last 30 years the Japanese have created new flat islands to be able to build on. This process continues today.



KS3 History knowledge organiser:  
Year 8 Spring term 1: What were the causes of the English Civil War?

Section 1: Key words and **key individuals**

Anglican	An English protestant
Catholic	A Christian who follows the original ‘universal’ practices of worship and belief as directed by the Pope.
Divine Right of Kings	belief that the King is chosen by God and can go no wrong
Grand Remonstrance	A list of demands written by Puritan MPs including the right of Parliament to choose the King’s ministers.
Monarch	A king or queen
MP	Member of Parliament – elected to sit in the House of Commons and be involved in ruling the country
Long term cause	A main reason for an event that usually leads to other reasons. These are often big problems that lead to an increase in tension over time.
Protestant	Someone who protested against the beliefs of the Catholic Church
Puritan	A strict Protestant who believed in simple church services and regular study of the bible. They wanted to ‘purify’ the Church of Catholic practices.
Ship Money	A tax traditionally only be imposed on coastal towns in times of war, to pay for the navy; Charles imposed the tax during peace and across the country.
Short term cause	A reason that ‘sparks’ off an event at a particular point.
Charles I	King from 1625- 49. The only English monarch who has been executed
Henrietta Maria	Charles I’s wife, she was a French Catholic.
Earl of Strafford	Charles’s chief adviser. Also known as Thomas Wentworth. Executed at Parliament’s demand in 1641
John Pym	The leading opponent of Charles in Parliament after 1640. Parliament’s unofficial ‘leader.’
Oliver Cromwell	MP before the war and devout Puritan. Leader of cavalry in New Model Army and Lord Protector between 1653 and 1658
Archbishop of Canterbury William Laud	leader of the Church of England, appointed by Charles in 1633. He favoured a more Catholic form of Christianity



Section 2: The long term causes of the war

The long term causes can be grouped under these three key words:

1. Power

2. Religion



3. Money



1625	Charles succeeds his Father, James as King of England (and Scotland). He marries Henrietta Maria. Charles believed in the Divine Rights of Kings which clashed with Parliament’s growing confidence that it had certain rights and authority.
1629-40	MPs refused to increase taxes to help Charles pay for a war with Spain leading to the 11 years Tyranny; a period when Charles ruled alone and according to his own power and will.
1633	Charles sent Thomas Wentworth to take control of Ireland. On his return he was promoted to his chief advisor and given the title of the Earl of Stafford. Parliament were against this as they did not trust Wentworth, believing him to be too powerful and a threat to their position.
1635-1636	Charles ordered all landowners to pay Ship Money (to pay for the navy). In the past, only people living near the coast paid it, but Charles insisted that everyone must pay. This brought Charles great unpopularity and when a landowner called John Hampden refused to pay, he was sent to prison for disobeying the King.
1637	Charles tried to make the religion of Scotland more like England by making them use the English Prayer Book. The Scots refused so Charles sent in an army to force them. The Scots defeated them and demanded compensation.
1640	Charles was forced to recall Parliament as he needed money to pay the Scots. MPs once again refused to sanction taxes, unless Charles would agree to change the way in which he had been ruling the country.
November 1641	Parliament demands more power by writing a list of demands called the Grand Remonstrance.
January 1642	Charles burst into the House of Commons with 400 soldiers and tried to arrest 5 leading MPs. they had been warned and escaped by boat down the river Thames.
August 1642	Charles gathered his army and Parliament gathered theirs – Civil War had begun

Section 3: The short term causes of the war

November 1641	Parliament demands more power by writing a list of demands called the Grand Remonstrance.
January 1642	Charles burst into the House of Commons with 400 soldiers and tried to arrest 5 leading MPs. they had been warned and escaped by boat down the river Thames.
August 1642	Charles gathered his army and Parliament gathered theirs. Charles raises his standard (flag) at Nottingham signifying that he is starting the war.





## SECTION 1 - KEYWORDS

Artillery	Large guns used on land such as cannons
Cavalier	Soldiers who fought for the King
Cavalry	Soldiers on horseback
Civil War	A war between citizens of the same country
Clubman	Local defence groups protecting their areas from soldiers on both sides
Oliver Cromwell	Parliamentarian and Puritan MP in charge of New Model Army
Gentry	Wealthy landowners
Infantry	Foot soldiers
MPs	Members of Parliament
Musket	Light gun with a long barrel
New Model Army	Parliament's professional army formed in 1645
Pike	A pole weapon used by pikemen
Prince Rupert	Royalist cavalry commander during Civil War
Roundheads	Soldiers who fought on the side of Parliament

## YEAR 8 History: LIFE DURING THE ENGLISH CIVIL WAR / THE EXECUTION OF CHARLES I

### SECTION 2 – THE TWO SIDES OF THE WAR

In 1642, people had to decide whether they supported the King or Parliament. Often they supported the side that got its army into their region first or the side the local landowner supported. Many even changed sides during the war. In over 20 counties the local people organised armies to keep both sides out. Between a third and two thirds of the gentry refused to fight on either side

<b>KING = ROYALISTS (also known as Cavaliers)</b>	<b>PARLIAMENT = PARLIAMENTARIANS (also known as Roundheads)</b>
Controlled the poorer regions of Britain, Ireland and Wales and the North of England	Controlled nearly all the major towns, cities, ports and the navy. This was a great advantage, because the wealth helped them during the war
Nearly half of the MPs in House of Commons fought for the King. Many nobles and some of the gentry also fought on this side	Puritans fought for Parliament and had a strong belief that God was on their side
Catholics fought for the King. Charles also hoped foreign rulers would help by sending troops, but none came	Many commanders like the Sir Thomas Fairfax and Oliver Cromwell were highly experienced
Commanded by Prince Rupert who had experienced but often made poor decisions and let the cavalry get out of control	<b>Gave jobs based on ability rather than nobility</b>
Gave jobs based on nobility rather than ability	<b>Regularly paid following creation of New Model Army</b>
Rich supporters with their own horses and guns	

### SECTION 3 – Weapons and Tactics

Both sides used similar weapons and tactics. At the core of both armies were infantry men who made up the majority of the soldiers.

**Pikemen** carried 16 foot long pikes which were designed to stop horses and soldiers charging into them.

#### Weapons & tactics: musketeers



Musketeer

Both armies had men called **musketeers** who were equipped with muskets (guns).

To load the musket they would pour the gunpowder down the barrel.

The musketeer would then insert a musket ball and ram it down with a special rod.

They would then aim the gun and fire it using the trigger. The trigger moved the burning end of a piece of rope onto the gunpowder in the barrel, causing the gun to fire.



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#### Weapons & tactics: cavalry

The **cavalry** (soldiers on horseback) were equipped with pistols and swords.

The swords were used for slashing at the enemy soldier's heads.

The cavalry's speed around the battlefield made it very important in the Civil War era – battles were often won or lost by the cavalry.

Cavalry soldiers wore a metal helmet and a breast plate. The rest of their uniform was made of leather.



Civil War soldiers did not wear full armour like medieval knights. Which invention had made heavy armour of very little use in a battle?



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## SECTION 4 – Who fought for whom?

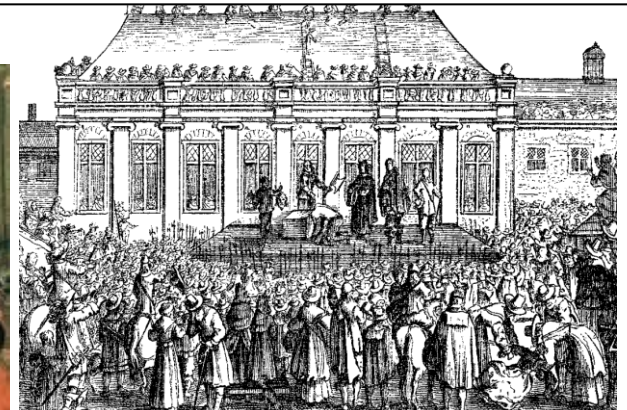
What you would expect	What actually happened
All the rich gentry supported Charles	In fact, many gentry opposed Charles. In Lancashire, for example, 272 members of the gentry supported the King, 138 supported Parliament and nine changed sides during the war.
Most MPs supported Parliament	In fact, nearly half the MPs were on the King's side. And Charles' supporters were not just MPs from the south-east but from all over the country.
Everyone took sides	Between a third and two thirds of the gentry took no active part in the war. In 21 counties armies were organised to keep both sides out!
People chose sides on a matter of principle	Many people did not choose which side they fought on. They tended to support the side whose army controlled their area or the side the local lord supported. Many gentry chose the side they thought would win.

## SECTION 5 – Key Battle of the War

1642	The Battle of Edgehill – was a confused draw. Charles advanced as far as Turnham Drive, 5 miles from London, but when 24,000 Londoners turned out to fight him, he turned back.
1643	Charles tried another attack on London, but he was defeated at the Battle of Newbury.
1644	Parliament made an alliance with the Scottish 'Covenanters' (Protestants) and Oliver Cromwell and his 'Ironsides' joined the parliamentary cavalry. Cromwell defeated a Royalist army at Marston Moor by attacking them at teatime.
1645	Parliament reorganised its armies into the New Model Army led by Cromwell. Charles was decisively defeated at the Battle of Naseby
CLIP Watch	<a href="https://www.youtube.com/watch?v=M_tfkA3dQic">https://www.youtube.com/watch?v=M_tfkA3dQic</a>
1646	Last battles. Royalists surrender at Oxford and Charles is imprisoned in Carisbrooke Castle on the Isle of Wight. Whilst there he secretly persuaded the Scots to invade England. Although the Royalists were defeated this was the last straw. Charles could not be trusted.
Jan 1649	Trial of Charles I. tried by 135 judges
Jan 1649	Charles found guilty of murder and tyranny and executed on 29 <sup>th</sup> January.

## SECTION 6 – Trial and Execution

- The trial was fixed for 20 January 1649 in Westminster Hall. Many people felt very reluctant to be involved and disappeared to their country estates.
- On the first day only 68 of the 135 commissioners turned up. The charged were read by John Bradshaw and Charles refused to accept them. Charles was removed and the trial continued in his absence.
- On 27 January 1649 Charles was brought before the court for sentencing. He was found guilty and was 'to be put to death by the severing of his head from his body'.
- The commissioners were nervous about signing his death warrant and many had to be forced to sign it
- On the morning of 30 January Charles was taken to Whitehall wearing two shirts. He ate a piece of bread and drank some wine and then prayed. At 2pm he stepped onto the scaffold.



## Year 8 History: Cromwell – Hero or Villain

### SECTION 1 – Key words

Republic	A country that is not ruled by a King or queen
Lord protector	Cromwell's title for running the England and Ireland. He turned down the offer to become King
Major general	England was divided into 11 districts. Major Generals were appointed to take control of each district
siege	Enemy surrounds a town cutting off essential supplies

### Section 2-Cromwell fact file



He was born in 1599 Huntingdon to a well off farming Puritan family

He had a deep love of music, enjoyed horse racing hawking and hunting

He was Parliament's chief spokesperson during the Civil War. He became an excellent cavalry commander and created the New Model Army, which led to Parliament's victory.



He became Lord Protector in 1649 and ruled England until 1658

Cromwell had a state funeral but when Charles II became King Cromwell's head was dug up and stuck on a spike outside Westminster Hall. For the next 300 years Cromwell's head had a tumultuous history before being laid to rest at Cambridge University in 1960

### Section 3 – Hero or Villain?

**Cromwell is one of the most famous men in history but he is also a very controversial figure. To some he was a great man who changed the way Britain was run and made it a safer and fairer place to live. But to others he was a power –hungry monster who made Britain a worse place to live. SO WHAT DO YOU THINK?**

Cromwell believed in Parliamentary democracy. When it tried to restrict people's freedom to worship Cromwell said that was wrong and dismissed Parliament.

In 1290 all Jews were expelled from the country. Cromwell allowed them to return and to worship freely.

### HERO OR VILLAIN?

He was an excellent politician and only appointed people for their ability not on their wealth.

In Ireland Cromwell slaughtered people who refused to surrender to him. This included thousands of innocent men, women and children.

He banned music, gambling, dancing and Christmas! Anyone caught playing football was whipped.

He made England stronger and safer by improving the army. Spain and France feared and respected England.

Without Parliament Cromwell ruled on his own – a bit like a King. The country was divided into 11 areas all with its own Major- General, who set laws and taxes. They were very unpopular.

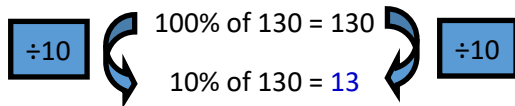
**Section 4 Case Study – Drogheda** – By 1640 over 25,000 English had settled in Ireland. Many of them were Protestant, which caused tensions between them and the Irish who remained Catholic and had supported Charles I. In 1641 this burst out into violence and the Irish killed 1000s of the settlers. In 1649 Cromwell decided to deal with the problem and took an army of 12,000 men and laid siege to the town of Drogheda. He demanded that the people surrendered and threatened to attack if they didn't. There are conflicting arguments as to what happened. Cromwell's side argued that the Irish refused to surrender- whereas the Irish said that they had 'thrown down their weapons on an offer of **quarter**' (to **surrender**). Whilst the actions of both Cromwell and the Irish is debated – the outcome was that 3000 of Irish men, women and children were killed and others sold into slavery abroad. As a result of Drogheda there are no statues of Cromwell in Ireland. The Irish call Cromwell the 'CURSE of IRELAND' **Do you think he deserves this reputation?**



## 1. Finding percentages of amounts (without a calculator)

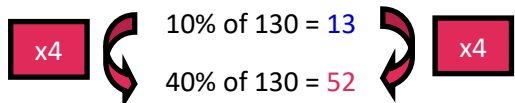
Break down 100% into building blocks to work out other percentages of an amount.

### Find 10% of 130

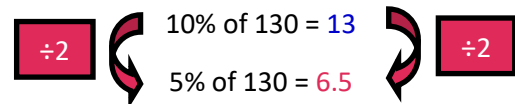


We can use this 10% to help us build other multiples of 10

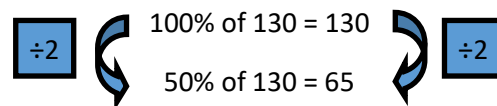
### Find 40% of 130



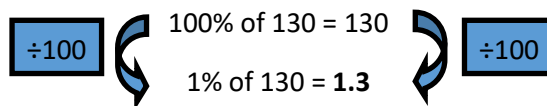
### Find 5% of 130



### Find 50% of 130



### Find 1% of 130



### Use these facts to find 46% of 130

$$\begin{aligned} 10\% &= 13 & 40\% &= 52 \\ 1\% &= 1.3 & 5\% &= 6.5 \\ \text{So } 46\% &= 52 + 1.3 + 6.5 = 59.8 \end{aligned}$$

## 2. Percentage increase

A bank pays 15% interest per year.

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

### Step 1 - find 15% of £20:

10% is £2, 5% is £1,  
so 15% is £2 + £1 = £3

### Step 2 - add it on:

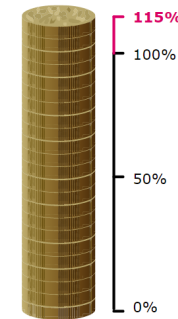
$$£20 + £3 = £23$$

We started with 100% (£20)

We added on 15% (£3)

We are left with 115% (£23)

So the account will have  
£23 in it after one year



## 3. Percentage decrease

A pair of shoes is in a sale.

The sale offers 20% off all prices.

The shoes originally cost £31.

What is the price of the shoes in the sale?

This question needs 2 calculations.

Work out the amount of money taken off.

$$10\% = £3.10 \quad \text{so } 20\% = £6.20$$

Work out the new cost.

£6.20 off leaves

$$\begin{aligned} £31 - £6.20 \\ = £24.80 \text{ to pay} \end{aligned}$$



## Maths, Y8—Percentages (Non Calculator)

## 4. Percentage change

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

In a sale the price of a microwave decreases from £50 to £39.

Work out the percentage decrease in price.

$$\begin{aligned} \text{Actual change} &= £50 - £39 \\ &= £11 \end{aligned}$$

$$\begin{aligned} \text{Percentage change} &= \frac{11}{50} \times 100 \\ &= \frac{1100}{50} = \frac{110}{5} = \frac{22}{1} \\ &= 22\% \text{ decrease} \end{aligned}$$

Multiply the numerator by 100, then simplify the fraction until the denominator is 1.

A car is travelling at 40 km/h. The car increases its speed to 56 km/h.

Calculate the percentage increase in the speed of the car.

$$\begin{aligned} \text{Actual change} &= 56 - 40 \\ &= 16 \end{aligned}$$

$$\begin{aligned} \text{Percentage change} &= \frac{16}{40} \times 100 \\ &= \frac{1600}{40} = \frac{160}{4} = \frac{40}{1} \\ &= 40\% \text{ increase} \end{aligned}$$

## 5. Reverse percentages

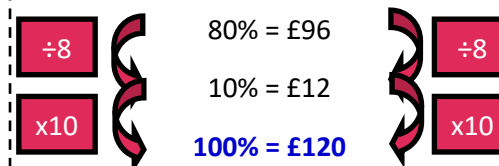
A shop has a sale, 20% off all items.

Sophie pays £96 for some sunglasses.

How much did the sunglasses cost before the sale?

$$100\% - 20\% = 80\%$$

The sunglasses cost 80% of their original price



The sunglasses cost £120 before the sale

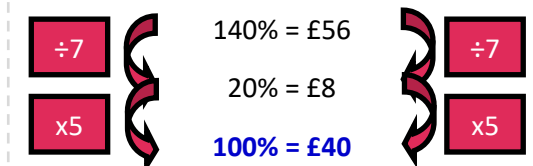
A shop sells boots for £56 a pair.

The shop makes a profit of 40%.

What price did the shop pay for the boots?

$$100\% + 40\% = 140\%$$

The shop sells the boots for 140% of their original price



The shop paid £40 for the boots



## 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?

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

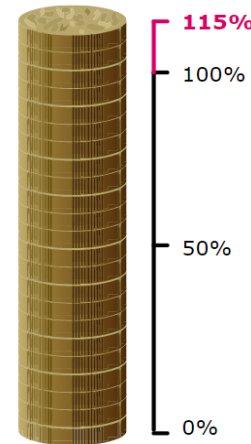
**What is 115% as a decimal?**

115% is equivalent to 1.15.

**1.15 is the multiplier.**

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

$£20 \times 1.15 = £23$



## 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?

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

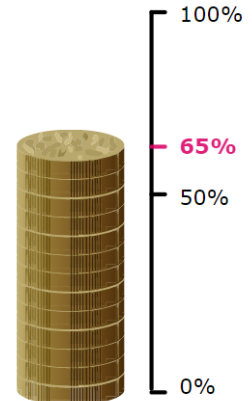
**What is 65% as a decimal?**

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

**0.65 is the multiplier.**

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

$£20 \times 0.65 = £13$



## Maths, Y8 - Percentages (Calculator)

## 4. Percentage change

**percentage change =**

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

actual increase in hourly pay:  $£9.83 - £9.48 = £0.35$

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

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

**Write the increase as a percentage.**

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

**Calculate the percentage reduction.**

actual reduction:  $721 - 684 = 37$

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

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

## 5. Reverse percentages

In these questions we have to find the **original amount**.

A TV set costs £190 in the sale. **What did it cost before the sale?**

A 5% decrease gives a multiplier of 0.95

We have original price  $\rightarrow \times 0.95 \rightarrow £190$

Working backwards  $? \leftarrow \div 0.95 \leftarrow £190$

The original price is  $£190 \div 0.95 = £200$



Saim invests some money at 2% interest for 1 year.

After 1 year it is worth £204.

**How much did he invest?**

An increase of 2% gives a multiplier of 1.02

We have original price  $\rightarrow \times 1.02 \rightarrow £204$

Working backwards  $? \leftarrow \div 1.02 \leftarrow £204$

$£204 \div 1.02 = £200$

## 1. Understanding Expressions & Substitution

Algebra uses letters called **variables** to represent unknown numbers

$$2x - 3 \quad \text{An unknown multiplied by 2 then subtract 3} \quad \text{If } x = 6, \quad 2x - 3 = 2 \times 6 - 3 = 9$$

$$\frac{x+4}{2} \quad \text{An unknown number add 4, then divided by 2} \quad \text{If } x = 6, \quad \frac{x+4}{2} = \frac{6+4}{2} = 5$$

## 2. Simplification

When we add **like terms** we describe how many of each letter we have

$$c + c + d + d + c + b = b + 3c + 2d$$

$$5z + 2y - 3z + y = 2z + 3y$$

## Maths, Y8 - Equations

## 6. Solving equations with unknowns on one side

This is where you work backwards to find the unknown number

$$\begin{array}{rcl} 2x + 8 = 18 & & \\ (-8) & & (-8) \\ 2x = 10 & & \\ (\div 2) & & (\div 2) \\ x = 5 & & \end{array}$$

$$\begin{array}{rcl} 3(x + 4) = 33 & & \\ (\div 3) & & (\div 3) \\ x + 4 = 11 & & \\ (-4) & & (-4) \\ x = 7 & & \end{array}$$

$$\begin{array}{rcl} \frac{x-8}{2} = 6 & & \\ (\times 2) & & (\times 2) \\ x - 8 = 12 & & \\ (+8) & & (+8) \\ x = 20 & & \end{array}$$

## 7. Solving equations with unknowns on both sides

Start by eliminating the unknowns from one side of the equation

$$\begin{array}{rcl} 6x + 7 = 4x + 19 & & \\ (-4x) & & (-4x) \\ 2x + 7 = 19 & & \\ (-7) & & (-7) \\ 2x = 12 & & \\ (\div 2) & & (\div 2) \\ x = 6 & & \end{array}$$

$$\begin{array}{rcl} 3x + 3 = 7x - 5 & & \\ (-3x) & & (-3x) \\ 3 = 4x - 5 & & \\ (+5) & & (+5) \\ 8 = 4x & & \\ (\div 4) & & (\div 4) \\ 2 = x & & \end{array}$$

$$\begin{array}{rcl} 5x + 3 = -6x + 19 & & \\ (+6x) & & (+6x) \\ 11x + 3 = 19 & & \\ (-3) & & (-3) \\ 11x = 16 & & \\ (\div 11) & & (\div 11) \\ x = 1.45 \text{ (to 2 dp)} & & \end{array}$$

## 3. Expanding single brackets

Multiply everything in the bracket by the number on the outside

$$6(x + 2) = 6x + 12$$

×	x	2
6	6x	12

## 4. Factorising single brackets

This is the reverse of expanding brackets.

Take the expressions and put the brackets back in.

Factorise the expression.

$$6x + 24$$

Do this by finding the highest common factor of your terms

6x and 24 are both multiples of 6.

Therefore 6x + 24 can be written as 6 × (something).

×		
6	6x	24

To find out what the unknown is you must divide 6x and 24 by 6.

$$6x \div 6 = x$$

$$24 \div 6 = 4$$

×	x	4
6	6x	24

$$= 6(x + 4)$$

## 5. Expanding double brackets

$$(x + 2)(x + 3)$$

×	x	2
x	x <sup>2</sup>	2x
3	3x	6

$$\begin{aligned} &= x^2 + 2x + 3x + 6 \\ &= x^2 + 5x + 6 \end{aligned}$$

$$(2x - 5)(x + 3)$$

×	x	3
2x	2x <sup>2</sup>	6x
-5	-5x	-15

$$\begin{aligned} &= 2x^2 + 6x - 5x - 15 \\ &= x^2 + x - 15 \end{aligned}$$

## Year 8 French Spring Half Term 3 Tout n'est pas rose !

### Et le week-end ? And at the weekend ?

Le week-end at the weekend	je me lève I get up
Le samedi matin on Saturday morning	je me couche I go to bed
Le samedi après-midi On Saturday afternoon	je fais la grasse matinée I have a lie in
Le samedi soir On Saturday evening	je fais du shopping I go shopping
Le dimanche matin On Sunday morning	je fais de l'équitation I go horse-riding
Le dimanche après-midi On Sunday afternoon	j'écoute de la musique I listen to music
Le dimanche soir On Sunday evening	je joue aux jeux vidéo I play video games
Quand j'ai le temps When I have time	je joue au handball I play handball
Chaque semaine Every week	je chatte sur Internet I chat on the Internet
Tous les jours Every day	je regarde la télé I watch TV
Une fois par semaine Once a week	je vais au cinéma I go to the cinema
Deux fois par semaine Twice a week	je vais à des fêtes I go to parties
	je vais en ville I go to town

### Tu reçois de l'argent de poche? Do you receive pocket money?

Oui, je reçois Yes, I receive	dix livres £10	par semaine per week
Mes parents me donnent My parents give me	vingt livres £20	toutes les deux semaines every 2 weeks
Ma mère me donne My mum gives me	trente livres £30	par mois per month
Mon père me donne My dad gives me	quarante livres £40	régulièrement regularly
		pour mon anniversaire for my birthday
		pour Noël for Christmas
		comme argent de poche as pocket money

Je ne reçois pas d'argent de poche. I don't receive any pocket money.

### Quels petits boulots dois-tu faire? What chores do you have to do?

Je dois I must	faire la vaisselle / les courses / mon/son lit do the washing up / shopping /make my/his/her bed
Mon frère doit My brother must	tondre le gazon mow the lawn
Ma sœur doit My sister must	ranger ma/sa chambre tidy my/his/her room

Chores and pocket money

<https://quizlet.com/30408488/1/le-menage-et-largent-de-poche-flash-cards/>







### les appareils numériques

1	keyboard	le clavier
2	to click	cliquer
3	screen	l'écran
4	printer	l'imprimante
5	file	le fichier
6	digital	numérique
7	laptop	l'ordi portable
8	computer	l'ordinateur
9	tablet	la tablette
10	software	le logiciel
11	ringtone	la sonnerie
12	key	la touche

### Technologie

J'utilise  
toujours- I  
always use

mon ordinateur - a  
computer  
mon ordinateur  
portable - a laptop  
mon portable - a  
mobile phone

pour -  
for/to

pour que  
je puisse

regarder mes séries  
préférées - watch my  
favourite series  
organiser les sorties avec mes  
amis - organise to go out with  
my friends  
contacter ma famille - get in  
touch with my family  
tchatter avec mes amis - chat  
to my friends  
télécharger/écouter de la  
musique - download/listen to  
music  
passer le temps- pass time  
prendre/ partager des photos  
- take/share photos  
envoyer des messages - send  
messages  
surfer sur Internet- browse  
the internet  
envoyer - to send  
enregistrer - to record  
recevoir - to receive

### la communication

1	to send	<u>envoyer</u>
2	chat room	le forum
3	online	<u>en ligne</u>
4	password	le mot de passe
5	to download	<u>télécharger</u>
6	to watch	<u>regarder</u>
7	social network	le <u>réseau social</u>
8	to stay in contact	<u>rester en contact</u>
9	to purchase	<u>faire des achats</u>
10	to talk online	<u>tchatter</u>
11	to surf the internet	<u>surfer sur internet</u>

### COMBIEN DE FOIS ?

le week-end

tout le temps

tous les jours

J'utilise mon portable...

souvent

en classe!

tous les soirs

Si on demande mon avis,  
je dirais que c'est

extensif - extensive  
amusant - fun  
nécessaire - necessary  
disponible - available  
dangereux - dangerous  
pratique - practical  
rapide - fast  
facile à utiliser - easy to  
use

populaire - popular  
utile - useful  
gratuit - free  
ridicule - ridiculous  
lent - slow  
simple - simple  
interactif - interactive



¿Qué estudias?

What do you study?

Estudio

I study

el colegio

School

estudiar

To study

el instituto

school

obligatorio

compulsory

Me aburre

It bores me

Me anima

It cheers me up

Me apasiona

It is a passion of mine

Me da igual

It is all the same to me

Me entretiene

It entertains me

El/la professor(a) es...

The teacher is...

despistado/a

Forgetful

estricto/a

Strict

gracioso/a

Funny

guay

Cool

inteligente

Intelligent

tolerante

Tolerant

trabajador/a

Hard-working

aburrido/a

boring

difícil

difficult

divertido/a

fun

duro/a

hard

fácil

easy

interesante

interesting

práctico/a

practical

útil

useful



El español



El inglés



El francés



La informática



La música



El teatro



La historia



Las matemáticas



Las ciencias



La tecnología



La religión



El dibujo



La educación física



La geografía

### Aa Gramática

p.132; WB p.64

#### The verb estudiar

Confidently using a regular *-ar* verb such as *estudiar* ('to study') in a range of tenses means you can become fluent much more quickly.

estudio	<i>I study</i>
estudiaba	<i>I used to study</i>
voy a estudiar	<i>I am going to study</i>
estudiaría	<i>I would study</i>

### Patrones y reglas

When saying what you or others study, you do not need to use the definite article.

- *Estudio ~~el~~ español, ~~las~~ ciencias y ~~la~~ educación física.*

But when giving your opinion on a subject, the definite article is needed.

- *Me gusta **el** dibujo y me encanta **la** historia.*



<https://quizlet.com/gb/499872303/mi-insti-61-year-7-unit-6-claro-1-flash-cards/>

<https://quizlet.com/gb/499873777/mi-insti-62-year-7-unit-6-claro-1-flash-cards/>

¿Qué hora es?

What time is it?

Es/Son

It is...

La hora...

The hour

¿A que hora?

At what time?

A la/las

at...

y cuarto

Quarter past

y media

Half past

menos cuarto

Quarter to



### Patrones y reglas

To say on what days you normally do something, use *los*. For Saturday and Sunday, add an *-s*.

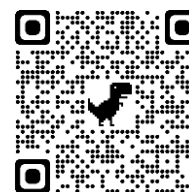
- *los lunes* on Mondays
- *los sábados* on Saturdays
- *los domingos* on Sundays



Almuerzo...	I have for lunch...
Bebo...	I drink...
Ceno...	I have for dinner...
Como...	I eat...
Desayuno...	I have for breakfast
Meriendo...	I have for a snack
Tomo...	I have/take

arroz	Rice
carne	Meat
ensalada	Salad
fruta	Fruit
marisco	Seafood
patatas fritas	Chips
pescado	Fish
pollo	Chicken
queso	Cheese
salchichas	Sausages
salmón	Salmon
sopa	Soup
tomate	Tomato
tostadas	Toast
verdura	Vegetables
yogur	Yogurt
agua	Water
bebida	Drink
leche	Milk
zumos	Juice
zumos de piña	Pineapple Juice

cantina	Canteen
comida	Food
vegetariano/a	Vegetarian



### Aa Gramática

p.22; WB p.10

#### Comer and beber in the present tense

Comer (to eat) and beber (to drink) are regular verbs in the present tense.

	comer	beber
yo	como	bebo
tú	comes	bebes
él/ella	come	bebe
nosotros/as	comemos	bebemos
vosotros/as	coméis	bebéis
ellos/as	comen	beben

### Aa Gramática

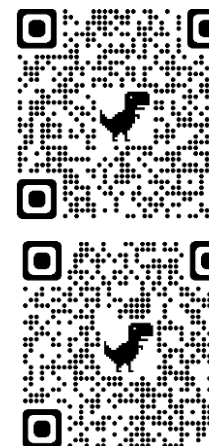
#### Negative expressions

There are several ways to form a negative sentence in Spanish.

No me gusta el arroz.	I don't like rice.
Nunca como ceviche.	I never eat ceviche.
No bebo ni zumo ni leche.	I drink neither juice nor milk.
No me gustan nada los champiñones.	I don't like mushrooms at all.

Note that *nada* is also used to mean 'nothing' or 'anything' in a negative sentence:

No como nada.	I eat nothing/I don't eat anything.
---------------	-------------------------------------



Mi plato favorito es... My favourite dish is...

la cebolla	onion
el champiñon	mushroom
los guisantes	peas
el pimiento	pepper
el plátano	banana
el refresco	fizzy drink
amargo/a	bitter
asqueroso/a	disgusting
delicioso/a	delicious
dulce	sweet
insípido/a	tasteless
picante	spicy
sabroso/a	tasty
salado/a	salty
tradicional	traditional
Contener	to contain
el ingrediente	ingredient

¿Qué desea? What would you like?  
¿Qué va a tomar? What are you going to have?

Para el primer plato... For the first course ...  
Para el segundo plato... For the second course...

alérgico/a	allergic
el apetito	appetite
el/la camarero/a	waiter/waitress
la cuenta	bill
el menú	menu
servir	to serve
el/la vegano/a	vegan
fresco/a	fresh

<https://quizlet.com/421940251/claro-2-11-que-hambre-flash-cards/>  
<https://quizlet.com/424596540/claro-2-unit-12-nam-nam-flash-cards/>  
<https://quizlet.com/424597037/claro-2-unit-13-una-de-bravas-por-favor-flash-cards/>



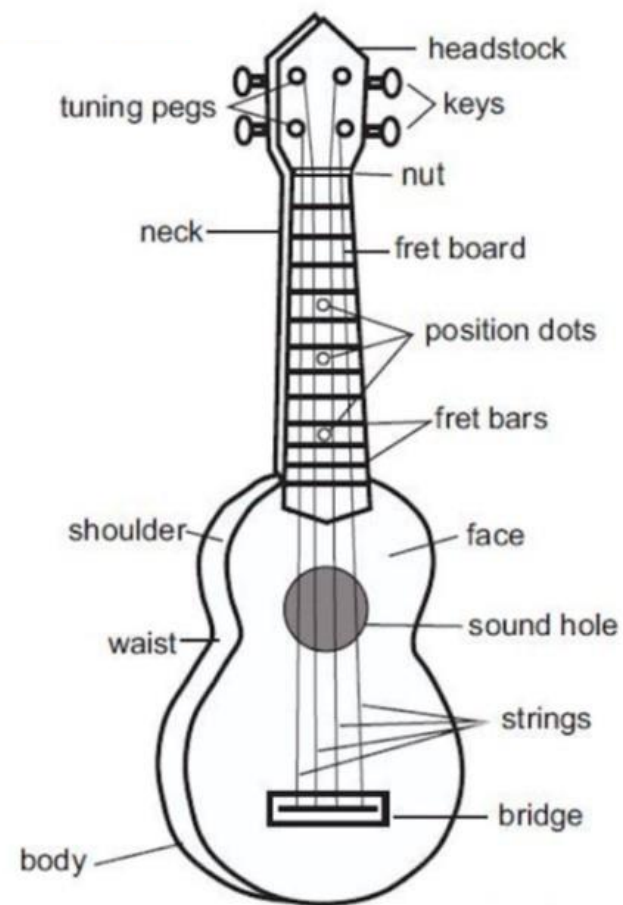


## Year 8 Music – Battle of the Bands – Ukulele Knowledge Organiser

### Section 1: Key Words

Strumming	Brushing fingers over all four strings at the same time
Plucking/picking	Playing individual strings, one at a time
Structure	The sections of a piece of music e.g. verse/chorus
Introduction	The section of music before the singing starts
Verse	A part of a song—the lyrics change for each verse but the melody stays the same.
Chorus	A part of a song; the lyrics and melody are the same for every chorus.
Bridge	A contrasting section which links the verse to the chorus
Middle 8	A section in the middle of a song which contrasts the verse and chorus. It is normally eight bars long.
Instrumentation	The instruments used in a piece of music. In pop music these normally include drum kit, guitar, bass guitar and piano
Melody	The main tune (usually sung by the singer)
Chord	Two or more notes played at once
Bass line	The lowest pitched part
Riff	A repeated pattern
Melody and accompaniment	The typical texture used in pop songs consisting of a main tune and supporting parts

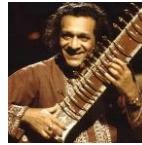










### Section 2: Ukulele Diagram and finger positions



# Indian Classical Music Knowledge Organiser Year 8 – Term 2

A **RAGA** performance is not worked out beforehand and relies on a **RAGA** (scale) and **TALA** (rhythm) to which considerable **IMPROVISATION** and **ORNAMENTATION** are added by the performers. Some performances are very long and can last all night!

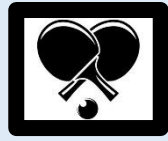
<u>Characteristic Rhythms and Metres, Traditional Rhythm Patterns &amp; Repetition and Ostinato</u>	<u>Pitch &amp; Melody and Harmony &amp; Tonality</u>		<u>Dynamics</u>
Based on <b>TALAS</b> (cyclic/repeating rhythm patterns) played by the <b>TABLA</b> . One single <b>TALA</b> used for a piece. Each <b>TALA</b> has a certain number of beats (regular and irregular <b>TALAS</b> are used). The most popular <b>TALA</b> is called <b>TINTAL</b> – 16 beats per cycle. Over 300 <b>TALAS</b> . <b>HAND CLAPS</b> and <b>WAVES</b> are used to mark certain beats.	Melodies based on <b>RAGAS</b> (scale/mode) – patterns of notes with strict rules about usage. <b>RAGAS</b> (scales) associated with a particular time of day or night or season and have different <b>MOODS</b> . Some <b>RAGAS</b> (scales) vary in ascent and descent <i>e.g. Raga Vibhas (morning Raga); Raga Behag (evening Raga)</i> . <b>RAGAS</b> are written down used <b>SARGAM</b> notation.		Generally increase throughout a Raga performance starting of softly ( <i>p</i> ) during the <b>ALAP</b> and <b>JHOR</b> with a gradual <b>CRESCENDO</b> in the <b>JHALA</b> and very loud at the end.
<u>Texture</u>	<u>Tempo</u>	<u>Ensemble</u>	<u>Form &amp; Structure</u>
There are <u>three basic layers</u> to the texture of Indian Classical Music: <b>MELODY</b> (Voice, Sitar, Sarangi, Bansuri, Esraj or Sarod performing the melodic form of the Raga); <b>DRONE</b> (Tanpura or Harmonium performing long sustained notes); <b>RHYTHM</b> (Tabla performing the rhythmic Tala). The opening three sections of a Raga performance all have a <b>2-PART TEXTURE</b> (melody and drone), the final Gat (or Bandish) section when the Tabla enters performing the Tala has a <b>3-PART TEXTURE</b> .	<b>ALAP</b> – slow and free unmetred rhythm with no recognisable beat or pulse. <b>JHOR</b> – speeds up and becomes more rhythmic. <b>JHALA</b> – further increase in tempo and greater sense of metre. <b>GAT</b> – very fast tempo with complex rhythms. <b>TEMPO RUBATO</b> sometimes added by performers during performance.	Indian Classical musicians must work together in order to interpret the music and perform effectively as one including starting and stopping together, agreeing tempo and dynamic changes, similar interpretation of expression and articulation ( <i>accents, staccato</i> ) as well as balance between parts.	<b>FOUR</b> sections (no breaks) <b>ALAP</b> – melody and drone, free unmetred, slow, soft. <b>JHOR (JOR)</b> – melody and drone, increase in speed, more rhythmic <b>JHALA</b> – melody and drone, more speed and improvisation <b>GAT (BANDISH)</b> – Tabla enters, tempo and dynamics increase.

<u>Origins and Cultural Context of the Traditional Music</u>	<u>Musical Characteristics of Folk Music</u>	<u>Impact of Modern Technology on Traditional Music</u>	<u>Artists, Bands &amp; Performers of Indian Classical Music</u>					
Around 1700 BC. Developed in temples and royal palaces. Ragas and Talas learnt by the <b>ORAL TRADITION</b> . Master-Student tradition. Spirituality (Hinduism) an important part.	A <b>RAGA</b> performance based on one <b>RAGA</b> and one <b>TALA</b> with freedom for <b>IMPROVISATION</b> and <b>ORNAMENTATION</b> during performance. No fixed length.	Available via the internet (YouTube®) and heard at cinema, radio and live concerts. Indian instruments now heard in jazz, pop and rock (live or sampled)	<div> <b>Ravi Shankar</b></div> <div> <b>Anoushka Shankar</b></div>					
<u>Instrumentation – Typical Instruments, Timbres and Sonorities</u>								
<div><b>Sitar</b> </div>	<div><b>Tanpura</b> </div>	<div><b>Sarod</b> </div>	<div><b>Sarangi</b> </div>	<div><b>Esraj</b> </div>	<div><b>Harmonium</b> </div>	<div><b>Bansuri</b> </div>	<div><b>Singer</b> </div>	<div><b>Tabla</b> </div>



# Badminton Y8

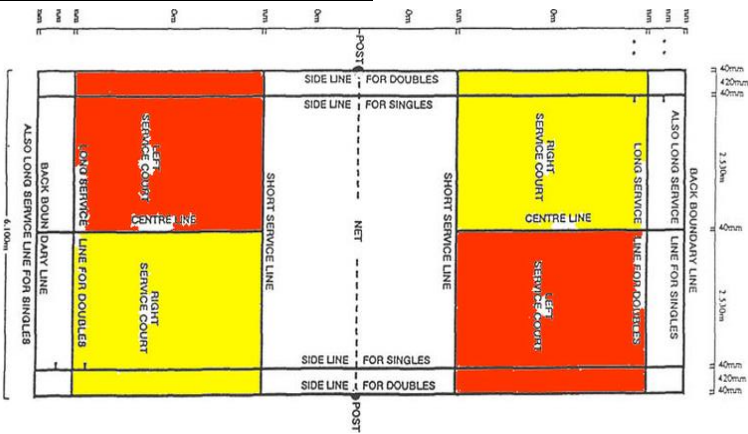
## Knowledge Organiser



### 1. Serving System- Doubles

1. Each side only has one serve. This means if you start serving and lose the point, the serve it passes to the other team.
2. Players only change side of the court if they win a point on their serve.
3. When your score is even you serve from the right hand side of the court, if its odd serve from the left.

### 3. Badminton Court - Doubles



### 6. Components of Fitness

**Cardiovascular Endurance** – The ability of the heart and lungs to supply oxygen to the working muscles

**Power** – The product of speed and strength, ie speed x strength.

**Co-ordination** – The ability to use two or more parts of the body together smoothly and efficiently

### 7. Key Words

**Footwork** – the way in which you move your feet to move around the court.

**Ready Position** – the waiting position before you move or play a shot.

**Trajectory** – the path followed by the shuttle once hit by the racket.

### 2. Skills & Techniques

**Grip and ready position:** To be able to demonstrate & use the correct grip and ready position.

**Overhead/Underarm Clear:** To develop the skill of outwitting an opponent using a combination of shots. Teaching points; Position of shuttle- key to shot, Aim towards flight of shuttle with non racket hand. Snap wrist on contact, high arc of shuttle

**Drop shot:** To be able to outwit opponents using simple drop shot. Teaching points; deception, low over net & use of angles.

**the Smash:** To understand the importance of movement and preparation for an effective smash. Teaching points; Shuttle in front of head, Snap wrist, Aim towards ground

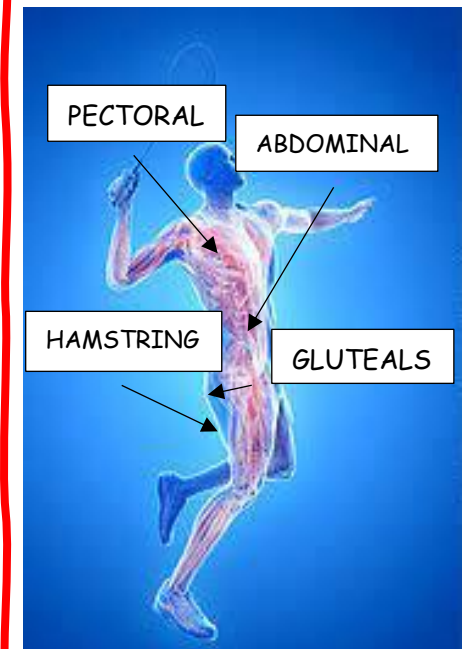
**Low Serve:** holding the racket using the thumb grip. The stance should be square or slightly staggered with the racket side foot in front of the other foot. The feet and body should be facing the opponent. The shuttle should be held at waist height, and body weight should be distributed between both feet.

**High Serve:** Most of the bodyweight should be placed on the dominant (rear) foot. Take the arm back into the backswing position with the wrist and hand cocked. Bodyweight should then be shifted on to the non-dominant (front) foot. To produce the pace on this serve a lot of quick wrist action, and forearm rotation is needed. Make contact with the shuttle at thigh level.

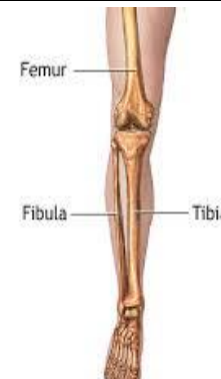
### 4. Rules:

1. The player/pair winning a rally adds a point to its score.
2. The player/pair winning a game serves first in the next game.
3. A point is scored when the shuttlecock lands inside the opponent's court or if a returned shuttlecock hits the net or lands outside of the court the player will lose the point.

### 5. Muscles Used in Badminton



### 8. Bones Used in Badminton



# YEAR 8 HANDBALL KNOWLEDGE ORGANISER

1.

## Rules of the Game.

1. Ball can be held for maximum of 3 seconds when stood still
2. Outfield players cannot enter either 'D'
3. A maximum of three steps can be made before and after a bounce of the ball
4. Contact with the ball cannot be made with the lower leg/foot unless you are a goalkeeper
6. When a foul is committed this is a free throw with the opponents to stand at least 3 metres away from the ball
5. Any contact made must be towards the front of an opponent – none can be made from behind

2.

## Passing & Receiving – How do we throw and catch the ball effectively in handball whilst on the move?

You may not always be receiving the ball from a static position.

Try to receive the ball slightly in front of you so that receiving the ball does not halt momentum

- Place hand out in front to act as a target for your teammate
- Relax fingers to act as a shock absorber when the ball makes contact with the hand
- Bend elbows slightly to aid with this
- Bring other hand on top of the ball to ensure ball is secure in grip



3.

## Moving with the ball – How can we move more effectively with the ball after three steps?

After taking three steps we can then bounce the ball before taking three more steps – **3 steps – bounce – 3 steps**

### Things to note:

- Should only be used when there is space in front
- Do not bounce the ball at feet or right in front of opponent

4.

## What fitness components are important in handball?

### Components of Fitness

**Balance** – to be able to stay upright over the base of support whilst jumping up to block

**Speed** - to move the legs quickly to move past an opponent

**Coordination** – ability to move arms to pass whilst using eyes to look for the target

**Power** – to ensure that shooting is performed explosively to make it harder for the goalkeeper to save

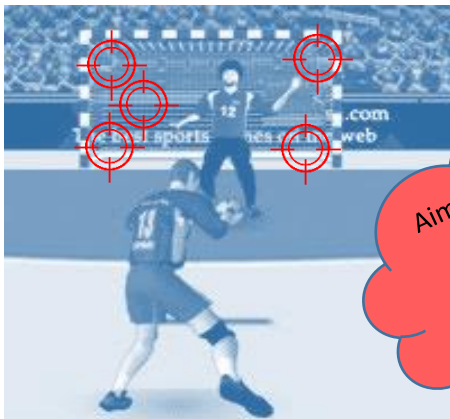
**Reaction Time** – to respond quickly to an opponent trying to move past with the ball or to shoot

## 5. Shooting – How can we effectively shoot in handball by getting closer to the goal?



Shots can be made by jumping prior to the line of the 'D' as long as the ball is thrown before landing inside of the 'D'

- Receive ball on the move
- Raise the ball above shoulder alike to when performing the shoulder pass
- Use the three steps to move into the shot to produce more power
- Transfer body weight from back to front
- Jump forwards to get close to the goal and release before landing inside the 'D'



Aim to corner areas / where the goalkeeper is not covering

## 6. Blocking – how can we defend effectively in handball?

Meet the opponent as close as you can in a balanced position

Get as close as possible to the shooting arm of the opponent

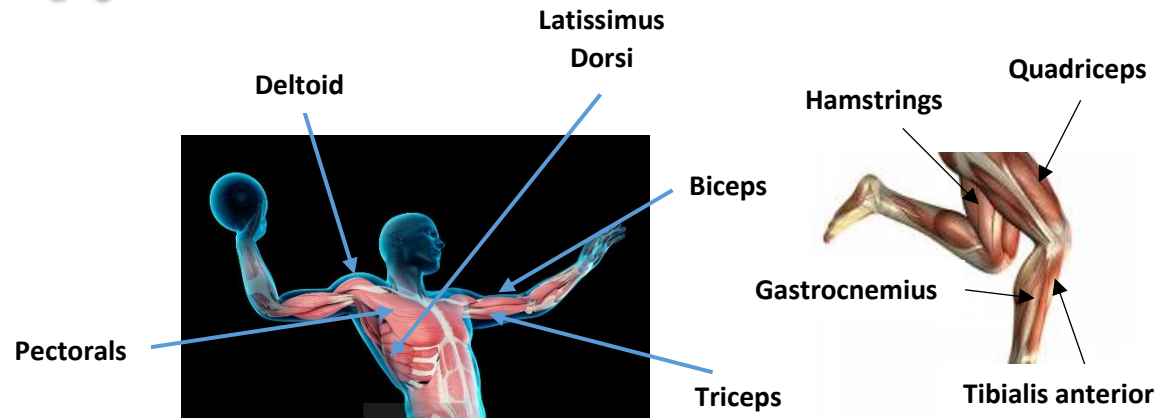
Jump up with body arms raised and close together so the ball cannot go through the middle

Slight bend in the elbows



Aim to block the ball with hands or forearms so no injury occurs

## 7. What muscles are used in handball?





## 1. Key Skills and Rules

**Speed:** -to dash across the court, catch and pass the netball and defend your opponent.

**Strength** – to apply great force when accelerating, jumping, or throwing the netball.

**Agility** – to rapidly change your position with precise control to dodge your opponents.

**Passing**- Being able to select the right type of pass.

**Footwork**:-Making sure that you don't move your feet once planted. No walking or running with the ball.

**Shooting**:-Feet shoulder width apart, ball above head, Only forearms bends, Bend knees, bend forearm, Raise up . Aim for back of ring.

**Dodging**:- Using different techniques to get free for the ball.

**Marking**:- Keeping close to the player and ensure that you have your hand ready. You can either defend the zone or the player.

**Contact**: You cannot touch or push any player during the game. This will result in a penalty pass, or penalty shot if you are in the circle, to the opposition.

**Obstruction**: You must be at least 1 metre away from the player holding the ball before you mark or defend the ball. This will result in a penalty pass, or penalty shot if you are in the circle, to the opposition.

**Held Ball**: You can only hold the ball for 3 seconds before you pass or shoot the ball, and picks it back up again, the opposition get a free pass.

## 2. Dodging

Dodging is used when you are attacking and want to lose your defender so that you can receive the ball without them interception.

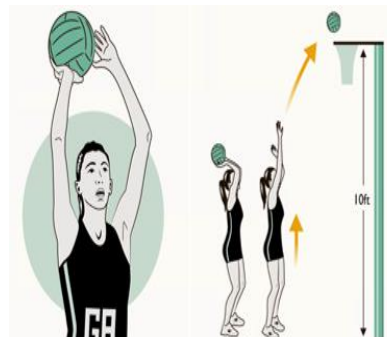
The Feint Dodge - You should be on your toes ready to move quickly. You should drop your shoulder and pretend to go in one direction to outwit your opponent, before quickly pushing off your outside foot to accelerate in the opposite direction. Signal that you would like to receive the ball into the space you are heading towards.

## 3. Defending

Each player on the team has a part to play when it comes to defending. Players need to work collectively in order to slow down the speed of the attack, by limiting the passing options and forcing errors in order to gain possession of the ball. It's your job as the defender to be aware of the ball and anticipate where your attacking player will run.



## 4. Shooting



1. Rest the ball on your preferred shooting hand with the other hand supporting on the side.
2. Feet should be shoulder width apart.
3. Look at the back of the ring.
4. Bend your knees, lift your heels off the floor and push the ball up and over the top of the ring to loop into the net.

## 5. Key Words

**Attack**: Attack in netball involves players keeping possession and passing the ball across the centre and goal third to the shooting circle, also known as the D or semi-circle.

**Defend**: There are three stages of defending in netball; marking the opposing player, marking the ball and marking the zone. The aim of defending is to create an interception and become the attacking team.

**Obstruction**: You must stand one meter away from the opposition with the ball, otherwise you will be called by the umpire for obstruction and the opposition will receive a penalty pass. You will have to stand by their side, out of the game, until they play this pass.

**Outwitting your opponent**: to get an advantage over a player by using tactics.

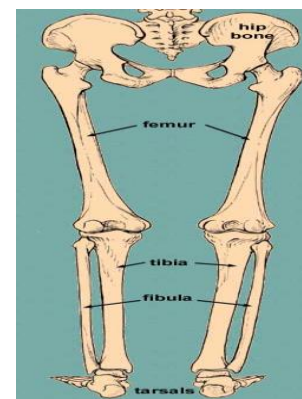
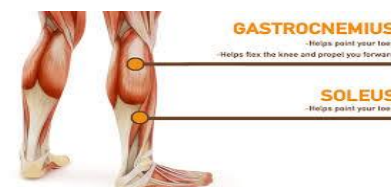
**Accuracy**: To play precisely or correctly e.g. your passes must be timed accurately when passing into space.

**Dodging**: Dodging in netball terms relates to moving from side to side to confuse the opponent before sprinting off to catch the ball. This is a way to outwit your opponent.

**Footwork**: When in position of the ball, you must not move the foot you landed on when you first received the ball. If you move your landing foot, the opposition will receive a free pass.

**Shooting**: This is how points are scored in netball. Only the Goal Attack or Goal Shooter can shoot when they are in the semi-circle.

## 6. Bones and Muscles



## 7. Components of Fitness

### 1. Cardiovascular

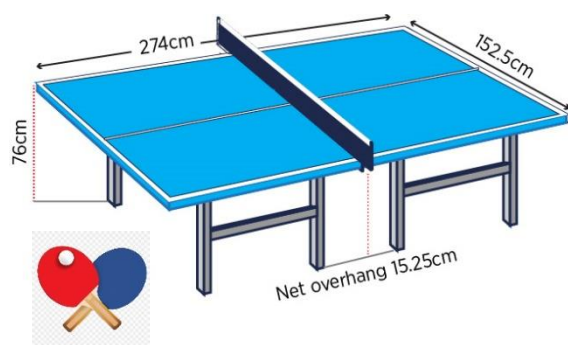
**Endurance**: So you can last the full length of the games, while maintain skill level

**2. Speed**: Enables you to beat opponent to the ball

**3. Reaction time** : You can react to the ball before your opponent, and to get rebounds.

**1. Aim of the game:** hit the ball over the net onto your opponent's side. A point is won by you if your opponent is unable to return the ball to your side of the table (e.g. they miss the ball, they hit the ball but it misses your side of the table or the ball hits the net) or if they hit the ball before it bounces on their side of the table.

## 2. Table layout:



**3. Scoring:** The winner of a game is the first to 11 points. There must be a gap of at least two points between opponents at the end of the game though, so if the score is 10-10, the game goes into extra play until one of the players has gained a lead of 2 points. The point goes to the player who successfully ends a rally, regardless of who has served.

**4. Rules:** A player takes two serves before the ball switches to the opponent to serve, except during periods of extra play where it changes each time. Service can be diagonal or in a straight line in singles. For service, the ball should first bounce in one's court, then in the opponent's court. If the ball touches the net before touching the opponent's court it is a 'let' and service is retaken. A player is not allowed to strike the ball in volley. A player may not touch the table with their non-paddle hand.

# TABLE TENNIS - YEAR 8

## 5. Keywords:

**SERVE** - The first shot, done by the server.

**LET** - Service ball hitting the net or a distraction that causes the point played over.

**FOOTWORK** - How a person moves to make a shot.

**TOP-SPIN** - Spin placed on a ball to allow it to curve down onto the table.

**BACK-SPIN** - Backward spin placed on the ball. Also called Underspin.

**VOLLEY** - To strike the ball before it touches the table.

**CROSS-COURT** - A ball that is hit diagonally from corner to corner.

**DOWN THE LINE** - A ball that is hit along the side of the table, parallel to the sidelines, is hit down the line.

## 6. Skills/ techniques:

**SERVE (forehand/ backhand)** - A stroke which starts every rally.

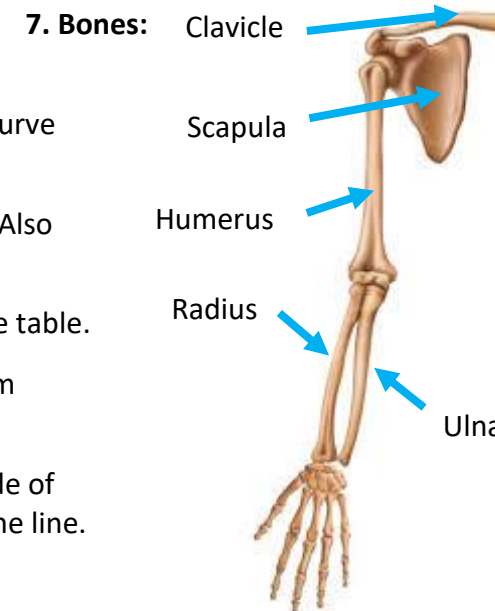
**PUSH (forehand/ backhand)** - To keep the ball safe from the opponent attacking the ball. To increase the opportunity to attack.

**DRIVE (forehand/ backhand)** - To decrease the amount of time available to the opponent.

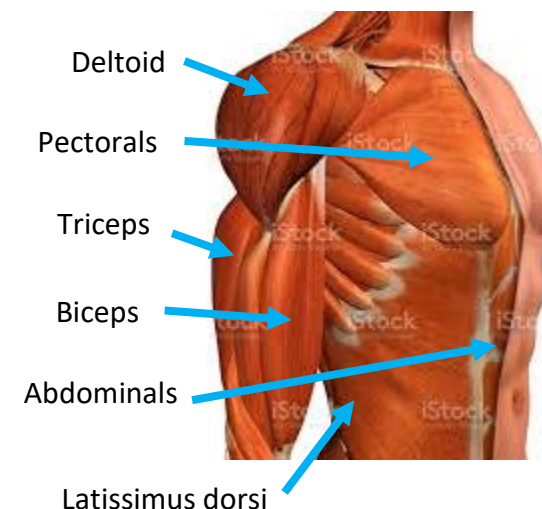
**DROP SHOT** - Short placement - very close to the net.

**LOB** - Usually used in a backcourt/ defensive situation. The player hits the ball high. The deeper the ball lands on the table, the more difficult it will be for the opponent to smash.

**SMASH** - A put-away shot. Ball is hit with enough speed so the opponent cannot make a return.



## 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

## 8.3 Passion of Jesus Knowledge Organiser

Key word	Meaning
1. <b>Betrayal</b>	To give up or to be disloyal to anyone
2. <b>Beatitudes</b>	Blessings taught by Jesus during His "Sermon on the Mount"
3. <b>Disciple</b>	A follower of Christ
4. <b>Kingdom of God</b>	What Jesus' refers to heaven as.
5. <b>Messiah</b>	The 'anointed one' the chosen one who will be a descendant of King David and bring peace.
6. <b>Resurrection</b>	Is coming back to life after death.
7. <b>Paschal Triduum</b>	Also known as Easter or holy triduum is the three days in the period that begins Maundy Thursday and ends Easter Sunday
8. <b>Sacrifice</b>	Christ offering of himself in the crucifixion

### 9. Gospel

The first Gospel to be written was the Gospel by St Mark in 65 AD. The second Gospel was written by St Matthew in the year 70 AD. The third Gospel was written by St Luke in 80-90 AD. The last Gospel to be written was St John in the year 90-120 AD



### 10. "Blessed are the Poor in Spirit, for theirs is the Kingdom of Heaven"

The Spirit of God is given to us through Confirmation and helps us to help others by acting through us, assisting us, strengthening us.

### 11. "Blessed are those who mourn, for they will be comforted"

Showing compassion and care for those who are bereaved by listening and supporting the person through the journey.

### 12. "To hunger and thirst for justice"

"is to have a strong and continuous desire for a religious lifestyle and maintain high moral standards, for the benefit of others.

### 13. Characteristics of the Kingdom of God:

faith, purity, belongs to those who suffer, love God and love your neighbour, honesty / truth, humility, joy in others' achievements, wealth and ambition must be sacrificed.



### 14. Mercy

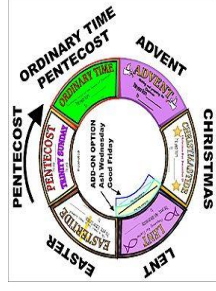
Jesus then told the parable of the Sheep and the Goats to illustrate some important points about Mercy. The people are separated at the last judgement according to the actions they took to help those in need. People are rewarded with Heaven for good deeds such as "Feeding the Hungry"



### 15.



**Holy week** is the most important week in the liturgical year. It starts on Palm Sunday where Jesus arrives into Jerusalem. Maundy Thursday remembers Jesus' last meal with his disciples. Good Friday remembers Jesus' death on the cross. The climax is Easter Sunday to celebrate the resurrection of Jesus.





## 16. C.S. Lewis

He was an Irish novelist and a Christian and Theologian. He wrote *The Chronicles of Narnia*. The books contain Christian ideas intended to be easily accessible to young readers.

## 17. Discipleship

Disciples were chosen by teachers to follow their teachings. A Christian disciple follows and imitates Christ as model for others to



18. Judas Iscariot was one of the Twelve Apostles. He is famous for betraying Jesus by bringing soldiers to arrest him in exchange for money. Christians remember this on Maundy Thursday



## 22. Paschal Candle

During the Easter service the Paschal Candle is lit and is carried through the church, reminding the people of the light of Christ's resurrection overcoming the darkness of the tomb.



## 23. Incarnation

The incarnation is the Christian belief that God took human form in Jesus. For Christians, the incarnation shows that Jesus was fully God and fully human.



## 24. Resurrection

The resurrection of Jesus Christ is important because it shows that he is the Son of God, and it brings Eternal Life to Christians. It also fulfills Old Testament prophecies about the Messiah.



## 25. Take it further...

How does Jesus show Kenosis when He is in the Temple?

How does Jesus show he is incarnate?

Is Narnia a good way of teaching children about sacrifice?

19. **"The whole Narnia story is about Christ,"** –C S Lewis. He said he "pictured him becoming a lion" because it's the king of beasts and because Christ is called "The Lion of Judah" in the Bible.

20. **Maundy Thursday** "Take this all of you and eat it this is my body which will be broken for you. Do this in memory of me" On Maundy Thursday, Christians remember the Last Supper when Jesus washed the feet of his disciples and established the ceremony known as the Eucharist.

21. **Sacrifice** Jesus' death is the most true sacrifice offered for us, and this is demonstrated by Aslan who sacrifices his life for an ordinary, sinful human being.

You should be aiming for these skills on every assessment page

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



## 8.4 Church in Britain

### Knowledge Organiser



#### Key words:

<b>Missionaries</b>	A religious person sent to a foreign country to spread their faith
<b>Martyr</b>	A religious person who is killed because of what they believe
<b>Protestantism</b>	Christian Churches which are not Catholic
<b>Persecuted</b>	Being abused or victimized for your beliefs
<b>Reformation</b>	16th Century movement against the Catholic Church which set up the Protestant Churches
<b>Treason</b>	Betraying your country
<b>Unity</b>	When many parts are joined to work together
<b>Excommunication</b>	Being excluded from the Church because they went against the Church rules

#### 2. Missionaries

See Keyword #1

Key missionaries to the UK are:

**St Bede** - A key source for the understanding of early British history and the arrival of Christianity

**St David** – Travelled through Wales and to south west England and Brittany to spread Christianity.

**St Brigit** - founder of several monasteries of nuns, including that of Kildare.

**St Patrick** - returned to the country where he had been a child slave, in order to bring the message of Christ.

#### 3. St Alban

See Keyword #2

St Alban became a Christian after talking to a priest and then gave his own life in order to save the priest.  
He is the first martyr in England.



#### 4. King Henry II

King Henry wanted more power over the Church and to get more money from their land.

He is famous for shouting “Will no-one get rid of this turbulent priest” about Thomas Becket

#### 4. Thomas Becket

Thomas Becket became the archbishop of Canterbury and told people to do the right thing by opposing the power of the King. Four Knights killed Thomas Becket in a church



#### 5. Henry VIII

See Keyword #2 #5

King Henry made himself the ‘Supreme head of the Church in England’ and broke away from the authority of the Pope, because divorce was against the Catholic Teaching.

#### 5. Thomas More

See Keyword #2 #6

Thomas More was a very devout Catholic working as an advisor for King Henry VIII  
More resigned from his job when King Henry broke from the Church and was arrested and executed in 1535

#### 6. Act of Supremacy

The Act of Supremacy declared Henry VIII to be the supreme Head of the Church of England.  
This led to breaking of England’s roots with the Catholic Church.

## 7, 8. The Reformation

The Reformation was a movement away from the doctrine, worship and authority of the Catholic Church. It was an effect of the growing power of the Church and conflict with the Pope

## 7, 8. The Effects of the Reformation

Effects of the reformation were: Services in English, A book of common prayers in English, Priests could marry and eventually, it was considered treason to be Catholic.

See Keyword #3

## 9,10. Persecution

Once Elizabeth became Queen, many Catholics were tortured and even put to death. Many Catholic families took risks to still practice their faith. They built houses with many hiding places for priests to hide.

See Keyword #4 #6

## 9,10. English College in Rome

The English College in Rome was a seminary (a school that trains priests) that was specifically set up to send missionaries to England to try to protect the Catholic Faith. Many of them died because of their work.

## 9,10. Modern Persecution

There are many Christians today who suffer for their faith, most notably in Syria, where some of the oldest Christian communities have lived for hundreds of years.

## 11. Emancipation 1829

- Emancipation means 'freedom' and it gave the Catholic community the rights to practice their religion free from persecution (fines and imprisonment)
- Catholics were allowed to build churches, worship, become MP's and vote.
- Bishop Ullathorne played an important role in re-establishing the Church after it was legalised.

## 23. TAKE IT FURTHER...

- Martyrs sacrificed their lives to defend the rights and beliefs for Catholics. How can that teach us to defend the rights of others?
- How can we use the history of the Church in Britain, to make sure what happened, won't happen again?
- Research an area in the world where Christians are being persecuted and find out why, and how we can help.

## 24. Think About...

- The importance of helping other when in need. – What parables link to this idea?
- Why is it important to remember those who have died for their beliefs?
- What can we do to support others?

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

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

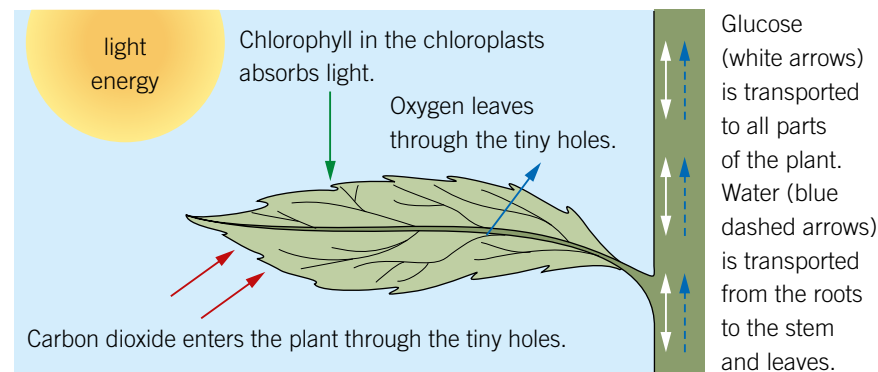


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### Photosynthesis

**Photosynthesis** is a chemical reaction that takes place in the **chloroplasts** to produce **glucose**.



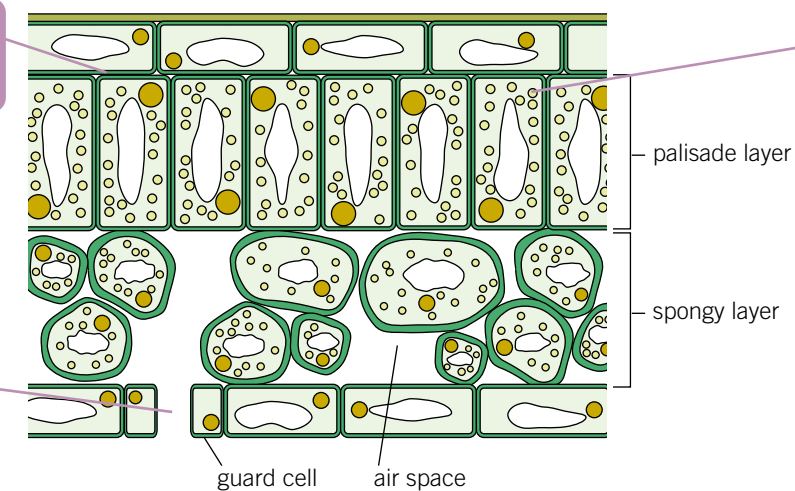
The minerals plants need are:

- 1 **nitrates** for growth
- 2 **phosphates** for healthy roots
- 3 potassium for healthy leaves and flowers
- 4 magnesium for making chlorophyll

If a plant does not have enough of a mineral, it may suffer from a mineral **deficiency**. Farmers can use **fertilisers** to add missing minerals to the soil.

waxy layer – to reduce water loss by evaporation

stomata – on the lower surface to reduce water loss by evaporation



chloroplasts – mainly located on the upper side of the leaf where the most sunlight reaches

Leaves are specially adapted for photosynthesis:

- have lots of green **chlorophyll** – absorb sunlight for photosynthesis
- are thin – allow gases to diffuse in and out of the leaf
- have a large surface area – absorb as much light as possible
- have veins – xylem transports water and phloem transports glucose

### Respiration

with oxygen

#### Aerobic respiration



- Respiration occurs in the **mitochondria** of cells to produce energy.
- Glucose is absorbed from the small intestine into the blood **plasma**. It is transported to the cells where it diffuses in.
- Oxygen is breathed in and diffuses into the bloodstream. Oxygen is then carried by haemoglobin to the cells where it diffuses in.
- Carbon dioxide diffuses out of the cells into the blood plasma. It is transported to the lungs where it diffuses into the air sacs and is exhaled.

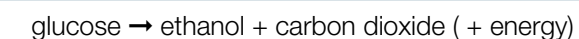
without oxygen

#### Anaerobic respiration (in animals)



- This occurs when there is not enough oxygen for aerobic respiration, such as during strenuous exercise.
- It transfers less energy than aerobic respiration.
- The lactic acid produced can cause muscle cramps. This causes increased inhalation to break down lactic acid – the oxygen needed is called the **oxygen debt**.

#### Fermentation (in microorganisms)



- Yeast respire anaerobically – this fermentation is important in food production (e.g., bread, beer, and wine).

### Key words

Make sure you can write definitions for these key terms.

aerobic   anaerobic   chlorophyll   community   consumer   deficiency   fermentation   fertiliser   producer   mitochondria   nitrate   oxygen debt   plasma  
phosphate   photosynthesis   stomata



### Competition

Animals compete for:

- 1 food
- 2 water
- 3 space – to hunt and for shelter
- 4 mates – to reproduce.

Plants compete for:

- 1 light
- 2 water
- 3 space
- 4 minerals – plants do not compete for food, as they produce their own through photosynthesis.

### Predators and prey

When a predator feeds on just one type of prey, there is an interdependence between the predator population and the prey population. This means that changes in the population of one animal directly affect the population of the other.

### Populations and ecosystems

The number of organisms that live in the same area is called a **population**. Populations of organisms are constantly changing – this affects other populations in a food web.

**Interdependence** is when living organisms depend on each other to survive, grow, and reproduce.

**Ecosystem**: all the organisms found in a particular location, and the area they live in.

**Community**: the organisms in an ecosystem.

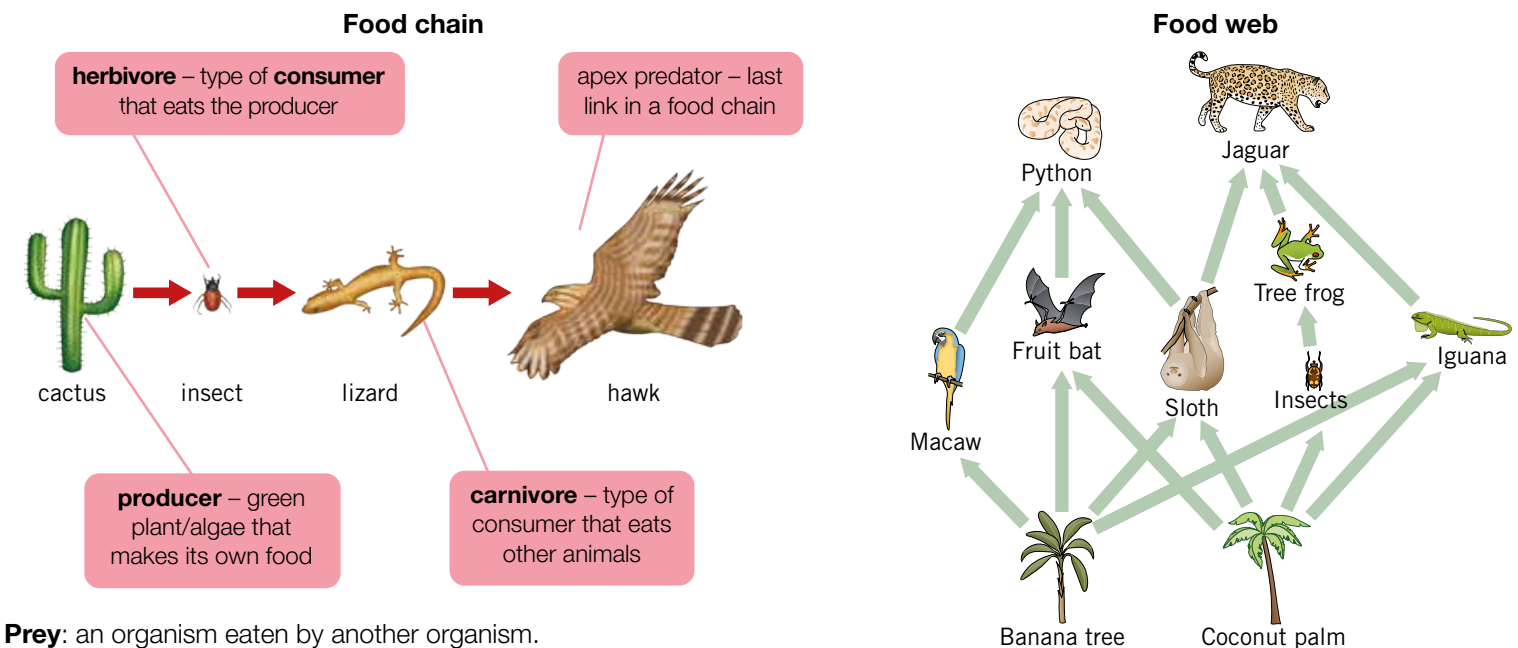
**Habitat**: the area a community lives in.

**Niche**: the particular place or role that an organism has within an ecosystem. This reduces competition for resources.

### Food chains and webs

**Food chains** show the transfer of energy between organisms – the arrows represent the direction of energy transfer.

**Food webs** show how lots of food chains are connected in an ecosystem.



**Prey**: an organism eaten by another organism.

**Predator**: an organism that eats another organism.

**Bioaccumulation** is the build up of chemicals, like insecticides, passed along a food chain.

### Adaption and change

#### Adaptation

- Adaptations are characteristics that help an organism to survive and reproduce.

*For example, the cheetah is the fastest land animal. This speed makes it a very successful predator.*

#### Environmental changes

- Plants and animals adapt to changes in their environments.
- Habitats can change through fire, climate change, or disease causing reduced food supplies.

*For example, deciduous trees look different in each season, and bears hibernate somewhere warm in the winter.*

#### Interdependence

- Predator and prey species are **interdependent**.

- This occurs when a change in the population of one animal directly affects the population of the other.

For example, Canadian lynx and the snowshoe hare are interdependent:

- When the prey (hare) population increases, the predators (lynx) have more to eat, the lynx survive longer and reproduce more, so the number of predators increases.
- The increase in predators means that more prey are eaten, so the prey population decreases.
- The predators then do not have enough food, so their numbers decrease, and the prey population increases again.

### Key words

Make sure you can write definitions for these key terms.

adaptation bioaccumulation carnivore chemosynthesis competition continuous characteristic discontinuous ecosystem environmental variation evolution extinct food chain food web fossil record habitat herbivore inherited variation interdependence interdependent natural selection niche population predator prey species variation



### 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  $\text{H}_2\text{SO}_4$ . Copper sulfate has the formula  $\text{CuSO}_4$  – 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*

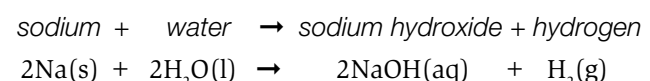
*magnesium + nitric acid → magnesium nitrate + hydrogen*

### Testing for hydrogen gas

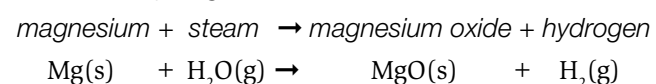
The gas produced when reacting a metal and a salt can be collected in an upturned test tube, and a test performed to check that the gas is hydrogen. Insert a lit splint into the upturned test tube – if the gas is hydrogen, there will be a 'pop' sound.

### Metals and water/steam

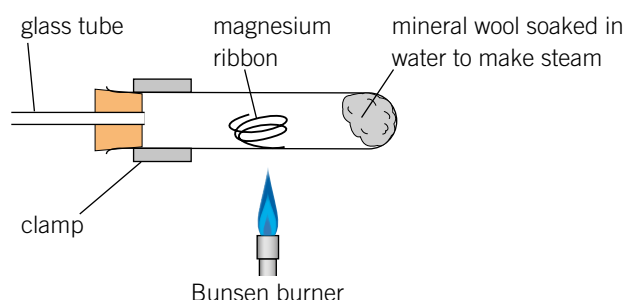
- Very reactive metals like sodium will react with cold water to produce a metal hydroxide and hydrogen gas.



- 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

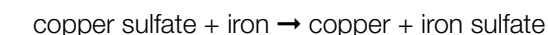
- Many metals will react with oxygen from the air to produce a metal oxide.
- Often, they will need to be heated before they can react.

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  $\text{NaCl(aq)}$  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





### How does light travel?

**Luminous** objects are sources of light, e.g., the Sun.

**Non-luminous** objects do not produce their own light, e.g., the Moon.

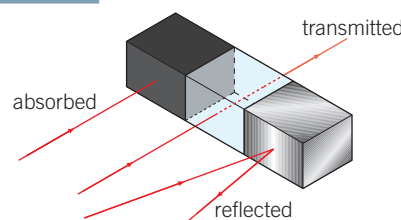
When light hits an object it can be **absorbed**, **reflected**, or **transmitted**.

If an object is:

**transparent** – most light is transmitted

**translucent** – light is scattered

**opaque** – no light is transmitted so a shadow is produced.



Light can travel through gases, some solids and liquids, and completely empty space (a vacuum).

The speed of light in a **vacuum** is about 300 000 km/s.

Distances in space are measured in **light-time**. Remember that light-time is a distance (not a measure of time).

A light-minute is the distance light travels in one minute.

A light-year is the distance light travels in one year.

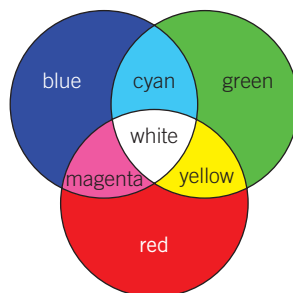
### Colours of light

A **prism** refracts different colours of light by different amounts. This disperses light into a continuous **spectrum** of colours.

The **primary colours** of light are **red**, **green**, and **blue**.

**Secondary colours** are produced when any two primary colours are mixed.

**Filters** subtract colours from white light, so that only one colour of light is transmitted.



Objects appear to be different colours because they reflect some colours of light and absorb others.

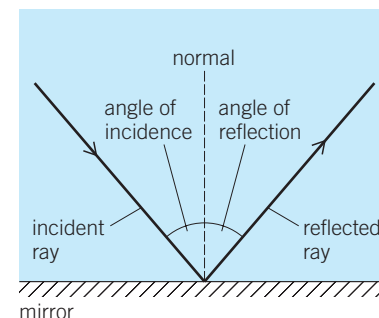
Black objects absorb all colours and white objects reflect all colours.

### Reflection and refraction of light

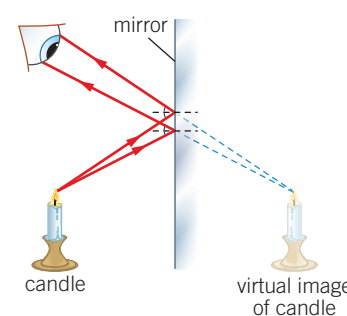
The **law of reflection** states that:

The **angle of incidence** is equal to the **angle of reflection**.

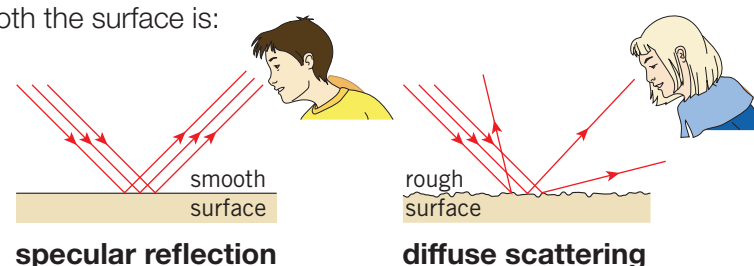
The **normal** is an imaginary line at 90° to the mirror.



Images in mirrors are **virtual** – they look like they are behind the mirror.



Whether or not you can see a clear reflected image depends on how smooth the surface is:

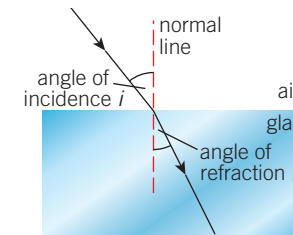


**Refraction** is when light changes direction when it travels from one **medium** (material, such as air or water) to another.

Refraction happens because light travels at different speeds in different materials.

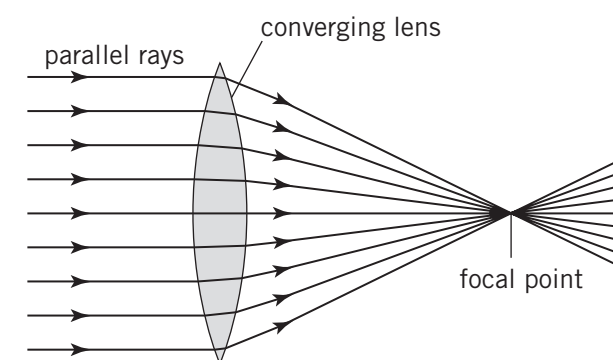
Rays of light will be refracted:

- towards the normal if they slow down, such as going from air to glass
- away from the normal if they speed up, such as going from water to air.



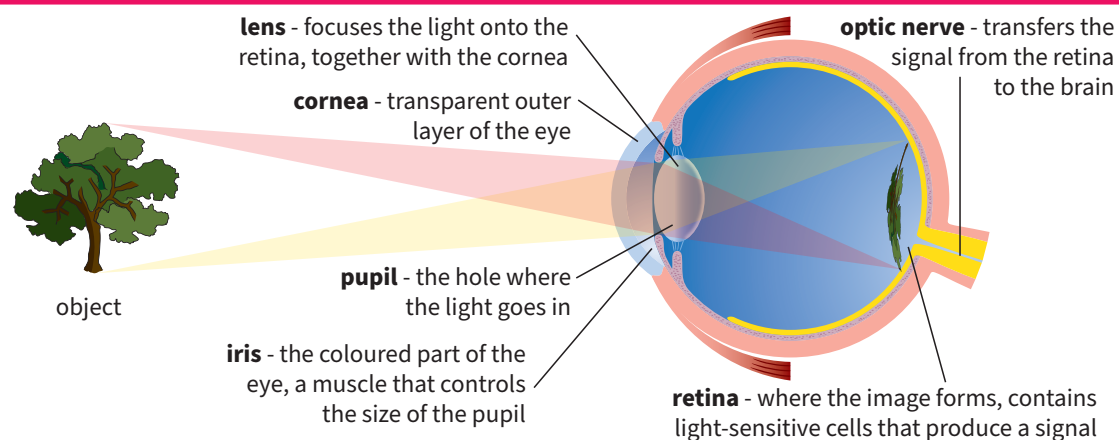
**Lenses** use refraction to spread out or **focus** light.

**Convex** (or **converging**) lenses (like the ones in your eyes) are shaped to focus the light to a point – called the **focal point**.



### How do eyes and cameras work?

Light entering your eye is refracted by the **lens**, focusing it on the **retina** and creating an inverted image. **Photoreceptors** detect the light hitting your retina and send an electrical impulse to your brain.



Cameras work in the same way as your eye – light passes through an opening and a **real image** is formed on a screen or film.

Digital cameras now have a **charge-coupled device (CCD)** instead of film – when light hits a **pixel** it produces an electrical charge.

### Key Words

Make sure you can write a definition for these key terms. **absorb** **angle of incidence** **angle of reflection** **aperture** **camera** **charge-coupled device** **continuous** **converging** **convex** **cornea** **diffuse scattering** **dispersion** **emit** **eye** **filter** **focal point** **focus** **image** **incident ray** **inverted** **iris** **law of reflection** **lens** **light-time** **luminous** **medium** **non-luminous** **normal** **opaque** **optic nerve** **photoreceptors** **pixel** **plane** **primary colour** **prism** **pupil** **ray** **real image** **reflect** **reflected ray** **refraction** **retina** **secondary colour** **source** **spectrum** **specular reflection** **translucent** **transmit** **transparent** **virtual image**



### Energy adds up

The **law of conservation of energy** states that energy cannot be created or destroyed, only transferred.

$$\text{total energy before} = \text{total energy after}$$

### Transferring energy

Light, sound, and electricity are ways of transferring energy between different stores.

### Energy and temperature

- **Thermometers** measure temperature in degrees **Celsius (°C)**.
- Temperature measures the *average* energy.
- **Thermal energy** measures the total energy.

A warm bath has more thermal energy than a heated kettle, even though the kettle has a higher temperature.

### Heating solids, liquids, and gases

- As we heat things the particles gain more **kinetic energy**, and vibrate more or faster.
- The energy needed to heat an object depends on the mass, material, and temperature rise.

### Equilibrium

**Equilibrium** is when objects have the same thermal energy.

### Energy resources

#### Renewable resources

Renewable resources produce greenhouse gases when built, not when used, and will not run out.

For example, wind, tidal, wave, hydroelectric, geothermal, biomass, and solar powers. The power rating tells you how much energy is transferred per second, or the rate of transfer of energy. Measured in **watts (W)**.

$$\text{Energy transferred (J)} = \text{power (W or J/s)} \times \text{time (s)}$$

The current generated is sent to our offices, factories, and homes down long cables.

Fossil fuels are burned to heat water, which produces steam.

Burning fossil fuels produces **greenhouse gases**, such as carbon dioxide.

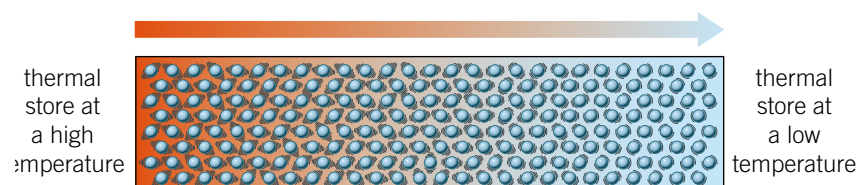
The steam turns a turbine, which spins a generator.

### Particles

Thermal energy can be **transferred** by **conduction**, **convection** or **radiation**.

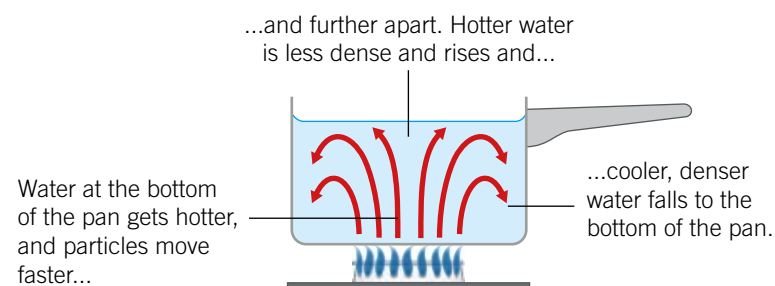
#### Conduction

- Particles collide into others when they vibrate.
- Occurs in solids.



#### Convection

- Occurs in liquids or gases.
- The part in contact with the heat source gets hotter. The particles move faster, causing them to become further apart, and a decrease in density.
- The hot part then rises, and cooler, denser parts fall and take its place at the bottom.
- They now heat, so the cycle continues. We call this a **convection current**.



#### Non-renewable resources

Non-renewable resources include the **fossil fuels** coal, oil, and gas. These were formed millions of years ago from fossilised remains. These are non-renewable because you cannot reuse them, and they will eventually run out. Coal, oil, or gas are used to run **thermal power stations**.

#### Food and fuels

- There is energy in the **chemical stores** associated with food and fuel.
- Energy is measured in **joules (J)**.
- You need different amounts of energy for different activities.

The energy in food varies.  
For example:

- apple – 200 kJ per 100 g
- chips – 1000 kJ per 100 g

The energy used when we do things varies too.  
For example:

- sitting – 6 kJ per minute
- running – 60 kJ per minute

### Energy and power

**Power** is the rate of energy transfer – how much energy is transferred each second.

#### Energy bills

- Energy use is measured in kilowatt hours (kWh).  
For example, a 2 kW device used for 1 hour uses 2 kWh; if used for 2 hours, it uses 4 kWh.
- An energy bill covers the cost of the fuel used at the power station, the power station, staff, and infrastructure.
- To convert kWh to joules, convert the time to seconds (there are 3600 seconds in an hour).  
For example, 2 kWh = 2000 J/s × 3600 s = 7 200 000 J

#### Reducing bills

- Use fewer appliances or more efficient ones.
- Insulated houses lose less thermal energy so don't need to use as much power.

### Work

You can transfer energy by using a force, which is doing **work**.

$$\text{Work done (J)} = \text{force (N)} \times \text{distance (m)}$$

Simple machines like **levers** and **gears** can make it easier to do work but you still get the energy out that you put in.

### Radiation

- **Infrared radiation** transfers energy without particles – it is a wave.
- All objects emit radiation.
- The amount depends on their temperature and the surface (colour and rough/smooth).
- Radiation can be **absorbed** or **reflected**.



### Key words

Make sure you can write definitions for these key terms.

absorb chemical store conduction convection convection current energy store fossil fuel gear greenhouse gas infrared radiation insulator joule kilowatt law of conservation of energy lever non-renewable power station radiation renewable reflect thermal energy thermometer work

