

Name and Tutor group:



# Year 7 Knowledge Organiser

## Term 4

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## CORSHAM CHARACTER

### INTELLECTUAL VALUES

The pursuit of truth,  
knowledge and  
understanding.

Be reflective. Be curious. Be  
open-minded. Be creative.



### PERFORMANCE VALUES

Maximum effort, maximum  
focus.

Be resilient. Always Persevere.  
Contribute to Teamwork.  
Be ambitious.



# DREAM BELIEVE ACHIEVE

# Knowledge Organiser – Year 7 Art

## PORTRAITURE

EXAMPLES OF FINAL OUTCOMES:



### YOU WILL LEARN:

Skills to produce two accurate portraits using pencil shading and paint.

You will then produce your own self-portrait using mark-making techniques with oil pastels.

### Why am I learning this?

The foundation skills in this project will enable you to tackle the varied concepts, artists, techniques and processes throughout Year 7. You will build on your knowledge and skills with each project as they increase in difficulty, enabling you to express yourself in a confident way.

## CONTEXTUAL KNOWLEDGE:

**Steve McCurry** **Vincent van Gogh**



**Impressionism** was about artists painting outdoors and spontaneously usually of landscapes and of everyday life. The focus was on light and colour using rapid and broken brushstrokes to represent this.

**Post-Impressionism** was a few artists who extended and changed impressionism from 1886. **Vincent van Gogh** was one of these artists.



Mark making is a term used to describe the different lines, patterns, and textures we create in an artwork.

## Homework Tasks:

Tick when complete ✓

1. Draw an eye.
2. Draw a mouth and nose.
3. Draw an ear.
4. Research Vincent van Gogh.
5. Sunrise/sunset in the style of van Gogh.
6. Create a paper collage of a person.

**HOW WELL AM I DOING?**

**NYM**

**NOT YET MET = Yellow Dot**

**M**

**MET = Green Dot**

**EX**

**EXCEEDING = Blue Dot**

Marking Your Work - Showing Expressions

## Keywords

Proportion

Tone

Monochrome

Mark-making

Shape

Form

Photography

The relationship of one part of a whole to other parts.

The lightness or darkness of something – this could be shade, or how dark or light a colour appears.

Monochrome means one colour.

Different lines, patterns and textures.

A shape is an area enclosed by a line. It is 2 dimensional and can be geometric or organic.

Forms are 3 dimensional shapes. They occupy space, like people!

A photograph is an image produced by the action of light onto light sensitive paper.

Information about Vincent Van Gogh:

[www.tate.org.uk/kids/explore/who-is/who-vincent-van-gogh](http://www.tate.org.uk/kids/explore/who-is/who-vincent-van-gogh)

# Year 7 – Flowol

**A sequence or set of steps (algorithm) for the mimic to follow to achieve a desired outcome.**

**Mimic (a 2D/3D representation of a real world system)**

**Main toolbar**

**Sensors:**

- Motion
- Light
- Temperature
- Sound
- Accelerometer

**Run or stop the Flowol simulation**

### FLOWCHART BASICS:

- TERMINATOR:** Indicates the beginning or end of your Flowol sequence
- PROCESS:** Indicates a process that is applied to your sequence (e.g. a delay)
- DATA (INPUT/OUTPUT):** In Flowol, this indicates an input or output, such as a motor.
- DECISION:** Indicates a point in your sequence that requires a decision to proceed.

### Control in everyday life:

**Traffic Lights**

**Mobile Phone**

**Automatic doors**

**Washing machine**

## Year 7 Spreadsheets

### Why do we use Spreadsheets?

Spreadsheets are used to store information and data. Once we have our information in a spreadsheet we can run powerful calculations, make graphs and charts and **analyse** patterns.

Uses of spreadsheets:

- Budget tracker
- Stock tracking of a business
- Money use in a business
- Teacher may use it to keep a **record** of **students** grades

### Spreadsheet layout

Rows of cells are horizontal and have a number at the side

Columns of numbers are vertical and have a letter at the top

### Cell reference

A cell reference is the name given to a cell to uniquely identify it. E.g. E4

An **absolute cell reference** ensures that 1 cell always remains constant even when autofill is used.

E.g. \$E\$4

### Sort & Filter

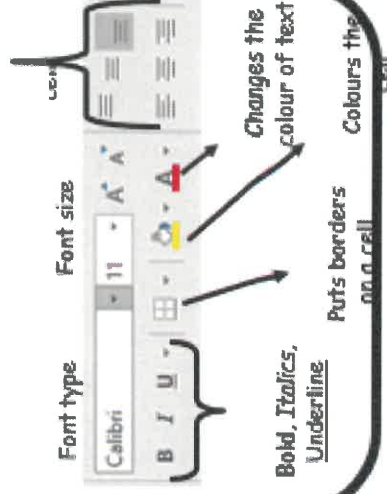
Sorting data organises it in a

specific way e.g. alphabetically

Filtering data makes it easy for us to find one specific piece of data **without** having to look through every piece of data

### Formatting Cells

Changes the way text is displayed in a



**Bold, Italics, Underline**

Puts borders on a cell

### Formulas

Only use when creating a calculation between 2 cells.

E.g.

= A1 + B1 (adds)

= A1 - B1 (subtracts)

= A1 \* B1 (multiplies)

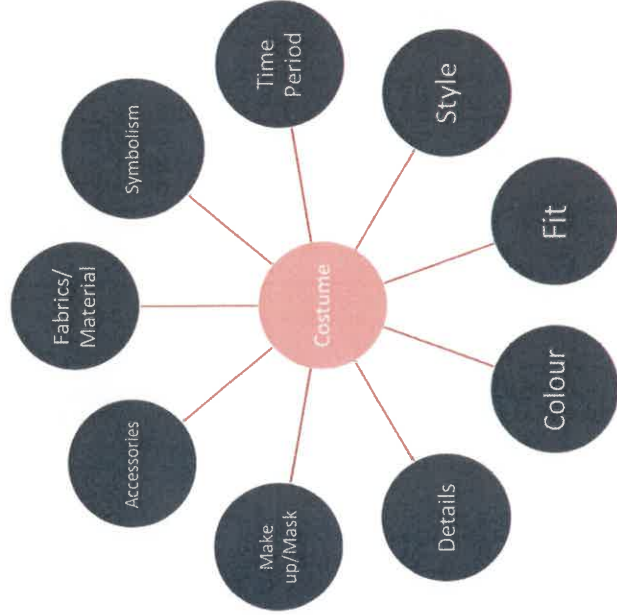
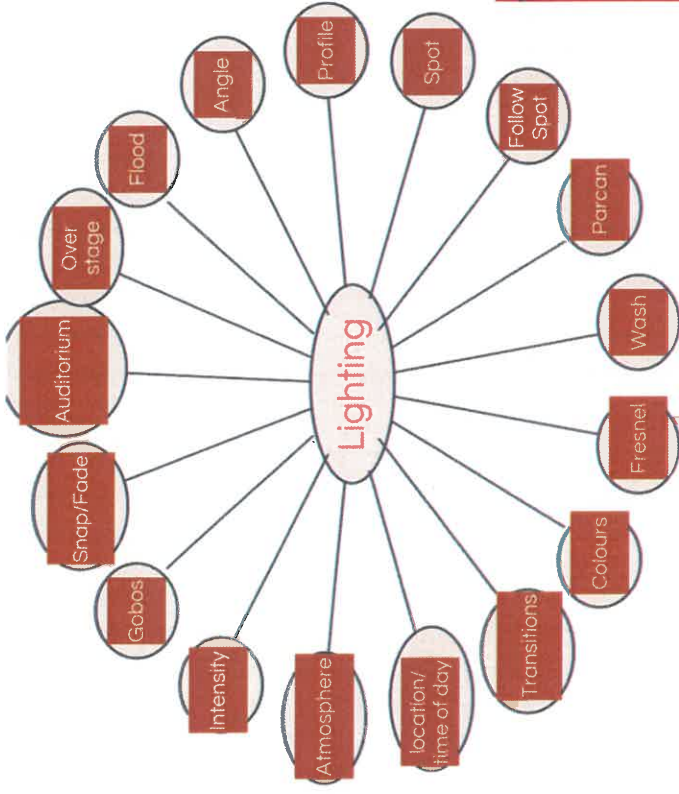
= A1 / B1 (divides)

# Year 7

## Live Theatre Review

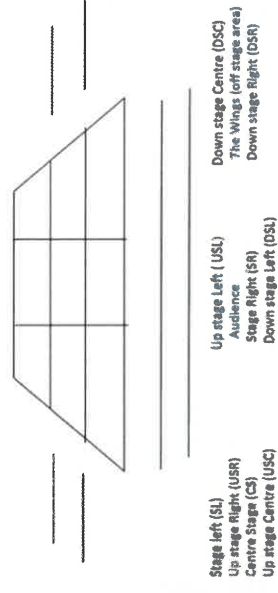
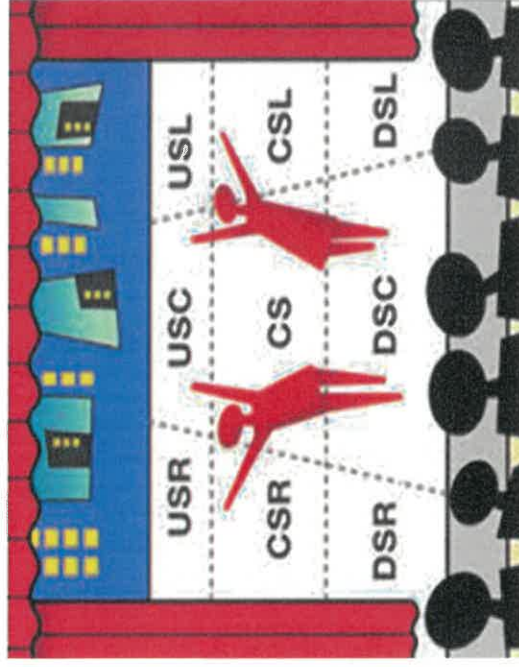
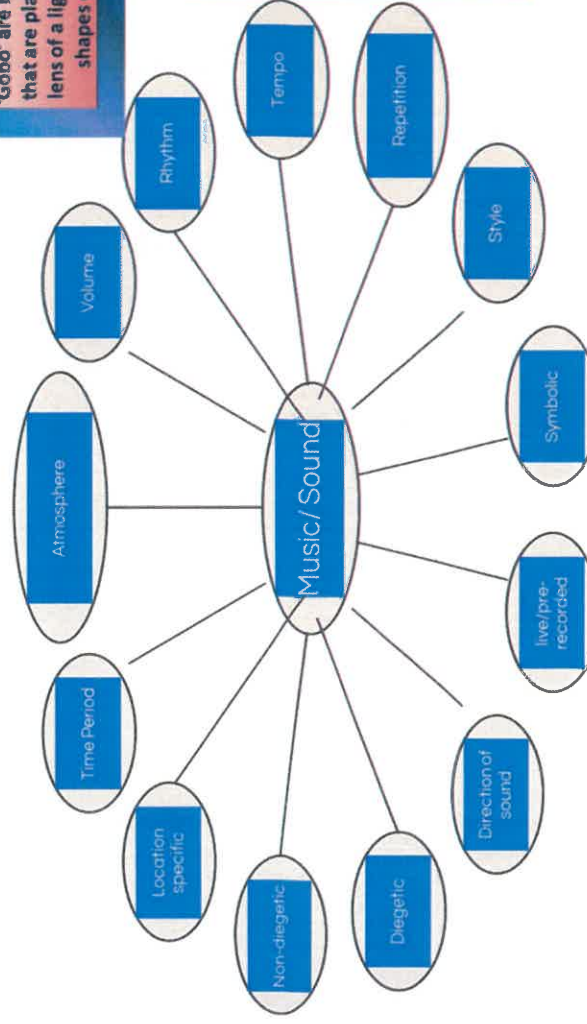
### Term 4

#### Knowledge Organiser



Diegetic sound is sound that the characters on stage can hear. For example, if a telephone rings on stage and a character answers it, then the sound is diegetic: the character on stage has heard the telephone.

Non-diegetic sound is any sound that a character cannot hear, but instead creates the mood or atmosphere for the performance. For example, if a piece of music is played to accompany a scene (called underscoring), but cannot be heard by the characters, then it is non-diegetic



# Year 7 Food and Nutrition- Knowledge Organiser

Nutrient/ Food group	Functions - Why do we need it?	Sources - Where they are found
Carbohydrates	These give us energy. Sugary ones give us quick release energy. Starchy ones give us slow release.	Bread, rice, pasta, potatoes
Protein	Needed for the growth and repair of our bodies and can also be used for energy.	Meat, fish, dairy products, tofu, soya, Quorn, nuts, seeds, lentils
Fat	These keep us warm, protect us and provides our bodies with energy	Butter, oil, processed foods e.g. crisps, chips, chocolate, cake.
Water	Keeps us hydrated and keeps our body's working properly.	Fruit and vegetables, water, fruit juices, milk.
Vitamins	These are needed generally to keep us healthy. The allow all the chemical reactions in our body and protect us from diseases.	Fruit, vegetables, cereals, dairy products
Minerals	Helps build bones and teeth and allow muscles to work properly.	Green vegetables, dairy products and red meat
Fibre	These are needed to keep our digestive system working (help us go to the toilet) and helps to fill us up.	Wholegrain cereals, brown rice, pasta, bread, fruit and vegetables

The 4C's	Description
Cooking	Always cook food properly. Check that food is cooked in the centre.
Chilling	Store food safely between 0 and 5°C
Cleaning	Always wash and dry your hands and equipment properly. Keep everything clean.
Cross Contamination	Wash your hands after touching raw foods. Keep raw and cooked foods separate.

## Knife Skills



Bridge Hold

Claw Hold

## What is Energy balance

Energy in = energy out

## Why is it important to keep it balanced?

To maintain a healthy weight and allow the body to stay healthy and work efficiently

## Preparation Boards

Red	Yellow	Blue	Green	Brown	White
Type of food					
Raw meats	Cooked meats	Pure fish	Fruit and salad	Vegetables	Bakery and dairy

## Keywords

- Hygiene
- Cross - Contamination
- Safety
- Healthy eating
- Bacteria
- Nutrient
- Food Group
- Eatwell Guide

## Healthy eating

The Eatwell guide shows how much of what we eat in total should come from each of the five food groups.

Oils and Spreads	Fruits and Vegetables	Meat, eggs and pulses	Starchy foods	Dairy foods
Butter, Vegetable oil, Margarine	Apples, Bananas Oranges, Pepper Carrots, Cabbage Spinach, Frozen peas	Chicken, fish, Lentils Chickpeas, beans	Bread, Potatoes Pasta, Rice, Cereals	Milk, Cheese, Yogurt

# Yr 7 Graphics – Healthy Bar Wrapper DESIGN AND TECHNOLOGY

Tools, Techniques, Materials and Equipment	
Paper	A compliant material made from wood pulp.
Board	Used for packaging, model making, photography and greeting cards.
Colour Rendering	A colour technique used for professional finish in DT.
Scoring	A method to create accurate folds.
Scissors / guillotine	To accurately cut paper.

**Paper and Board**  
Papers and boards are made from wood pulp and are converted in a paper mill. Paper is measured in Grams Per Square Metre (GSM). Board thickness is quoted in microns or Grams Per Square Metre (GSM).



**Packaging**  
To protect products, especially in transport  
To promote product using attractive fonts, logos and designs.  
To present the product.  
To place the product.  
To provide important information.




**Maths in DT:**  
Multiplication  
Divide  
Add / Subtract  
Measurement conversion  
Ratios  
Percentages  
Surface area

**What is good design?**  
Clear ideas  
Annotations  
Measurements  
Content  
Presentation  
Balance

**Health and Safety in DT:**

- Listen to your teacher's instructions
- Always wear an apron
- Long hair should be tied back
- Don't use equipment you are not trained on
- Always stand up during practical lessons
- When using machines, always wear safety glasses
- Only use the stop button in an emergency
- Work quietly and be sensible and careful at all times



**Paper finishes:**  
Off set lithography  
Embossing  
Varnish



A0	A1	A3	A4	A5
	A2			









**PERSUASIVE TECHNIQUES**

**STRUCTURE**

Apostrophes	Connectives
Colons	Full Stops
Capital Letters	'In Media Res'
Commas	Semi-Colons
Complex sentences	Question marks
Compound sentences	Varied sentences

**WRITING TO PERSUADE**

**Before you start, think about the TAP**

**T**ext type – what should the style and layout look like?

**A**udience – who are you writing for?

**P**urpose – what are you trying to achieve?

Persuade? Argue? Advise? Inform?



**Text Types:**

Article

Leaflet

Letter

Review

Report

Speech

**FIGURATIVE LANGUAGE DEFINITIONS**

**Alliteration:** use of the same consonant at the beginning of adjacent or closely connected words.

**Hyperbole:** exaggeration to emphasise a point.

**Metaphor:** comparing one thing to another, directly, in a way that isn't literally true.

**Onomatopoeia:** a word whose sound suggests its meaning.

**Personification:** giving human qualities to non-human things.

**Sibilance:** use of the 's' sounds in quick succession.

**Simile:** a comparison of two things that uses the words 'like' or 'as'.

**ENGLISH LANGUAGE DEFINITIONS**

**Adjective:** a word that describes a noun.

**Adverbs:** words that give extra information about the verb.

**Connective:** a word that joins parts of a sentence together.

**Emotive Language:** Language used to create a particular emotion in the reader.

**Figurative Language:** Using language techniques to describe something in a non-literal way.

**Noun:** a naming word.

**Pronouns:** a word that can replace a person's name to refer to them.

**Verb:** a doing word.

**CONNECTIVES/DISCOURSE MARKERS:**

Position	Addition
Firstly	Furthermore
Secondly	Additionally
Meanwhile	In addition
Finally	<b>Contrast/Compare</b>
In conclusion	Although
<b>Emphasis</b>	Whereas
Importantly	Alternatively
Notably	Similarly
Significantly	Equally

What is development?		Variations in the level of development		Human factors affecting development	
<b>Development</b> is an improvement in living standards through better use of resources.	<b>LIDCs</b>	Poorest countries in the world. GNI per capita is low and most citizens have a low standard of living.	<b>Politics</b>	Aid can help some countries develop key services and infrastructure faster.	Countries that export more than they import have a trade surplus. This can improve the national economy.
<b>Economic</b> This is progress in economic growth through levels of industrialisation and use of technology.	<b>EDCs</b>	These countries are getting richer as their economy is progressing from the primary industry to the secondary industry. Greater exports leads to better wages.	<b>Education</b>	Aid can improve projects such as schools, hospitals and roads.	Having good trade relationships. Trading goods and services is more profitable than raw materials.
<b>Social</b> This is an improvement in people's standard of living. For example, clean water and electricity	<b>ACs</b>	These countries are wealthy with a high GNI per capita and standards of living. These countries can spend money on services.		Other trade links becoming established.	
<b>Environmental</b> This is advances in the management and protection of the environment.					

### Measuring development

There are used to compare and understand a country's level of development.

### Economic indicators examples

**Employment type**  
The proportion of the population working in primary, secondary, tertiary and quaternary industries.

**Gross Domestic Product (GDP) per capita**  
This is the total value of goods and services produced in a country per person, per year.

**Gross National Income (GNI) per capita**  
An average of gross national income per person, per year in US dollars.

### Social indicators examples

**Infant mortality**  
The number of children who die before reaching 1, per 1000 babies born.

**Literacy rate**  
The percentage of population over the age of 15 who can read and write.

**Life expectancy**  
The average lifespan of someone born in that country.

### Mixed indicators

**Human Development Index (HDI)**  
A number that uses life expectancy, education level and income per person.

# Are we happy living in an uneven world

## Physical factors affecting development

### Natural Resources

- Fuel sources such as oil.
- Minerals and metals for fuel.
- Availability for timber.
- Access to safe water.

### Climate

- Reliability of rainfall to benefit farming.
- Extreme climates limit industry and affects health.
- Climate can attract tourists.

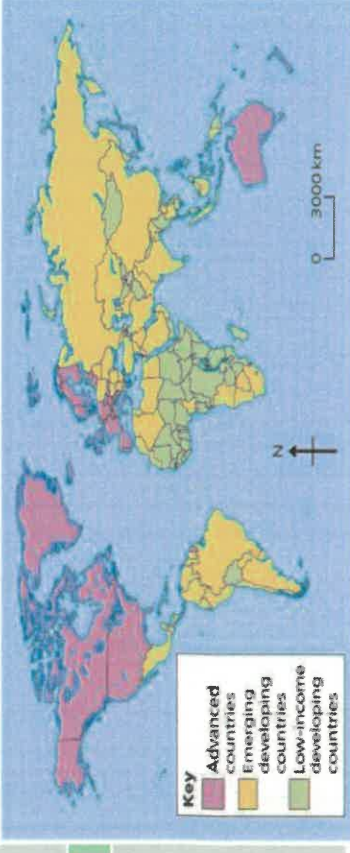
### Natural Hazards

- Risk of tectonic hazards.
- Benefits from volcanic material and floodwater.
- Frequent hazards undermines redevelopment.

### Location/Terrain

- Landlocked countries may find trade difficult.
- Mountainous terrain makes farming difficult.
- Attractive scenery attracts tourists.

Human factors affecting development	
<b>Politics</b>	<ul style="list-style-type: none"> <li>Aid can help some countries develop key services and infrastructure faster.</li> <li>Aid can improve projects such as schools, hospitals and roads.</li> <li>Too much reliance on aid might stop other trade links becoming established.</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>Education creates a skilled workforce meaning more goods and services are produced.</li> <li>Educated people earn more money, meaning they also pay more taxes. This money can help develop the country in the future.</li> </ul>
<b>Aid</b>	<ul style="list-style-type: none"> <li>Corruption in local and national governments.</li> <li>The stability of the government can effects the country's ability to trade.</li> <li>Ability of the country to invest into services and infrastructure.</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>Lack of clean water and poor healthcare means a large number of people suffer from diseases.</li> <li>People who are ill cannot work so there is little contribution to the economy.</li> <li>More money on healthcare means less spent on development.</li> </ul>



### Uneven development

Development is globally uneven with most ACs located in Europe, North America and Oceania. Most EDCs are in Asia and South America, whilst most LIDCs are in Africa. Remember, development can also vary within countries too.

### Consequences of Uneven Development

Levels of development are different in different countries. This uneven development has consequences for countries, especially in wealth, health and education.

<b>Wealth</b>	People in more developed countries have higher incomes than less developed countries.
<b>Health</b>	Better healthcare means that people in more developed countries live longer than those in less developed countries.
<b>Education</b>	More developed countries have better standards of education available than those in less developed countries.

### Sustainable Development Goals

These are targets for all countries to reach to help the whole world beat poverty and increase global development.



### GOAL 5: GENDER EQUALITY



Our mission: To end all forms of discrimination against women and girls and to advance gender equality as a driver of economic growth and sustainable development.

#### KEY PROBLEMS

Women have fewer opportunities of employment than men, and are paid less for the same job.



Stereotypical gender roles and traditions limit women's opportunities to advance.



Women have less access to decision-making positions than men.



## Are we happy living in an uneven world

### Can aid help speed up development?

Positives of Aid	Negatives of Aid
<p>Aid can improve sanitation and health and reduce death rate.</p> <p>Aid can help countries increase output with technology.</p> <p>Can rebuild livelihoods after a disaster</p>	<p>Aid doesn't always reach the people that need it.</p> <p>Countries can become dependent on the aid rather than develop themselves.</p>

#### Goat Aid

Positives	Negatives
<p>Improves the lives of local, rural population by</p> <ul style="list-style-type: none"> <li>a) Improving drinking health through drinking milk</li> <li>b) Increasing crop yields through using manure</li> <li>c) Increasing income by selling extra crops or offspring.</li> </ul>	<p>Does not help the whole country become more industrialised.</p> <p>Aid is reliant on donations given by the public of ACs</p>

### How will gender equality speed up development

Gender Equality is Sustainable Development goal #5

#### How it will help

Equal opportunities is a basic human right.  
Reducing domestic violence in LIDCs will help the country develop

#### What are the barriers

It takes a long time to change countries views and opinions, especially in traditional societies.

### Escaping from poverty

For people who live in poverty in LIDCs, one of the options for them is to migrate to ACs. Thousands of migrants attempt this dangerous journey every week in an attempt to earn and send home money.

The consequence of this escaping from poverty that many people put their lives at risk in crossing the sea. IT also means there is an increase in the illegal trade of people smuggling.



## Enquiry: Why were battles won?

**Outline:** During the Medieval and early Modern periods, monarchs often had to prove themselves or defend their country through fighting battles. The tactics and weapons used in these battles changed over time for a wide range of reasons.



Battle	Date	Summary
Hastings	1066	William the Conqueror won against Harold II to become the Norman king of England.
Agincourt	1415	Henry V won against the French which strengthened his claim to the French throne.
Bosworth	1485	Henry Tudor won against Richard III to become king of England.
Armada	1588	Elizabeth I won against Philip II of Spain's armada to prevent the Spanish invasion of England.
Naseby	1645	Parliament won against Charles I's army. This was a turning point which made it more likely that Charles would lose the English Civil War.
Trafalgar	1805	Britain won against Napoleon's France in a naval battle near Spain. This slowed down Napoleon's domination of Europe.
Waterloo	1815	Britain won against Napoleon's France in a land battle. This ended his domination of Europe.



**Furthering learning**  
Want to find out more about the Battle of Hastings?



## History – Year 7 Knowledge Organiser Topic 3

### Key individuals



**Sir Francis Drake.** He was a pirate who worked for Elizabeth. His tactics helped the English beat the Armada, especially the use of fireships.



**Oliver Cromwell.** Helped to command Parliament's army in the Civil War. His tactics helped them to beat the king and he became leader of England.



**Horatio Nelson.** Led the British navy at Trafalgar. His tactics were crucial to British success, but he died during the battle.



**The Duke of Wellington.** Commanded the British and their allies at Waterloo. Was instrumental to the victory.



### Key vocabulary:

**Armada:** Ships used to attack. The Spanish Armada had 130 ships which attempted to invade England.  
**Broadside:** when a ship fires all its cannon at once.  
**Cavalry:** soldiers who fight on horses.

**Civil War:** a war fought within one country.

**Crescent formation:** a shape that ships form when sailing which looks like a crescent.

**Feigned retreat:** when soldiers pretend to run away, but then turn around and fight back when the enemy is chasing them.

**Fire ships:** ships set on fire and sent into enemy lines to disrupt the formation of their ships.

**Infantry:** soldiers who fight on foot.

**Longbow:** English and Welsh technology which fires arrows faster and further.

**Mercenaries:** soldiers who are paid to fight for the highest bidder.

**Navy:** ships used to defend a country.

**New Model Army:** Parliament's new army in the Civil war which was well trained and disciplined. Became England's first standing army.

**Pikemen:** soldiers who carry 16ft pikes.

**Shield wall:** when soldiers pack closely together behind their shields.

**Standing army:** a professional army which is always ready to fight.

**Strategy:** overall plan for how to win a battle or a war.

**Tactics:** different methods used during a battle to achieve the overall strategy.

## Enquiry: Why were battles won?

### Historical skill focus: cause and consequence

- Why do events happen?
- What is the impact of these events?



History – Year 7

Knowledge Organiser  
Topic 3



### Can you explain why?

You could write one or two paragraphs to explain.

Explain the reasons why battles are won.

### What to focus on:

### Starting sentences

One or two reasons why the victory happened.

One cause of...

Think about the motives behind the countries involved or the conditions during the battle.

The most significant cause was...

This cause led to...

Think about political reasons or military reasons?



### Developing

I can identify the causes of an event.

### Secure

I can describe how an event happened.

### Exceeding

I can explain why an event happened in a PEE paragraph.

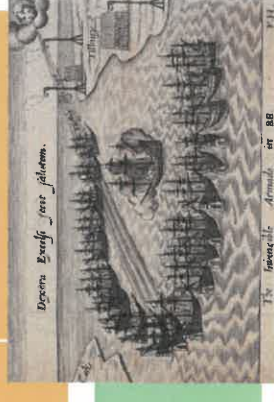
I can identify the impact of an event.

I can describe the impact of an event.

Point = A key cause was...

Evidence = This cause led to...

Explain = This is important because...



# YEAR 7 — DIRECTED NUMBER

## Operations with equations and directed numbers

@whisto\_maths

### What do I need to be able to do?

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

- Perform calculations that cross zero
- Add/ Subtract directed numbers
- Multiply/ Divide directed numbers
- Evaluate algebraic expressions
- Solve two-step equations
- Use order of operations with directed number

### Keywords

**Subtract:** taking away one number from another.

**Negative:** a value less than zero.

**Commutative:** changing the order of the operations does not change the result

**Product:** multiply terms

**Inverse:** the opposite function

**Square root:** a square root of a number is a number when multiplied by itself gives the value (symbol  $\sqrt{\quad}$ )

**Square:** a term multiplied by itself.

**Expression:** a maths sentence with a minimum of two numbers and at least one math operation (no equals sign)

### Perform calculations that cross zero

Number lines are useful to help you visualise the calculation crossing 0

$4 - 6 = -2$

Use the number line to guide subtraction of 6

Start at 4

Find the difference between 6 and -4

From 6 to 0  
6  
From 0 to -4  
4  
10 beads between them

$-5 + 5 = 0$

Rearrangements of the same equation

$5 - 5 = 0$

### Add directed numbers

$2 + -4 = -2$

Representations

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

Two  $-1$ 's left  $= -2$

$8 + -3 = 5$

Partitioning

$8 + -3 = 5$

$5 + 3 + -3 = 5$

Partition the value to create a zero pair calculation

Generalisation

$+ - = -$

### Subtract directed numbers

Representations

$2 - -1 = 3$

"Subtract" - means take away or remove

Representation for calculation

Take away one

Start with the representation of 2

$2 - -3 = 5$

Generalisation

$- - = +$

### Multiply/ Divide directed numbers

Two representations of the same calculation

$2 \times -3 = -6$

Negative, Negative calculation

$-2 \times -3$

This is the negative of  $2 \times -3$

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

$-2 \times -3 = 6$

Divisions are the inverse operations

### Evaluate algebraic expressions

$a = 5$

$b = -4$

$a^2 = 5^2$

$a^2 = 25$

$b^2 = (-4)^2$

$b^2 = 16$

With negative numbers the brackets are important so that it performs  $-4 \times -4$

Brackets around negative substitutions helps remove calculation errors

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

$3b - 2a = 3(-4) - 2(5) = -12 - 10 = -22$

### Two-step equations

Bar Model

$4x + 2 = 10$

$10 - 4x = 2$

Representing the same question (use fact families)

Function machine

$x \rightarrow \times 4 \rightarrow +2 \rightarrow 10$

Inverse operations to find x

### Use order of operations

Brackets

Indices or roots

Multiplication or division

Addition or subtraction

Brackets around negative substitutions helps remove calculation errors

Remember square roots have a positive and negative value

+	-3	-2	-1	0	1	2	3
-3	9	6	3	0	-3	-6	-9
-2	6	4	2	0	-2	-4	-6
-1	3	2	1	0	-1	-2	-3
0	0	0	0	0	0	0	0
1	-3	-2	-1	0	1	2	3
2	-6	-4	-2	0	2	4	6
3	-9	-6	-3	0	3	6	9

# YEAR 7 — FRACTIONAL THINKING

## Addition and subtraction of fractions

@whisto\_maths

### What do I need to be able to do?

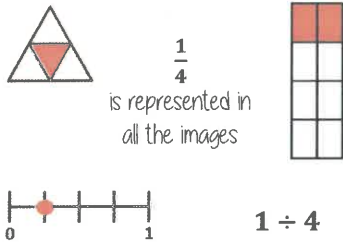
By the end of this unit you should be able to:

- Convert between mixed numbers and fractions
- Add/Subtract unit fractions (same denominator)
- Add/Subtract fractions (same denominator)
- Add/Subtract fractions from integers
- Use equivalent fractions
- Add/Subtract any fractions
- Add/Subtract improper fractions and mixed numbers
- Use fractions in algebraic contexts

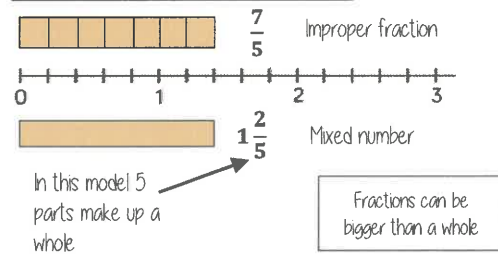
### Keywords

- Numerator:** the number above the line on a fraction. The top number. Represents how many parts are taken
- Denominator:** the number below the line on a fraction. The number represent, the total number of parts
- Equivalent:** of equal value
- Mixed numbers:** a number with an integer and a proper fraction
- Improper fractions:** a fraction with a bigger numerator than denominator
- Substitute:** replace a variable with a numerical value
- Place value:** the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

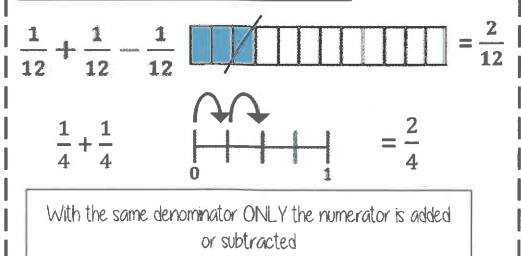
### Representing Fractions



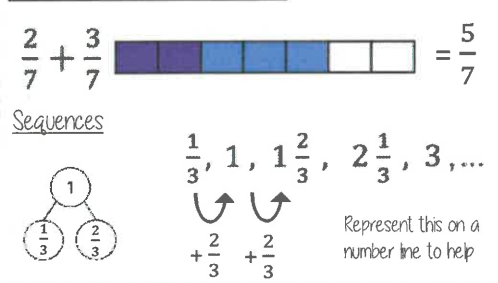
### Mixed numbers and fractions



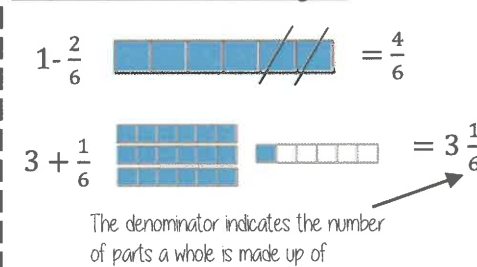
### Odd/Subtract unit fractions



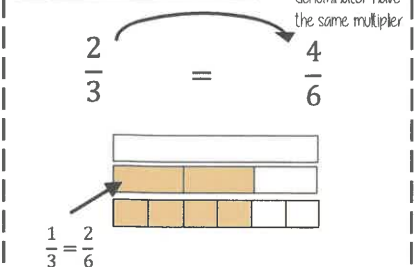
### Add/Subtract fractions



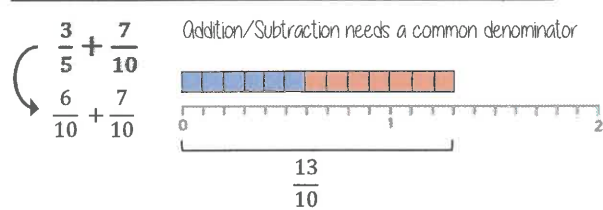
### Add/Subtract from integers



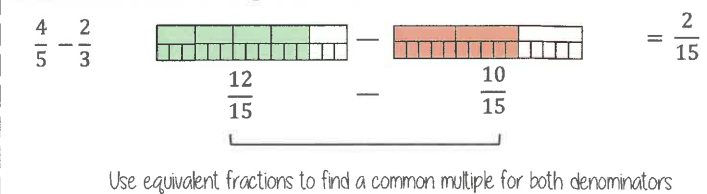
### Equivalent fractions



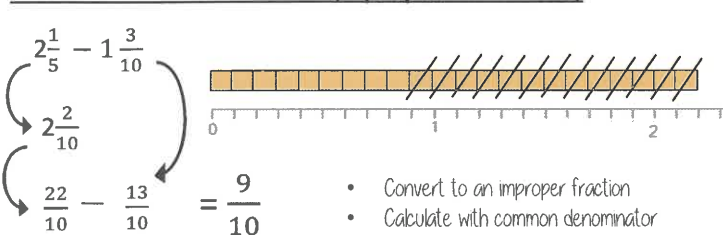
### Add/Subtraction fractions (common multiples)



### Add/Subtraction any fractions



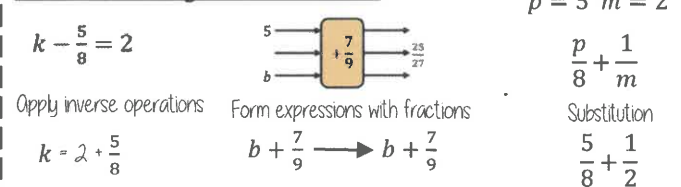
### Add/Subtraction fractions (improper and mixed)



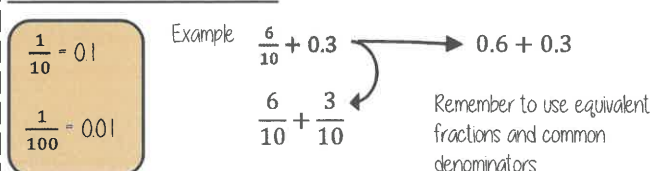
### Partitioning method

$$2\frac{1}{5} - 1\frac{3}{10} = 2\frac{2}{10} - 1\frac{3}{10} = 2\frac{2}{10} - 1 - \frac{3}{10} = 1\frac{2}{10} - \frac{3}{10} = \frac{9}{10}$$

### Fractions in algebraic contexts



### Fractions and decimals





## Exploring Instruments of the Orchestra

### A. Key Words, Terms and Facts about the Orchestra

**ORCHESTRA** – A large ENSEMBLE (group of musicians) of performers on various musical instruments who play music together. No set numbers of performers although a **SYMPHONY ORCHESTRA** (a large orchestra) can have between 80-100+ performers. Famous orchestras include: **THE LONDON SYMPHONY ORCHESTRA**, **THE BBC SYMPHONY ORCHESTRA** and the **HALLÉ ORCHESTRA** (Manchester).

**CONDUCTOR** – Leads the orchestra with a **BATON** (white 'stick') and hand signals. Stands at the front so they can be seen by all performers. Sets the **TEMPO** and **BEATS TIME**. Brings different instruments 'in and out' when it is their turn to play. Keeps the performers together. Takes charge in rehearsals. In ultimate control of the performance of the music, adjusting **DYNAMICS**, **TEMPO**, and mood.

**FAMILIES/SECTIONS** – Instruments of the orchestra can be divided into 4 families or sections: **STRINGS**, **WOODWIND**, **BRASS** and **PERCUSSION**.

**TUNING UP** – Before the orchestra rehearses or plays, all instruments need to be **IN TUNE** with each other.

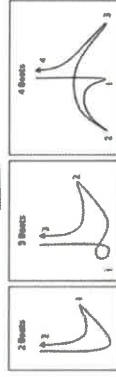
The **OBOE** always sounds the note 'A' which all other instruments **TUNE** to.

**SONORITY** (also called **TIMBRE**) – Describes the **UNIQUE SOUND OR TONE QUALITY** of different instruments and the way we can identify orchestral instruments as being distinct from each other – Sonority can be described by many different words including – *velvety, screechy, throaty, rattling, mellow, chirpy, brassy, sharp, heavy, buzzing, crisp, metallic, wooden etc.*

**PITCH** - The **HIGHNESS** or **LOWNESS** of a sound, a musical instrument or musical note (*high/low, getting higher/lower, step/leap*).



Conductor



Sir Simon Rattle

Sir Andrew Davis

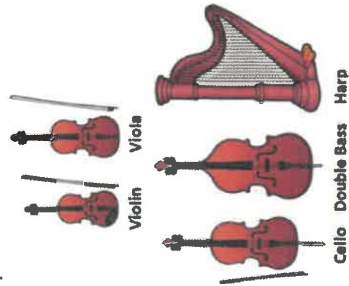
Karina Camellakis

### C. Strings Section/Family

Largest section of the orchestra who sit at the front, directly in front of the conductor.

Usually played with a **BOW** (**ARCO**), (not the **HARP**) but can be **PLUCKED** (**PIZZICATO**).

**VIOLINS** split into two groups: **1<sup>st</sup> VIOLINS** (often have the main **MELODY** of the piece of music) and **2<sup>nd</sup> VIOLINS**.



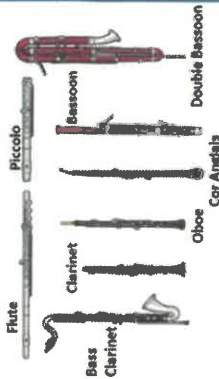
### D. Woodwind Section/Family

Originally (and some still are) made from wood (some now metal and plastic). All are **BLOWN**.

**FLUTES**: Flute and Piccolo – air blown over hole.

**SINGLE REED** (small piece of bamboo in the mouthpiece): Clarinet, Bass Clarinet & Saxophone (not traditionally in the orchestra, but some modern composers have used it)

**DOUBLE REED** (two reeds in the mouthpiece): Oboe, Cor Anglais, Bassoon, Double Bassoon.



### E. Brass Section/Family

Four types of brass instruments in an orchestra, all made from metal – usually brass and **BLOWN** by the player 'buzzing their lips' into a **MOUTHPIECE** (shown right).

The Trumpet, French Horn and Tuba all have three **VALVES** which, along with altering the players mouth positions, adjust the length of the tubing allowing for different notes to be played. The Trombone has a **SLIDE** which adjusts the length of the tubing. Brass instruments (along with Percussion) have often been used to play **FANFARES**: a short, lively, loud piece of music usually warlike or victorious in character used to mark the arrival of someone important, give a signal e.g., in battles, of the opening of something e.g., a sporting event or ceremony.

Fanfares often use notes of the **HARMONIC SERIES** – a limited range of notes played by **BUGLES** (smaller trumpets with no valves) and valveless trumpets.



### F. Percussion Section/Family

Always located at the very back of the orchestra (due to their very loud sounds!). Large number of instruments which produce their sound then *hit, struck, scraped, or shaken*.

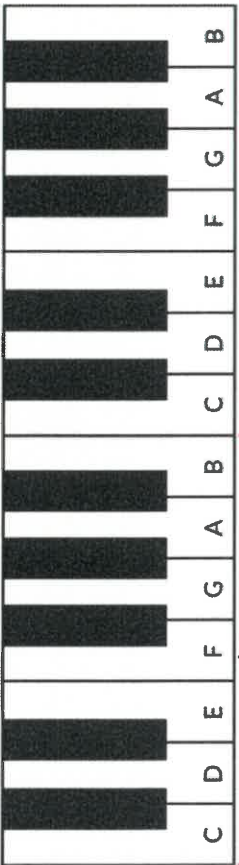
**TUNED PERCUSSION** (able to play different pitches/notes)



# Keyboard Skills

## Exploring Treble Clef Reading and Notation

### A. Layout of a Keyboard/Piano

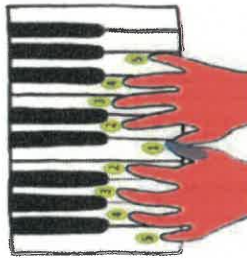
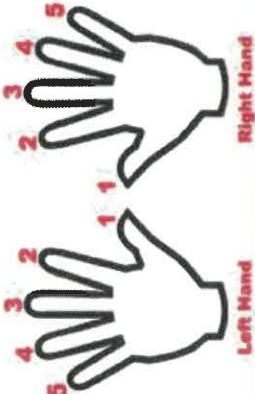


A piano or keyboard is laid out with **WHITE KEYS** and **Black Keys** (see section G). C is to the left of the two Black Keys and the notes continue to G then they go back to A again. Notes with the same letter name/pitch are said to be an **OCTAVE** apart. **MIDDLE C** is normally in the centre of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

### D. Keyboard Functions

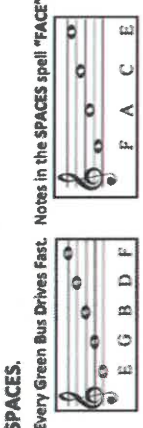


### E. Left Hand/Right Hand (1-5)

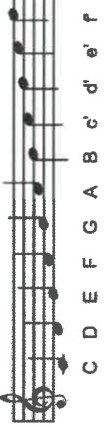


### B. Treble Clef & Treble Clef Notation

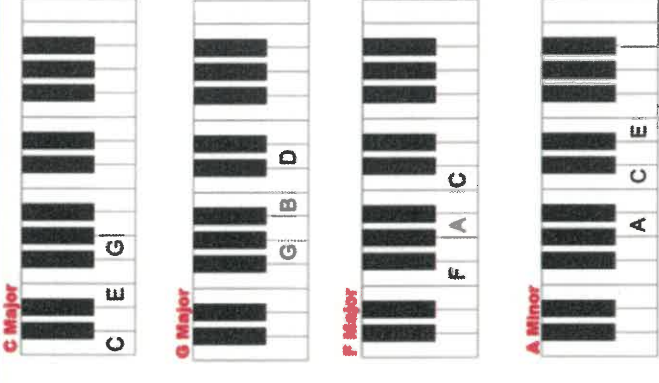
A **STAVE** or **STAFF** is the name given to the five lines where musical notes are written. The position of notes on the staff or staff shows their **PITCH** (how high or low a note is). The **TREBLE CLEF** is a symbol used to show high-pitched notes on the staff and is *usually* used for the right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



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



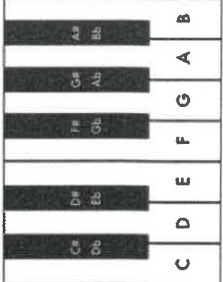
### C. Keyboard Chords



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

### F. Black Keys and Sharps and Flats

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



# Year 7 Terms 3 & 4 - Comparative religion

## The 6 Major World Religions and How We Identify Them

### Christianity

Identifying Features: Belief in Jesus Christ as the Son of God and the Savior of humanity. The Bible is their sacred text. The religion focuses on salvation, the afterlife, and the resurrection of Jesus.

### Islam

Identifying Features: Followers are called Muslims, and they believe in Allah as the one true God and the Prophet Muhammad as His last messenger. The Qur'an is the sacred text, and the Five Pillars of Islam are fundamental practices.

### Judaism

Identifying Features: The oldest of the Abrahamic religions, it centres on the belief in one God (Yahweh). The Torah (first five books of the Hebrew Bible) is the central sacred text. Jewish practices include observance of laws and traditions such as the Sabbath and - Identifying Features: A diverse religion with no single founder, it believes in the cycle of birth, death, and rebirth (samsara) and aims for moksha (liberation). The sacred texts include the Vedas, Upanishads, Bhagavad Gita, and Ramayana.

### Buddhism

Identifying Features: Founded by Siddhartha Gautama (Buddha), it teaches the Four Noble Truths and the Eightfold Path to overcome suffering (dukkha). The aim is to reach enlightenment (nirvana) and escape the cycle of samsara.

### Sikhism

Identifying Features: Founded by Guru Nanak in the 15th century, Sikhism emphasizes monotheism, equality, and service to others. The Guru Granth Sahib is their central religious text.

## What the Abrahamic Faiths Have in Common

The Abrahamic religions—Judaism, Christianity, and Islam—share several common features:

- Monotheism: They all believe in one God who is the Creator of the universe.
- Abraham: All trace their spiritual lineage to the patriarch Abraham.
- Sacred Texts: Each has a foundational scripture: the Torah (Judaism), the Bible (Christianity), and the Qur'an (Islam).
- Prophethood: They believe in prophets through whom God's revelations were communicated.
- Moral Laws: Each religion emphasizes a system of ethical teachings and commandments for living.
- Afterlife: All believe in an afterlife, with a focus on judgment and eternal life.

## What the Dharmic Faiths Have in Common

The Dharmic religions include Hinduism, Buddhism, Jainism, and Sikhism. While there is considerable diversity within these traditions, they share several common features:

- Karma and Rebirth: All believe in the concepts of karma (the law of moral cause and effect) and samsara (the cycle of birth, death, and rebirth).
- Dharma: The notion of dharma refers to duty, righteousness, and living in accordance with the moral order.
- Spiritual Liberation: Each tradition seeks liberation from samsara—whether through moksha (Hinduism), nirvana (Buddhism), or similar concepts.
- Meditation and Ethics: Emphasis to attain spiritual goals.

### Why Do People Go on Religious Pilgrimages?

- Religious pilgrimages are journeys to sacred sites, often taken for spiritual growth, penance, or fulfillment of religious duties. Common reasons include:
- **Spiritual Connection:** To connect with the divine or the sacred through proximity to holy sites.
- **Fulfillment of Religious Duty:** In some religions, pilgrimages are a required practice, such as the Hajj in Islam.
- **Seeking Healing or Blessings:** Many go to sacred sites seeking physical or spiritual healing, blessings, or answers.
- **Strengthening Faith:** Pilgrimages often renew religious commitment and devotion.
- **Community and Tradition:** Pilgrimages also offer a chance for believers to come together, fostering a sense of community and tradition.

### Religious Leaders

Religious leaders vary across different faiths and often fulfil roles of spiritual guidance, teaching, and leadership:

- **Christianity:** Priests, pastors, bishops, popes (for Catholicism), and ministers.
- **Islam:** Imams, mullahs, ayatollahs (in Shia Islam).
- **Judaism:** Rabbis, cantors.
- **Hinduism:** Gurus, swamis, priests (pujaris).
- **Buddhism:** Monks, lamas (in Tibetan Buddhism), teachers (senseis in Zen).
- **Sikhism:** Gurus (historically), now the Guru Granth Sahib is the eternal Guru, and Sikh leaders (Gurdwara priests).

### Why Do People Have Religious Festivals?

Religious festivals are significant events that mark important moments in religious history, such as the birth of a deity, a sacred text, or a key religious event. They serve several purposes:

- **Celebration of the Divine:** Many festivals commemorate important figures or divine events, like Christmas (Christianity), Eid (Islam), or Diwali (Hinduism).
- **Strengthening Community:** Festivals are communal affairs that bring people together, enhancing social bonds and shared cultural practices.
- **Renewing Faith:** Festivals serve as opportunities for reflection, renewal of faith, and spiritual practice.
- **Expressing Gratitude and Devotion:** Festivals are often times for thanking deities for blessings, and for offering prayers and sacrifices.
- **Marking Time:** Festivals often align with specific times of the year

### Different Places of Worship: What Are They and What Makes Them Special?

**Christianity:** Churches (or cathedrals) are places of worship, prayer, and community gatherings. They are often characterized by crosses, altars, and pews.

**Islam:** Mosques are places where Muslims gather for prayers, particularly on Fridays for the Jum'ah (weekly congregational prayer). Key features include minarets, prayer rugs, and the qibla (direction toward Mecca).

**Judaism:** Synagogues are places for prayer, study, and community gatherings. They often contain the Torahs are kept.

**Hinduism:** Temples are dedicated to particular deities and often feature statues or images of gods. They are places for puja (worship) and festivals.

**Buddhism:** Temples and monasteries are places for meditation, rituals, and teachings. They often house statues of the Buddha and are designed for reflection and serenity.

**Sikhism:** Gurdwaras are places of worship where the Guru Granth Sahib (the Sikh holy book) is read and sung. They are also centres of community service, offering food (langar) to all.

# P1 Chapter 3: Energy

## Knowledge organiser

### Energy

- **Energy** is needed to make things happen
- It is measured in **joules** or **kilojoules**
- The **law of conservation of energy** says that energy cannot be created or destroyed, only transferred
- This means that the total energy before a change is always equal to the total energy after a change

Energy can be in different energy **stores**, including:

- **Chemical** – to do with food, fuels and batteries
- **Thermal** – to do with hot objects
- **Kinetic** – to do with moving objects
- **Gravitational potential** – to do with the position in a gravitational field
- **Elastic potential** – to do with changing shape, squashing and stretching

### Food and energy

- Food has energy in a chemical energy store
- Different foods contain different amounts of energy
- Different activities require different amounts of energy
- Different people need different amounts of energy depending on what they do each day

### Power and energy

- **Power** is a measure of how much energy is transferred per second
- Power is measured in **watts (W)**
- Each appliance has its own power rating to tell us how quickly it uses energy
- We can calculate power with the equation:

$$\text{power (W)} = \frac{\text{energy (J)}}{\text{time (s)}}$$

### Non-renewable energy

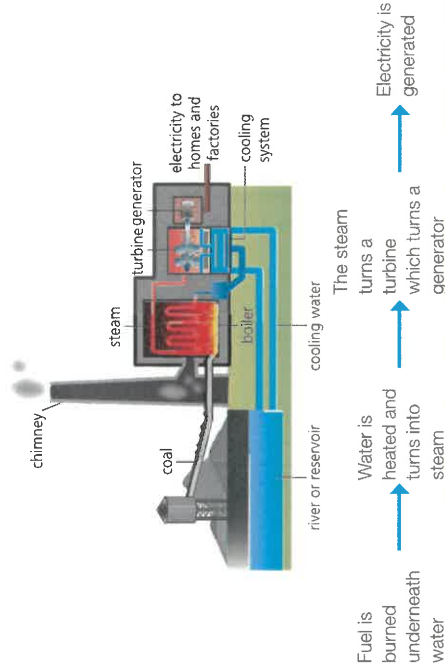
- **Non-renewable** energy cannot be replaced within your lifetime
- Non-renewable **energy resources** include coal, oil, natural gas and nuclear resources
- Coal, oil and natural gas are also known as **fossil fuels**, they release carbon dioxide when burned which contributes to global warming

### Renewable energy

- **Renewable** energy can be replaced within your lifetime
- Renewable energy resources include wind, tidal, wave, biomass, solar, hydroelectric and geothermal
- Renewable energy resources do not produce much carbon dioxide, meaning that they have a smaller effect on global warming

### Power stations

Thermal power stations burn coal, oil and natural gas, which are all non-renewable energy resources



### Dissipation of energy

- We say that energy is **dissipated** when it is transferred to a nonuseful store, it cannot be used for what it was intended for
- Energy can be wasted through friction, heating up components or heating the surroundings
- **Efficiency** is a measure of how much of the energy has been used in a useful way, we can calculate this with the equation:

$$\text{efficiency (\%)} = \frac{\text{useful energy output}}{\text{energy input}} \times 100$$

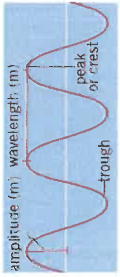
### Key terms

Make sure you can write definitions for these key terms.

chemical    dissipated    efficiency    elastic potential    energy    energy resources    fossil fuels    gravitational potential    joules    kinetic    kilojoules  
law of conservation of energy    non-renewable    power    renewable    thermal    watts

### Properties of waves

- A wave is an **oscillation** or **vibration** which transfers energy from one place to another
- Amplitude** – the distance from the middle to the top of bottom of the wave
- Wavelength** – the distance between a point on the wave to the same point on the next wave
- Trough** – The bottom of the wave
- Peak** – The top of the wave
- Frequency** – How many waves pass a fixed point per second, measured in Hertz (Hz)



There are two main types of waves:

#### Transverse waves, e.g. light

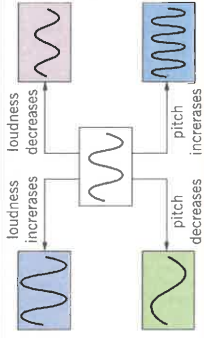
- Travel at 90° direction of energy transfer
- Do not need a medium to travel through

#### Longitudinal waves, e.g. sound

- Travel in the direction of energy transfer
- Need a medium to travel through

### Sound waves

- Sound waves are caused by the vibration of particles; sound travels quicker in a solid than a gas as the particles are closer together
- Oscilloscopes** display sound waves on a screen
- Humans can hear between 20–20000 **hertz** (Hz), but other animals have different ranges of hearing
- Sound waves above 20000 Hz are known as **ultrasound**, these sound waves are too high pitched for humans to hear

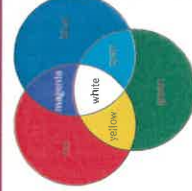


### Hearing

- The **pinna** directs sound along the **auditory canal** to the **eardrum** which will vibrate
- The vibration from the ear drum moves onto the ossicles which amplifies the sound
- This passes the sound to the cochlea where tiny hairs detect the vibrations and passes this along to the **auditory nerve** as electrical signals for our brain

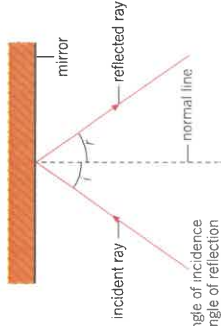
### Colour

- Light can be split using a prism and is made up from different colours of light
- Primary colours** can be mixed in order to form **secondary colours**
- Objects appear a certain colour as they absorb all other colours of light, but reflect the colour of light which they appear.

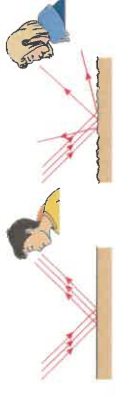


### Reflection

- The **law of reflection** states that the **angle of incidence** will be equal to the **angle of reflection**

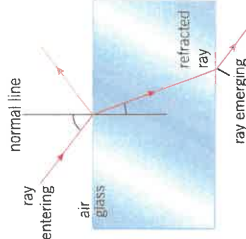


- For light reflecting off a smooth surface will form an image is called **specular reflection**
- Reflection off of a rough surface will not form an image and is known as **diffuse scattering**



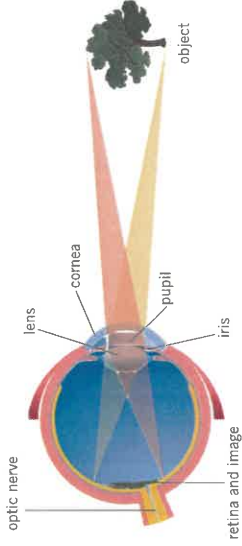
### Refraction

- Refraction** occurs when a wave passes between two different substances
- This happens as the wave will travel at different speeds in the different materials
- When the wave passes into a more dense material from a less dense material it will bend towards the **normal**, e.g. air into glass
- When the wave passes into a less dense material from a more dense material it bends away from the normal e.g. glass to air



### Light and the eye

- 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
- If the light is not focussed on the retina or the eye, people cannot see properly
- Long sighted people have the light focus behind the eye, short sighted people have the light focus in front of the retina.
- Lenses can be used to refract the light in a way in which it will focus on the retina.



### Key terms

Make sure you can write definitions for these key terms.

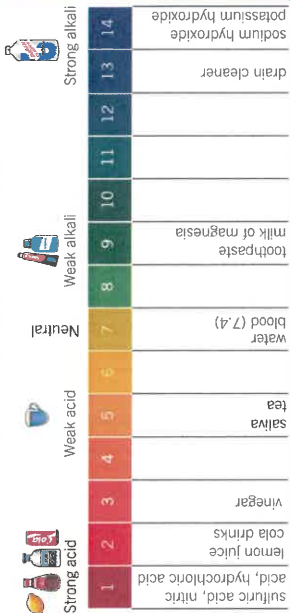
amplitude angle of incidence angle of reflection auditory canal auditory nerve diffuse scattering frequency hertz law of reflection lens longitudinal normal oscillation oscilloscope peak photoreceptors primary colour refraction secondary colour specular reflection transverse trough ultrasound wave wavelength

### Chemical reactions

- A **chemical** reaction is a change in which atoms are rearranged to make new substances
- A **reversible** reaction is one where the products can react to get back the substances which you started with, most chemical reactions are not reversible
- You can look for signs that a chemical reaction has taken place such as flames, smells, heat change, a loud bang or gentle fizz

### Acids and alkalis

- Acids** and **alkalis** are the chemical opposites of one another
  - Both acids and alkalis can be **corrosive** and **irritants**
- To see whether a substance is an acid or an alkali, we can use an **indicator**. Indicators show how acidic or how alkaline a solution is by showing its position on the **pH scale**, one example of this is **universal indicator**
- If the solution has a pH value of 1–6 it is **acidic**
  - If the solution has a pH value of 8–14 it is **alkaline**
  - If the solution has a pH value of 7 it is known as **neutral**

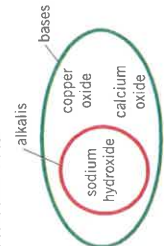


### Acid strength

- The strength of an acid depends on how much of the acid has broken apart when it has dissolved in water
  - Hydrogen chloride dissolves in water to form hydrochloric acid; this is a **strong acid** as all of the particles split up
  - A **weak acid** will have particles that do not all split up
- 
- The **concentration** of the acid is the amount of acid which has dissolved in 1 litre of water
  - The more concentrated the acid, the lower the pH

### Neutralisation

- Neutralisation** reactions are any reaction in which acids react with a **base** to cancel out the effect of the acid
- These reactions form a neutral solution with a pH of seven
- A **base** is any substance which neutralises an acid
- An alkali is a base which has been dissolved in water

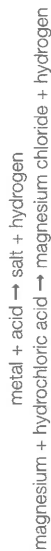


### Salts

- Salts** are substances which are formed when an acid reacts with a metal or metal compound
- Different acids form different types of salts:
  - Hydrochloric acids form chloride
  - Sulphuric acids form sulphates
  - Nitric acids form nitrates

### Metal reactions

When a metal reacts with an acid it will produce a salt and hydrogen gas, the fizzing that you see is the hydrogen gas being given off



When a metal reacts with oxygen a metal **oxide** is formed, this process is known as **oxidation**



- When a metal reacts with water it forms a metal **hydroxide** and hydrogen gas.
  - The alkali (group 1) metals react most vigorously, giving off a brightly coloured flame
- $$\text{metal} + \text{water} \rightarrow \text{metal hydroxide} + \text{hydrogen}$$
- $$\text{sodium} + \text{water} \rightarrow \text{sodium hydroxide} + \text{hydrogen}$$

When a more reactive metal reacts with a compound containing a less reactive metal, it can take it's place, this is known as a **displacement** reaction



- If the metal on it's own is higher in the **reactivity series** than the metal in the compound a reaction will take place
- If the metal on it's own is lower in the reactivity series than the metal in the compound, a reaction will not take place

### The reactivity series

- The **reactivity series** describes how reactive different metals are compared to one another
- The higher the metal is in the reactivity series the more reactive it will be this means that it will react much more vigorously



Make sure you can write definitions for these key terms.



acid

alkali

alkaline

base

chemical

chemical reaction

pH scale

reversible

concentration

concentrated

corrosive

displacement

hydroxide

indicator

irritant

neutral

universal indicator

weak acid

