Fir Vale School

KS3 (Y7, Y8, Y9)

Get Ready

Revision Pack

Year 7 Pack

Please use this pack to revise for everything you have studied during Term 1-5.

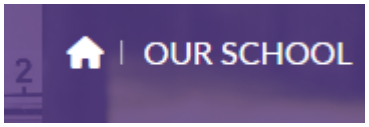
The end of year examinations will take place from Monday 2nd until Friday 13th of June.

If you have any questions regarding this pack come and see Mr.Darazkan or send an email to mdarazkan@firvale.com

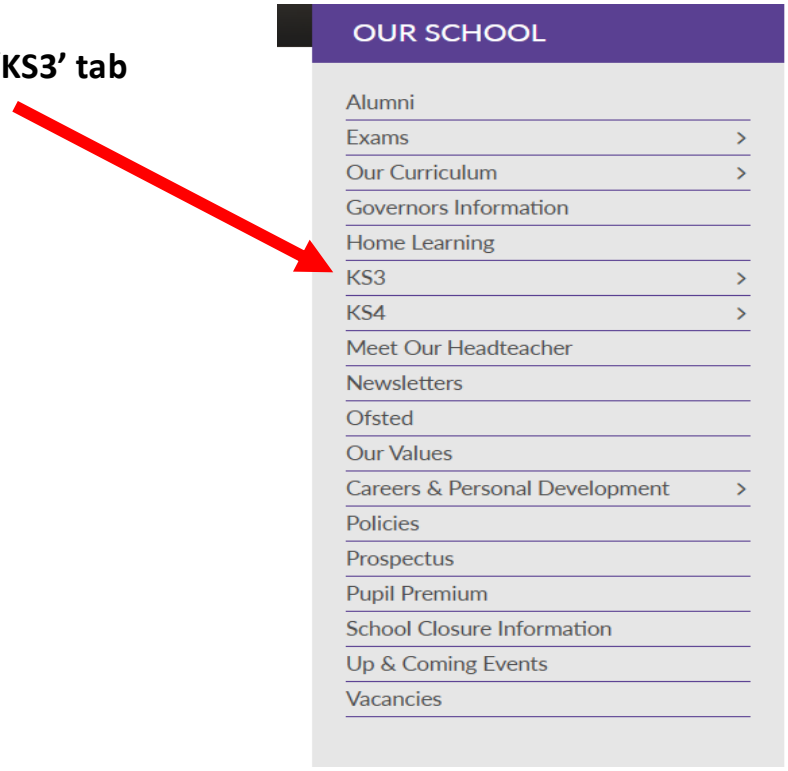
How to find your subjects Knowledge Organisers on Fir Vale School Website

1- **Go to https://www.firvale.com/**

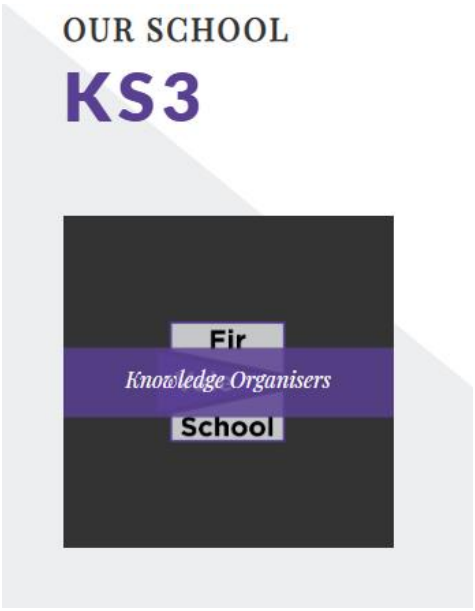
2- **Click on the tab 'Our School'.**



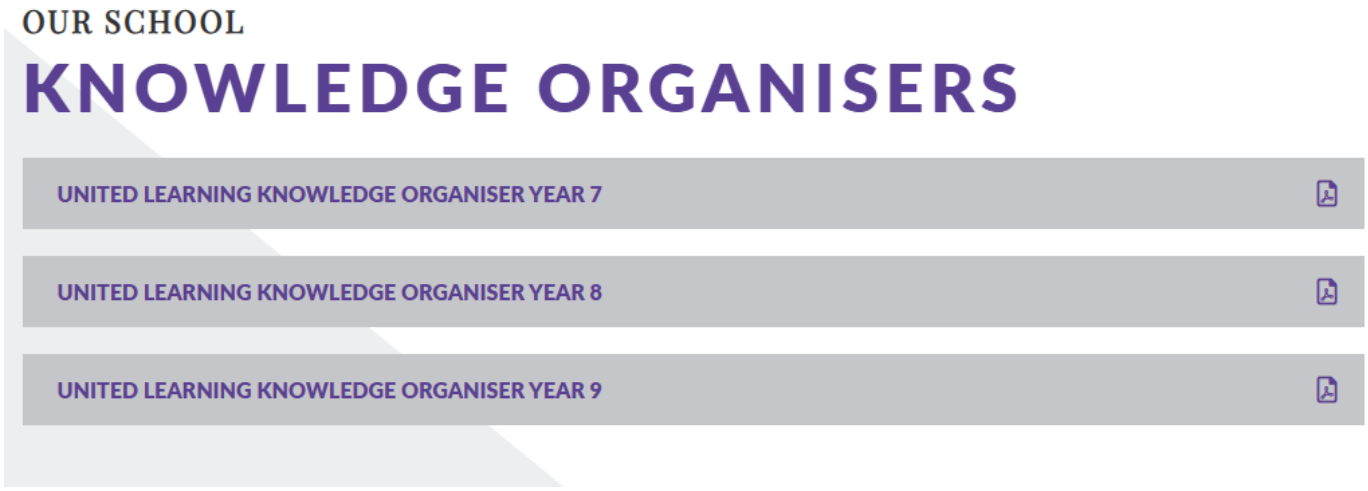
3- **Click on 'KS3' tab**



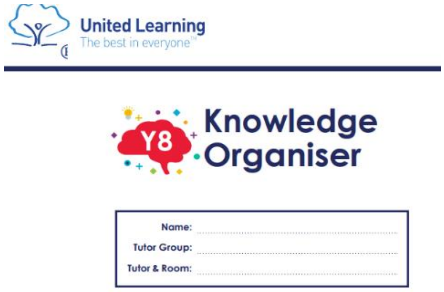
4- **Click on 'Knowledge Organisers'.**

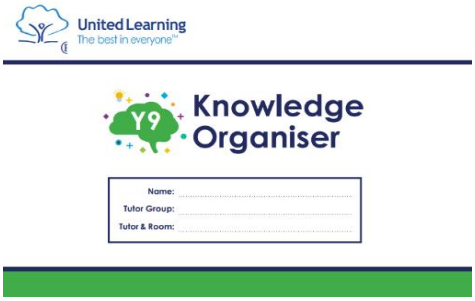


5- **Click on the relevant Knowledge organiser for your year group.**



6- **Once you open the file then you will need to find the subject that you would like to revise for.**





7- **Find the subjects that you would like to revise for in the content table and then scroll down to find the relevant Knowledge Organiser.**

Maths Year 7 End of Year Assessment Topics		Sparx Codes
Numerical Skills	Understand and use place value for decimals. Calculations with negative numbers. Estimate calculations by rounding.	M763, M704, M522, M527, M135, M111, M431, M878
Order of operations	Solve calculations requiring understanding of B-I-DM-AS (know that the inverse of squaring is 'square rooting')	M521
Introduction to Algebra	Introduce the concept of algebra, simplify expressions, manipulate expressions through simple one step rearranging, substitute positive and negative integers into expressions, solve siimple one step equations. Substitute and solve.	M106, M830, M813, M795, M531, M417, M327, M208, M979
Primes, Factors and Multiples	Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple	M227, M823, M698, M322, M829
Expanding and Factorising 1	Simplify and manipulate algebraic expressions to maintain equivalence by multiplying a single term over a bracket or by taking out common factors	M288, M237, M792, M100
Addition and Subtraction	Use Addition and Subtraction, including formal written methods, applied to integers, decimals	M928, M429, M347, M152, M899
Perimeter	Calculate and solve problems involving perimeters of rectangles and compound shapes (not circles). Converting metric units of length.	M920, M635, M690
Mean	Describe, interpret and compare observed distributions of a single variable through the use of the mean	M940
Multiplication and Division	Use Multiplication and Division, including formal written methods, applied to integers, decimals	M113, M911, M187, M803, M462, M354, M873, M262
Area of triangles and quadrilaterals	Derive and apply formulae to calculate and solve problems involving area of triangles and quadrilaterals. Converting metric units of area.	M900, M390, M291, M610, M269, M996
Fraction Manipulation	Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1	M158, M410, M671, M939, M601
Adding and Subtracting Fractions	Use addition and subtraction, including formal written methods, applied to proper and improper fractions, and mixed numbers	M835, M931
Comparing and Ordering Fractions	Compare and order fractions by creating common denominators	M335, M958
Fractions of amounts	Interpret fractions as operators	M695
Polygons	Derive, describe, and illustrate properties of triangles, quadrilaterals and other plane figures. Describe, sketch, and draw regular polygons, and other polygons that are reflectively and rotationally symmetric example, equal lengths and angles] using appropriate language and technologies	M276, M523
Angles	Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles	M502, M541, M780, M331, M818, M351, M679, M319
Coordinates	Read and plot coordinates in all 4 quadrants. Coordinates and developing algebraic relationships. Find midpoints. Understand how coordinates link to basic graphs of y=a, x=a, y=x and y=-x	M618

How do I revise for my next English assessment?

This sheet will help you understand what kind of questions you will get in your next English test. It will also give you links to on line videos and quizzes you can try at home to help you revise.

Sparx Reader

The best way to revise for any test is to make sure you are always doing your Sparx Reader homework. It gives you short pieces of a story to read and answer questions on, which is exactly what you will be doing in your next English test!

Punctuation and Grammar- In the test you will be asked to correct sentences using capital letters, commas and full stops in the right place. Use this quiz to test how good you are at punctuation!

Sentence types- In the next test, you will be asked about different types of sentences and how we might use them. Use this link that will show you a video and a quiz on what the different types of sentences are!

This video will guide you through verbs, nouns, adjectives and adverbs. You will need to know these for the test. Use this link to find the video: https://youtu.be/7zRih61HCZs

This video will guide you through similes, metaphors and personification. You will need to know these for the test. Use this link to find the video: https://youtu.be/NegoYIuXoEA

Cells and organisation

Cells and organisation

The seven common processes of living organisms

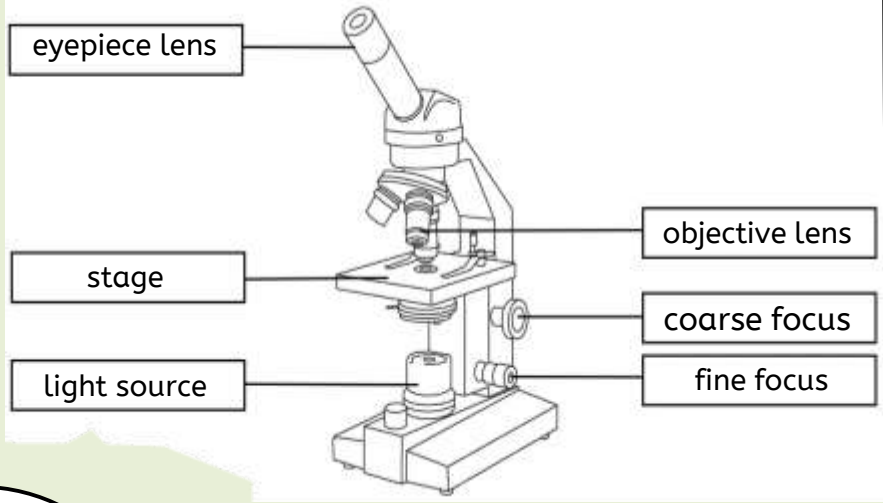
Process	Definition
Movement	Moving itself or its parts to change position or location.
Reproduction	Producing offspring of the same kind.
Sensitivity	Sensing and responding to changes in their surroundings.
Growth	Increasing in size and repairing parts that are damaged.
Respiration	Using oxygen and glucose (a sugar) to provide energy.
Excretion	Removal of waste substances that are no longer needed.
Nutrition	Using food or other nutrients like water to stay alive.

Levels or organisation

cell → tissue → organ → organ system

cell	The smallest living building block of organisms.
tissue	A group of similar cells that work together to perform a specific function.
organ	A structure made up of different types of tissues that work together to carry out a specific function.
organ system	A group of organs that work together to perform a common function.

The parts of the microscope

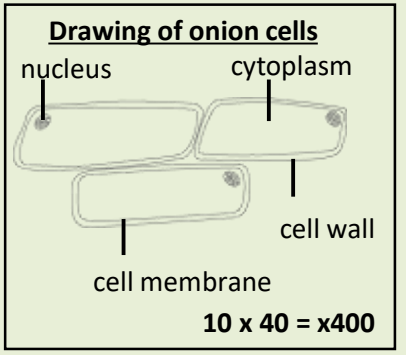


Total magnification = eyepiece x objective

Using a microscope

1. Turn the **objective lens** to the **lowest magnification**.
2. Secure the slide on the **stage** using the clips.
3. Move the **stage** up to the **objective lens** by turning the **coarse focus**.
4. Look down the **eyepiece lens** and move the stage away by turning the **coarse focus**.
5. To make the image sharper and clearer, turn the **fine focus.**
6. Rotate the **objective lens** to get a higher magnification.

Rules for scientific drawings of cells

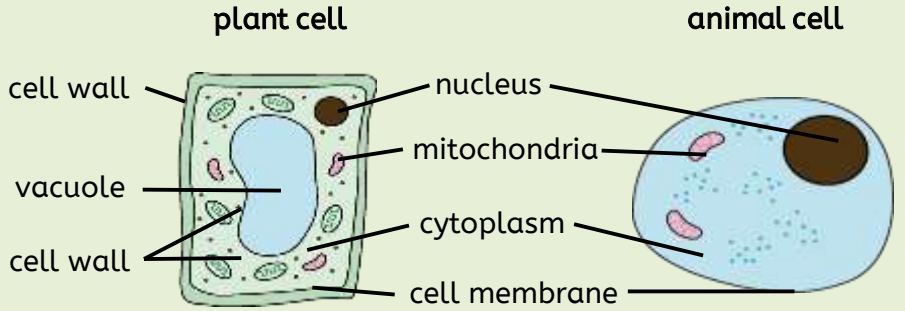


- smooth continuous lines
- large, with the same proportions
- stippling
- a few cells
- title and label
- total magnification

Cells and organisation

Cell organelles and their functions

nucleus	Contains the genome which controls the cell's activities.
cytoplasm	Where the chemical reactions of the cell take place.
mitochondria	Where energy is released in respiration.
cell membrane	Controls which substances enter or leave the cell.
vacuole	Stores a watery sap.
cell wall	Strengthen and support the cell.
chloroplasts	Where light is trapped for photosynthesis to happen.



Cells are three dimensional (3D).

The rate of diffusion

The rate of diffusion means how fast diffusion happens. Three factors that can affect the rate of diffusion are **temperature**, the **concentration** of particles and **surface area**.

- The higher the temperature, the faster the rate of diffusion.
- The bigger the difference in the concentration of particles, the faster the rate of diffusion.
- The larger the surface area, the faster the rate of diffusion.

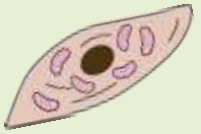
Needs of plants and animals for survival

- Plants need oxygen, water, light, carbon dioxide, minerals, a suitable temperature, and space to grow.
- Animals, including humans, need water, oxygen, nutrients and the right temperature to survive.
- Plants and animals need these to keep all the cells that make them up alive and functioning properly.

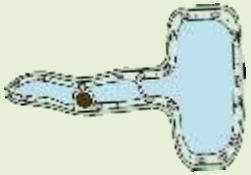
Oxygen and **glucose** (a sugar) are needed for **respiration** to take place in cells, to provide energy to keep cells alive. These useful substances enter the cell by **diffusion.** Waste products of respiration are carbon dioxide and water. Waste products leave the cell by diffusion and need to be removed from cells to keep them alive.

Specialised cells are adapted to carry out a specific function

<u>Palisade cell</u>
Lots of chloroplasts that absorb light for photosynthesis. **Column shape** to pack more in the leaf.



<u>Muscle cell</u>
Lots of mitochondria to release energy for contraction.



<u>Root hair cell</u>
A long cell membrane that provides a large surface area to absorb more water and minerals.

<u>Red blood cell</u>
No nucleus for space to carry more oxygen.

Cells and Organisation

Glossary

- **carbon dioxide:** (noun phrase) a gas present in the air, produced during respiration and essential for plant life
- **cell membrane:** (noun phrase) the part of the cell that controls which substances enter or leave the cell
- **cell wall:** (noun) the cell wall is made of fibres to strengthen and support the cell
- **cell:** (noun) the smallest living building block of organisms
- **chloroplasts:** (noun) the part of the cell where light is trapped for the plant to make food by photosynthesis
- **coarse focus:** (noun phrase) the larger focusing wheel on the microscope that moves the stage up and down to bring the object into a general focus
- **concentration:** (noun) the number of particles present in a certain volume (space)
- **cytoplasm:** (noun) the part of the cell where the chemical reactions of the cell take place
- **diffusion:** (noun) – the random spreading out of particles from an area of high concentration to and area of low concentration
- **excretion:** (noun) a process of living organisms. removal of waste substances that are no longer needed by the organism
- **eyepiece lens:** (noun) the lens at the top of the microscope that we look through for magnification
- **field of view:** (noun phrase) the area of a specimen that is visible through the eyepiece lens of a microscope at any given moment
- **fine focus:** (noun phrase) the smaller focusing wheel on the microscope (used after the coarse focus) to bring the object into sharp focus and clarity and remove any blurriness
- **function:** (noun) a special activity, purpose or job of a person or thing
- **genome:** (noun) a cell's set of instructions for growth, development, and life processes; the genome stores genetic information that was inherited from parents
- **glucose:** (noun) a sugar that cells use with oxygen to provide energy through respiration
- **growth:** (noun) a process of living organisms. when an organism increases in size and repairs parts that are damaged

- **hierarchy:** (noun) a system that organises or ranks things in order
- **lens:** (noun) a curved glass that bends light to change the size of an image
- **light source:** (noun phrase) the part that provides lighting to allow you to see the object being viewed
- **magnify:** (verb) to make something appear larger
- **microscope:** (noun) an instrument used to magnify small objects, usually objects that cannot be seen with the naked eye
- **minerals:** (noun) nutrients from the soil that plants need for survival and growth
- **mitochondria:** (noun) the part of the cell where respiration takes place, providing energy for the cell's activities
- **movement:** (noun) a process of living organisms. when an organism moves itself or its parts to change position or location
- **muscle cells:** (noun phrase) specialised cells in animals that are adapted for contracting to create movement (usually movement of body parts)
- **muscle contraction**: (noun phrase) shortening of muscle cells to generate a pulling force
- **nucleus:** (noun) the part of the cell that contains the genome, which controls activities in the cell
- **nutrition:** (noun) a process of living organisms. when an organism uses food or other nutrients like water to stay alive
- **objective lens:** (noun) the lens located on a rotating wheel, just above the stage, that is used for magnification - there are usually three of them
- **observation:** (noun) the act of noticing facts about things happening or existing in the world
- **organ:** (noun) a structure made up of different types of tissues that work together to carry out a specific function
- **organ system:** (noun phrase) a group of organs that work together to perform a common function
- **organelle:** (noun) cell structures that have specific functions to perform in the cell
- **organism:** (noun) something that is living or used to be alive
- **oxygen:** (noun) a gas that is found in the air and is essential for the survival of most living organisms as it is used in the process of respiration
- **palisade cells:** (noun phrase) specialised cells in plant leaves that are adapted for photosynthesis, which allows the plant to make food
- **photosynthesis**: (noun) the chemical reaction in which plants use carbon dioxide and water to make glucose and oxygen using energy transferred by light
- **qualitative data:** (noun phrase) non-numerical information, such as detailed descriptions

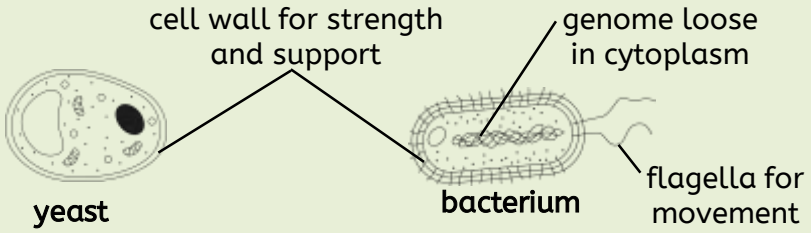
- **quantitative data:** (noun phrase) information that is numerical
- **red blood cells:** (noun phrase) specialised cells in animals that are adapted for transporting oxygen throughout the body
- **reproduction:** (noun) a process of living organisms. when an organism produces offspring of the same kind
- **respiration:** (noun) a process of living organisms. a chemical reaction that takes place in all living cells that releases energy
- **root hair cells:** (noun phrase) specialised cells in plant roots that are adapted for absorbing water and minerals from the soil
- **selectively permeable:** (adjective phrase) something that has holes in it to allow the movement of only some substances through whilst preventing the movement of others
- **sensitivity:** (noun) a process of living organisms. when an organism senses and responds to changes in its surroundings
- **specialised:** (adjective) adapted to suit a specific purpose; when cells or tissues become adapted to carry out their specific function
- **specimen:** (noun) a sample of an object or organism used for scientific examination or study
- **stage:** (noun) the part of the microscope where we place the object or sample that we want to observe under the microscope.
- **surface area:** (noun phrase) the entire outer area of an object or shape
- **temperature:** (noun) a measure of how hot or cold something is; it can be measured using a thermometer; its unit is degrees Celsius, °C
- **tissue:** (noun) a group of similar cells that work together to perform a specific function
- **vacuole:** (noun) where the cell sap is found in plant cells. sap is a fluid containing water, sugars and other substances

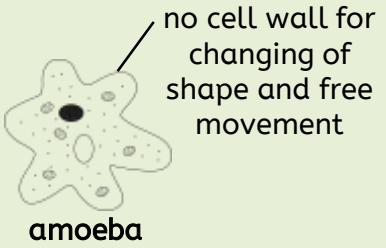
Organ Systems

Organ systems

Unicellular organisms are made of only one cell (e.g. bacteria, amoeba and yeast).

- They can carry out the 7 life processes of living organisms, all in one cell.
- Unicellular organisms share common organelles, but they also have adaptations.
- Unicellular organisms can be helpful or harmful.
- Unicellular organisms use diffusion to exchange substances.





Multicellular organisms are made of many cells (e.g. plants and humans).

- They are larger and more complex than unicellular organisms.
- They cannot rely on diffusion alone for exchanging substances.
- Multicellular organisms depend on tissues, organs, and organ systems working together to exchange and transport substances to cells of the body, to keep cells alive.
- Organ systems in humans include the **gas exchange system**, **digestive system**, **circulatory system**, **skeletal system** and **muscular system**.

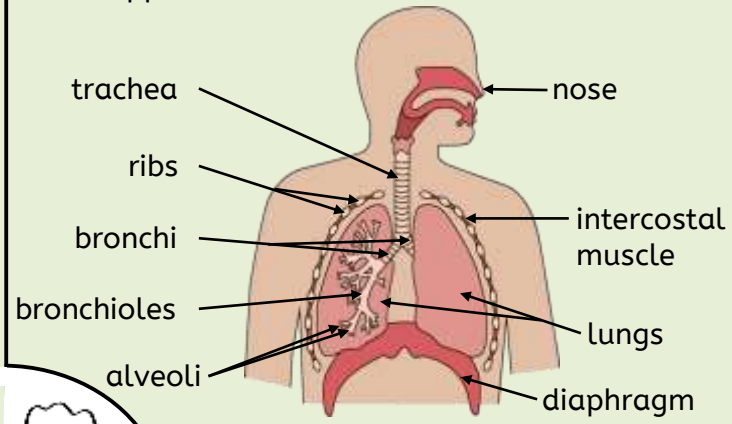
- Used in baking
- Used to make alcoholic drinks

- Supports digestion
- Used to make cheese and yoghurt

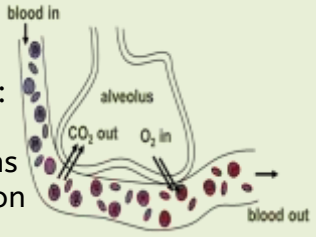
Gas exchange system

Air is a mixture of gases, including oxygen and carbon dioxide.

The human gas exchange system allows for the exchange of oxygen and carbon dioxide between an organism and its environment. Inhaled air contains more oxygen than exhaled air. Exhaled air contains more carbon dioxide than inhaled air. Oxygen moves from the alveoli into cells and then into the blood vessels (capillaries), while carbon dioxide moves in the opposite direction via diffusion.



Alveoli are adapted for efficient diffusion:



- **good blood supply** maintains the concentration difference
- **large surface area** for faster rate of diffusion
- **thin walls** (one cell thick) to provide a shorter diffusion pathway

Breathing involves changes in pressure and volume inside the chest, helped by the movement of intercostal muscles and diaphragm, which causes the movement of the ribcage.

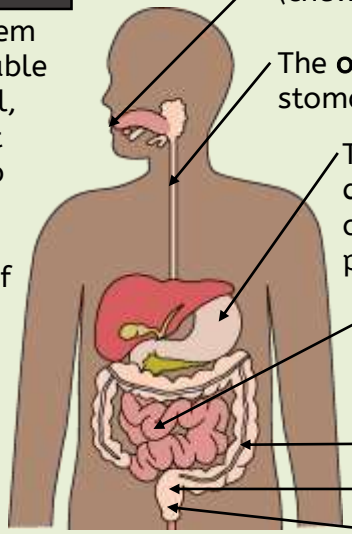
Vital capacity is the maximum volume of air exhaled after inhaling fully and can be used to estimate lung volume.

	Inhalation	Exhalation
Intercostal muscles	contract	relax
Ribcage	pulled up and out	released down and in
Diaphragm	contracts and moves downwards	relaxes and moves upwards
Volume in the chest	increases	decreases
Pressure in the chest	decreases	increases
Movement of air	into the lungs	out of the lungs

Organ systems

Digestive system

- The human digestive system breaks down large, insoluble food molecules into small, soluble molecules so that they can be absorbed into the blood.
- **Mechanical digestion:** the physical breakdown of food into smaller pieces.
- **Chemical digestion:** the use of chemical substances to break food down into smaller molecules.



The **mouth** performs both mechanical digestion (chewing) and chemical digestion (saliva).

The **oesophagus** connects the mouth to the stomach and uses peristalsis to push food down.

The **stomach** performs both mechanical digestion (muscular tissue contracts) and chemical digestion (glandular tissue producing chemical substances).

The **small intestine** breaks down food chemically. Absorption of digested nutrients also happens here.

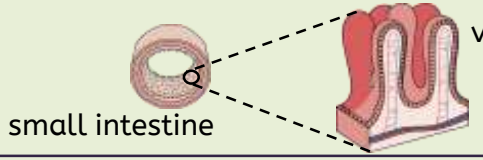
The **large intestine** reabsorbs water from undigested food back into the blood.

Faeces (poo) are stored in the **rectum**.

Faeces and waste gases are egested from the **anus**.

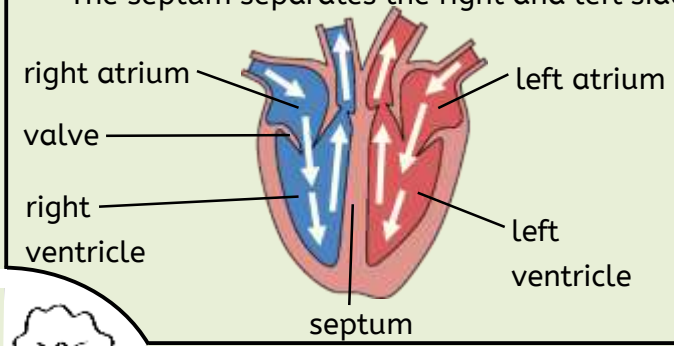
Adaptations:
The small intestine is covered in many villi for efficient absorption by diffusion:

- villi provide a **large surface area** for faster rate of diffusion
- villi have **good blood supply** to maintain the concentration difference
- villi have **thin walls** (one cell thick) to provide a shorter diffusion pathway



Circulatory system

- The circulatory system transports useful molecules and waste around the body. The human circulatory system consists of the heart, blood and blood vessels.
- The heart has four chambers: two atria and two ventricles.
- Valves ensure blood flows in the right direction.
- The septum separates the right and left sides of the heart.



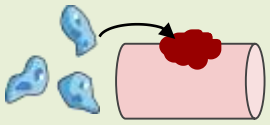
The heart pumps oxygenated blood from the lungs to the body and deoxygenated blood from the body to the lungs (double circulatory system).

Arteries	Capillaries	Veins
• Blood taken away from heart • High pressure blood • Thick muscular and elastic walls • Small lumen	• Exchange substances between blood and cells • Very low pressure blood • Very thin walls (one cell thick) • Very small lumen	• Blood brought back to heart • Low pressure blood • Thin walls • Large lumen • Valves prevent back flow

Organ systems

Circulatory system (continued)

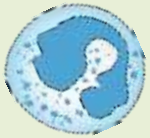
Blood is a fluid that transports substances, useful molecules and waste around the body. Blood helps the body to defend against diseases and to form scabs to heal cuts.



Platelets help with blood clotting for wound healing.

Plasma carries the other blood parts, nutrients, waste and carbon dioxide. It is yellow coloured and mostly water.

Red blood cells carry oxygen to all the cells of the body.



White blood cells help defend against disease.

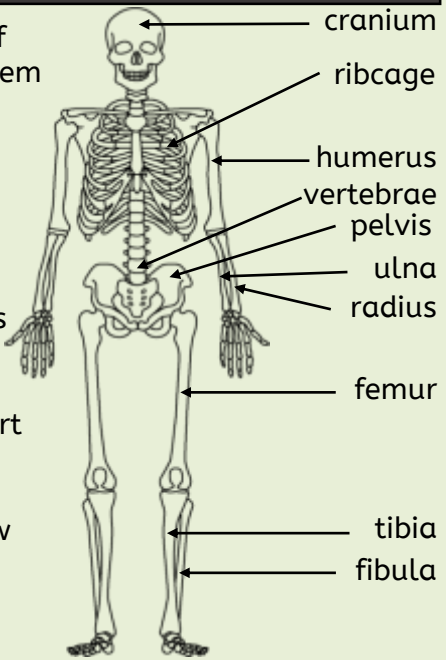
Adaptations of the red blood cells:

- biconcave shape →large surface area for faster oxygen diffusion
- contains haemoglobin → carry oxygen
- no nucleus → space for more haemoglobin → more oxygen

Red blood cells, white blood cells and platelets are made in the **bone marrow** - soft tissue inside large bones protected by the hard part of the bone around it.

Skeletal system

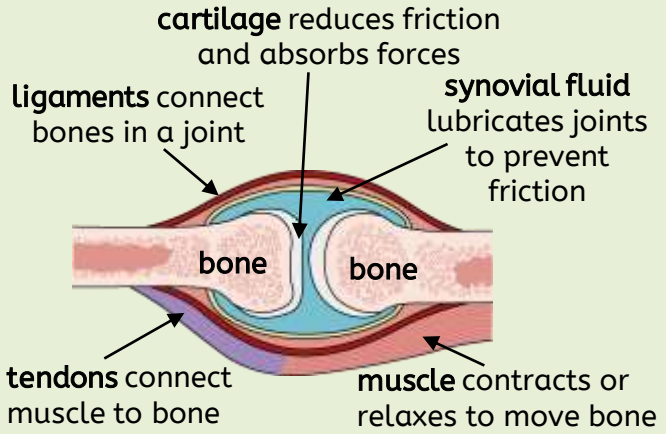
Four functions of the skeletal system are **support**, **movement**, **making new blood cells** and **protection** of organs (e.g. the cranium protects the brain and the ribcage protects the heart and lungs). **Bones** are living tissues that grow and change.



Joints, muscles and movement

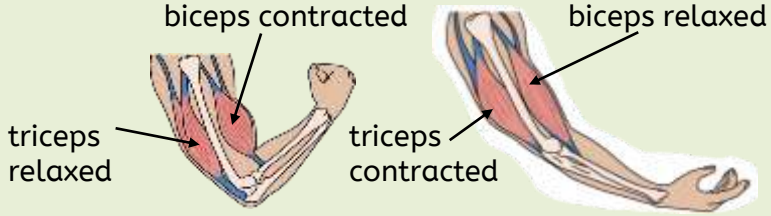
A joint is the point where two or more bones meet in the body. Joints connect bones and allow the body to move and bend. Different joint types allow various movements:

- **hinge** joint: movement backwards and forwards e.g. the knees and elbows
- **ball-and-socket** joint: movement in many directions e.g. the hips and shoulders
- **pivot** joint: twisting movement around a fixed point e.g. the neck
- **fixed** joint: does not allow for any movement e.g. in the cranium



Ageing can lead to joint wear, inflammation and arthritis. Arthritis causes joint pain and affects synovial fluid and cartilage.

- Muscles can **only** pull, they **cannot push**;
- Muscles work in **antagonistic muscle** pairs. When one muscle contracts to pull the bone in one direction, the other muscle relaxes to allow movement.

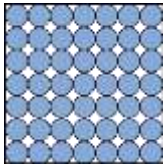
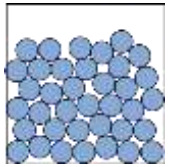
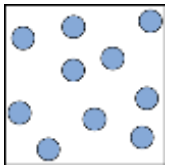


- The way in which muscles and bones work together to exert forces is called **biomechanics**.
- **Muscle strength** varies based on muscle size, age, sex, training, nutrition and injury.

Particles, substances and Mixtures

Particles, substances and mixtures

The particle model of matter

	Solid	Liquid	Gas
Diagram			
Arrangement	ordered and all touching	random and all touching	random and not touching
Movement	vibrate in fixed positions	move and slide over each other	move around quickly in random directions
Attraction between particles	strong	weak	very weak

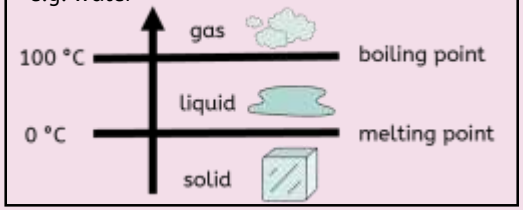
Diffusion

Diffusion is the random movement of particles from an area of high concentration to an area of low concentration. Particles of substances in the liquid and gas states can diffuse because their particles can move freely.

Melting and boiling points

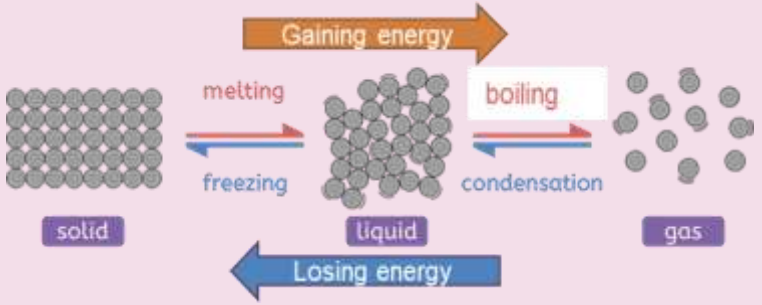
melting point: the temperature at which a substance changes from a solid to a liquid

boiling point: the temperature at which a substance changes from a liquid to a gas, e.g. water



Change of state

A change of state is a physical change because no new substances are made, and the change is reversible. Only the amount of energy the particles have changes, which affects the arrangement and movement of the particles. Temperature stays constant during a change of state.



Explaining the properties of solids

Property	Reason
Fixed shape and cannot flow	Strong forces of attraction between the particles keep them in fixed positions.
Cannot be compressed (squashed)	Particles are all touching and have no space to move into.

Explaining the properties of liquids

Property	Reason
Takes shape of container and can flow	Weak forces of attraction between the particles, so they can move around each other.
Cannot be compressed (squashed)	Particles are all touching and have no space to move into.

Explaining the properties of gases

Property	Reason
Takes shape of container and can flow	Very weak forces of attraction between the particles, allowing them to move and spread out.
Can be compressed (squashed)	Particles are not touching and have space to move into.

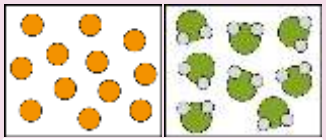
Gas pressure

When gas particles collide with the walls of their container, this creates a constant force on the walls of the container.
This causes pressure. The faster the particles move, the higher the gas pressure. The gas pressure inside containers can be increased by adding more particles or increasing the temperature. The more frequent the collisions, the higher the gas pressure.

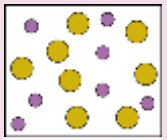
Particles, substances and mixtures

Pure substances and mixtures

A **pure substance** is one that contains only one substance, e.g. pure iron contains only iron particles. A **mixture** contains two or more substances that are not joined together and can be physically separated.



pure substances
(one type of particle)



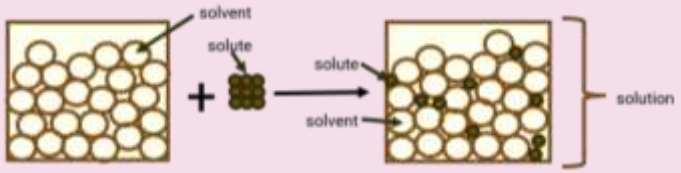
mixture

Solutions and solubility

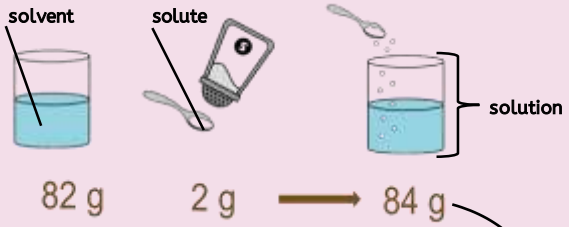
A **solute** can be dissolved in a **solvent**. The mixture created is called a **solution**. When no more solute can dissolve in the solution, it is a **saturated** solution. If a solid dissolves in a solvent, it is **soluble**. If it does not dissolve in a solvent, it is **insoluble**. **Solubility** is a measure of how much solute can dissolve in a solvent. The higher the temperature of the solvent, the greater the mass of the solute that can be dissolved.

Solubility is different for different solutes. The solubility of a solute will change depending on the solvent used.

During **dissolving**, the solute particles are separated and fit between the solvent particles to make a solution.



mixture



Conservation of mass

When a solution is formed, **the mass of the solvent + the mass of the solute = the mass of the solution.**

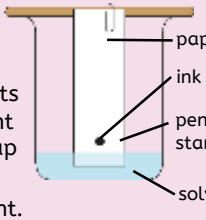
Mass remains constant because the number of particles is the same before dissolving as it is after.

Separating mixtures

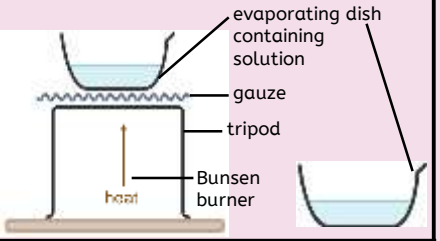
We can separate mixtures in different ways depending on their properties:

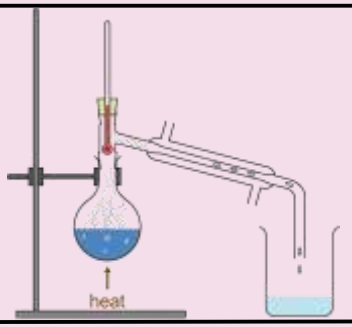
Chromatography is a separation technique that separates mixtures containing more than one solute based on their solubilities in a solvent. It works because some of the coloured substances dissolve better than others, so they travel further up the paper. A pencil line is drawn, and spots of ink or dye are placed on it. There is a container of solvent (e.g. water or ethanol). As the solvent continues to travel up the paper, the different coloured substances spread apart.

A **chromatogram**, the results of chromatography experiment.



Evaporation and **crystallisation** can be used to separate a soluble solid from a solution. For example, copper sulphate is soluble in water – its crystals dissolve in water to form a copper sulphate solution. During evaporation, the water evaporates away, leaving solid copper sulphate crystals behind. Crystallisation produces larger solid crystals.

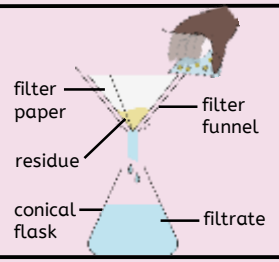




Distillation is a separation technique used to separate a mixture of liquids. The basis for separation in distillation is the difference in the boiling points of the components. For example, water can be separated from an ink and water solution because water has a much lower boiling point than ink. When the solution is heated, water evaporates. It is then cooled and condensed into a separate container. The ink does not evaporate, so it stays behind.

Filtration can be used to separate a liquid from an insoluble solid. The filter paper used in filtration is 'selectively permeable', meaning that it has holes in it that allow the movement of only some substances through whilst preventing the movement of others. The insoluble solid is unable to pass through the small holes of the filter paper. When a mixture of sand and water is filtered:

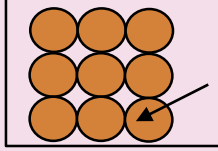
- The sand stays behind in the filter paper (it becomes the **residue**).
- The water passes through the filter paper (it becomes the **filtrate**).



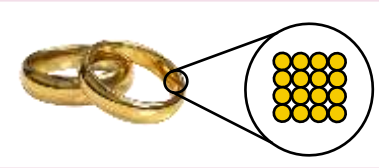
Chemical Changes

Chemical changes

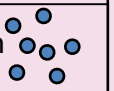
Atom
The smallest particle of matter, which all things are made of.



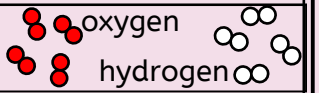
Element
A pure substance that is made of only one type of atom. All atoms of an element are identical, e.g. Gold is an element made up of gold atoms only. The 118 known elements are listed on the periodic table of elements.



The atoms of some elements do not join together, but instead they stay as separate atoms, e.g. helium.



The atoms of other elements join together to make **molecules**, e.g. oxygen and hydrogen.



Properties of elements

Individual atoms do not have the properties of the element. The properties of an element are because of the arrangement and behaviour of the atoms as a group.

Metals	Non-metals
most are shiny	most are dull
most are hard	solid non-metals are soft and easy to cut, **except carbon as diamond**
most are strong	most are not strong
most are sonorous (makes a ringing sound when hit)	most are not sonorous
malleable (easy to reshape without breaking)	not malleable
most are ductile (can be drawn out into a long wire without breaking)	not ductile
most have very high melting and boiling points	most have very low melting and boiling points
some but not all are magnetic	not magnetic
conduct electricity	non-metals do not conduct electricity, **except carbon as graphite**
good at conducting heat	poor at conducting heat

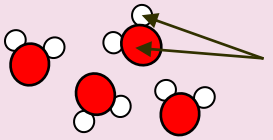
Writing element symbols

The first letter is always written as a capital letter and if there is a second letter, it is always written as a lowercase letter. Element symbols make writing elements easier and allow scientists all over the world to communicate and write about them.

Na	O
sodium	oxygen

Chemical changes

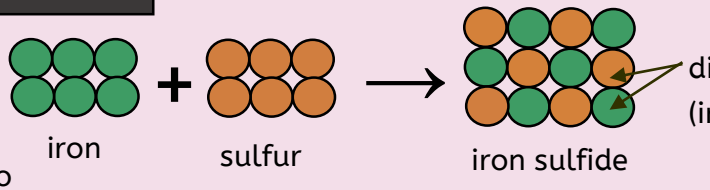
Compound
A substance made of two or more different elements chemically joined (bonded) together.
A chemical bond is a strong force that holds atoms together in a compound. Lots of energy is needed to break a chemical bond. A compound cannot be easily separated.
A compound may have very different properties to those of the elements from which it is made.
Water is a compound of hydrogen and oxygen.
Each of its molecules contains two hydrogen atoms and one oxygen atom.



water

Chemical reactions

When chemicals react, the atoms are rearranged. For example, iron reacts with sulfur to make iron sulfide. Iron sulfide, the compound formed in this reaction, has different properties to the elements it is made from.



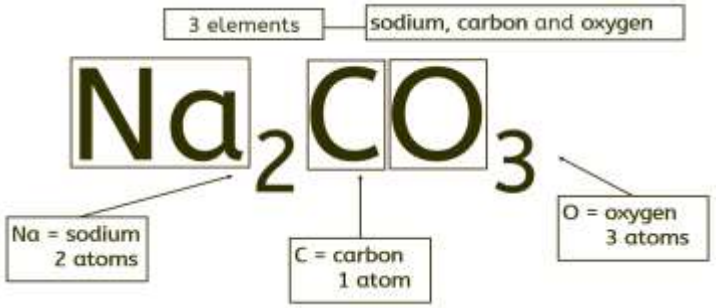
	iron	sulfur	iron sulfide
Type of substance	element	element	compound
Colour	silvery grey	yellow	black
Is it attracted to a magnet?	yes	no	no

Conservation of mass

Atoms are not destroyed nor created during chemical reactions, so in any reaction:
Total mass of reactants = total mass of products

Chemical formulae

A chemical formula uses chemical symbols and numbers to show how many of each atom is present in a compound.
The small numbers (subscript) go at the bottom.
For example:
CO_2 is correct;
CO2 and CO^2 are wrong.



The formula for sodium carbonate is Na_2CO_3. It tells you that sodium carbonate contains two sodium atoms (Na x 2), one carbon atom (C) and three oxygen atoms (O x 3).

Naming metal and non-metal compounds
The metal element (furthest left on the periodic table) comes first in the name of the compound. The ending for the non-metal is shortened and changed to '–ide'. E.g. iron + sulfur → iron sulfide

Naming three element compounds containing oxygen
The metal element (furthest left on the periodic table) comes first in the name of the compound. If there are three elements in the compound, and one of them is oxygen, the ending of the non-metal is shortened and changed to '–ate'. E.g. lithium + nitrogen + oxygen → lithium nitrate

Chemical changes

Chemical equations

We summarise chemical reactions using equations:

reactants → products

- **Reactants** are shown on the **left** of the arrow;
- **Products** are shown on the **right** of the arrow.

Do not write an '=' sign instead of an arrow.

If there is more than one reactant or product, they are separated by a '+' sign. For example:

copper + oxygen → copper oxide

Reactants: copper and oxygen
Products: copper oxide

A **word equation** shows the names of each substance involved in a reaction and **must not include any chemical symbols or formulae.**

Oxidation reactions

In oxidation reactions, a substance gains oxygen. Metals and non-metals can take part in oxidation reactions (be oxidised).

Magnesium reacts with oxygen to form magnesium oxide:
magnesium + oxygen → magnesium oxide
$2Mg(s) + O_2(g) \rightarrow 2MgO(s)$

Carbon reacts with oxygen to form carbon dioxide:
carbon + oxygen → carbon dioxide
$C(s) + O_2(g) \rightarrow CO_2(g)$

Another example is a combustion reaction, where we burn fuels in oxygen:

Fuel + oxygen → carbon dioxide + water

methane + oxygen → water + carbon dioxide

- Combustion is another name for burning fuels.
- It is an exothermic reaction.
- The fire triangle shows three components which, when combined, provide the right conditions for combustion to happen.

Thermal decomposition reactions

This is the breaking down of a substance, using heat, to form two or more products. It is an endothermic reaction.
Many metal carbonates take part in thermal decomposition reactions. For example, copper carbonate:

copper carbonate is green; copper oxide is black.
copper carbonate → copper oxide + carbon dioxide
$CuCO3(s) \rightarrow CuO(s) + CO_2(g)$

Exothermic and Endothermic reactions

- **Exothermic** reaction - **transfers** energy to the thermal store of the surroundings. This causes a **rise** in temperature (**positive** temperature change).
- Hand warmers transfer energy to the thermal store of the surroundings by an exothermic oxidation reaction.
- **Endothermic** reaction – **transfers** energy in from the thermal store of the surroundings. This causes a **drop** in temperature (**negative** temperature change).
- Sports injury packs transfer energy from the thermal store of the surroundings by an endothermic reaction.

Temperature data collected from exothermic and endothermic reactions can be improved by:

- Using a **polystyrene cup** as an insulator, as it reduces energy transfers to or from the surroundings.
- Using a **lid** to reduce energy transferred from the surface.
- Using a **digital thermometer**, which is easier to read than a regular thermometer and, if it measures in decimal places, also has better resolution.

State symbols in chemical formulae provide information about the physical state of the reactants and products.
(s) – solid , (l) – liquid, (g) – gas, and (aq) – aqueous solution (i.e. dissolved in water).
The state symbol comes after the chemical formula and is written in lower case and in brackets. E.g. $CuCO_3(s) \rightarrow CuO(s) + CO_2(g)$

Chemical Changes

Glossary

- **anomaly:** (noun) a value in a set of results which does not fit the pattern
- **aqueous solution:** (noun phrase) a solution formed when a substance dissolves in water
- **atom:** (noun) the smallest particle of matter, which all things are made of
- **chemical bond:** (noun phrase) a strong force that holds atoms together in a compound
- **chemical formulae:** (noun phrase) a simplified representation that uses symbols and numbers to show how many of each atom is present in a compound
- **combustion:** (noun) burning of a fuel in oxygen
- **compound:** (noun) a substance made of two or more different elements chemically joined together
- **conservation of mass:** (noun phrase) the scientific principle that states mass cannot be created or destroyed in a physical change or chemical reaction
- **ductile:** (adjective) able to be drawn out into a long wire without breaking
- **element:** (noun) a pure substance that is made of only one type of atom
- **endothermic:** (adjective) a chemical reaction that transfers energy from its surrounding
- **exothermic:** (adjective) a chemical reaction that transfers energy to its surroundings
- **fuel:** (noun) a substance that contains chemicals that can react. It has a large store of chemical energy
- **hazard:** (noun) an object or situation that may be harmful to people, property or the environment
- **hypothesis:** (noun) a statement that can be tested scientifically
- **malleable:** (adjective) easy to reshape without breaking
- **mixture:** (noun) a substance that contains more than one type of element or compound that are not chemically joined
- **molecule:** (noun) two or more atoms joined together
- **open system reaction:** (noun phrase) a reaction in which gases or other substances can enter or leave during a reaction

- **oxidation:** (noun) a reaction in which a substance joins with oxygen
- **physical property:** (noun phrase) a property that can be measured without making a permanent change to the substance (eg melting point, hardness)
- **precipitate:** (noun) an insoluble solid formed when two solutions are mixed and react together
- **prediction:** (noun) a statement that proposes an anticipated outcome if the hypothesis is correct
- **product:** (noun) the chemical(s) produced in a reaction
- **properties:** (noun) characteristics that describe what something can do or how it behaves
- **reactant**: (noun) the chemical(s) taking part in a reaction
- **reproducible:** (adjective) when other people do the same experiment and get the same data or conclusion
- **resolution:** (noun) the ability for an instrument to measure the smallest amount of change. The higher the resolution, the smaller the measurements it can handle
- **sonorous:** (adjective) makes a ringing sound when hit
- **subscript:** (noun) a small number written below and to the right of a chemical symbol in a formula, showing how many atoms are present for that element
- **systematic error:** (noun phrase) experimental mistakes that affect the expected outcome or results
- **thermal decomposition:** (noun phrase) when a compound is broken down using heat
- **zero error:** (noun phrase) when a measuring device shows a value other than zero, even when there is nothing being measured

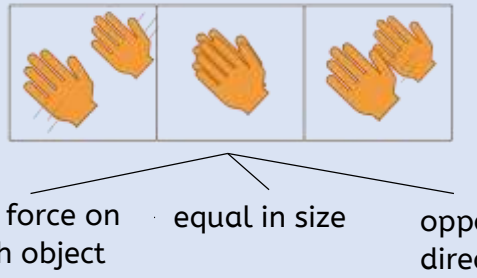
Fundamentals of Physics

7.02: Fundamentals in physics

Forces and their interactions

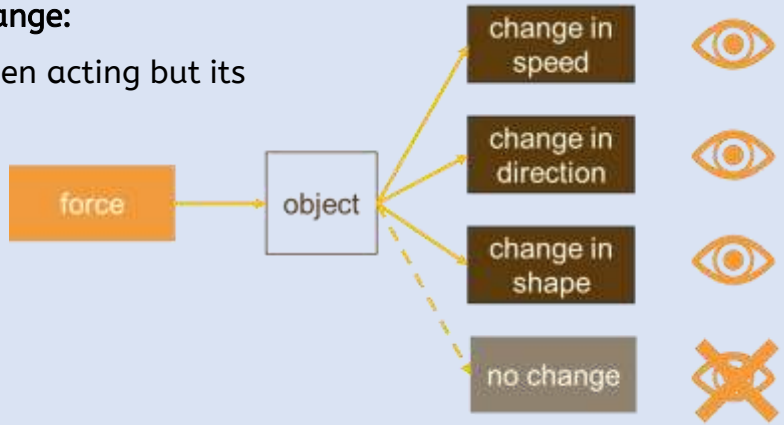
Interaction:

When two objects influence each other and cause a pair of forces to arise.



Forces can cause change:

A force cannot be seen acting but its effects often can.



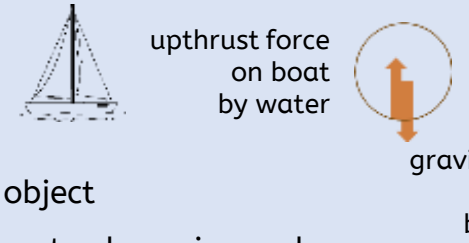
Forces can be contact or non-contact:

Contact forces arise between two touching objects.

Non-contact forces can act between two objects at a distance.

contact	thrust, friction, air resistance, water resistance, normal contact, upthrust
non-contact	gravity force, magnetic force

Free-body force diagrams



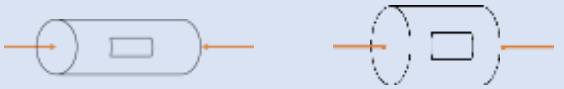
One object

Arrows to show size and direction of forces

Labelled forces:

- What kind of force is acting?
- What is the force acting on?
- What exerts the force?

Deforming forces



Two pushing forces cause compression: the object contracts.

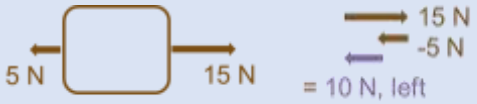
Two pulling forces cause tension: the object extends.

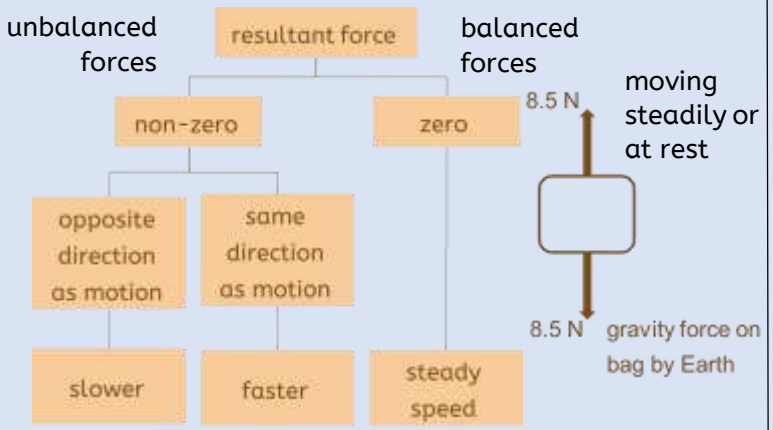
.02: Fundamentals in physics

Combining forces

More than one force acting:

- Their effects are combined
- As if a single force is acting: the resultant force

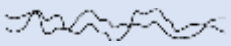




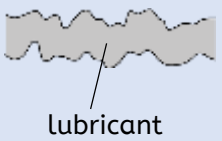
Friction force

- **What?** One of three frictional forces. They act to resist motion.
- **Where?** Acts between solid surfaces, along the surfaces.
- **When?** An object is sliding or trying to. When starting to slide, the applied force must be larger than the limiting friction: so, an unbalanced force acts.
- **How?** Opposite direction to the motion, or the applied force.
- **Why?** Surfaces are uneven, so the 'catching' between them must be overcome.

	Useful	Nuisance
Walking	✓	
Machines		✓
Driving	✓	
Wear and tear		✓



catching;



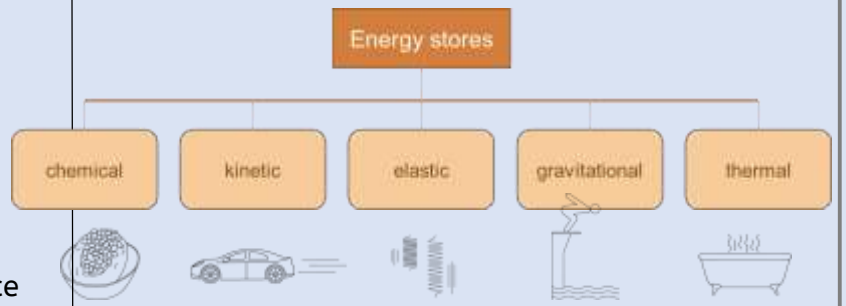
surfaces parted: no catching

Energy stores and pathways

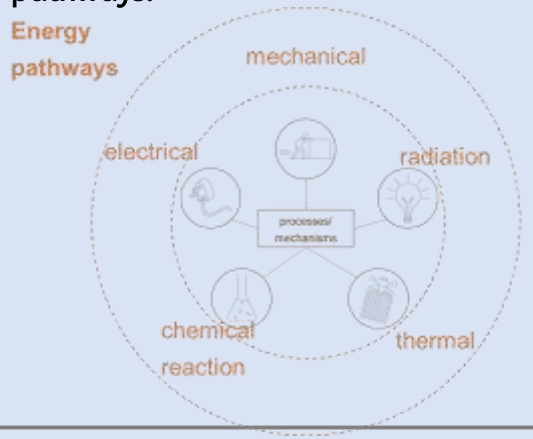
What energy does:

- Flows between objects in a system
- Stays the same when it transfers
- Cannot be used up

Energy is transferred between stores:



Energy is transferred because of processes, by pathways:

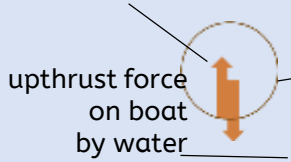


7.02: Fundamentals in physics

Modelling forces

Forces are modelled because:

- forces cannot be seen acting
- there are many forces acting at a time
- their size and direction have important effects on situations, so need to be shown.



Investigating forces

Scientific methods:

- With or without hypothesis
- Manipulating variables or not

Statement to answer an enquiry question.

comparative term — Smoother surfaces cause less friction to act on objects sliding over them. — present tense

the effect which can be tested

'group' being tested (IV)

Planning to collect high-quality data:

- Measuring with skill
- Preparing the data table
- Repeatable data

Check force-meter is on zero with no force.

headings describe variable

IV ↓

Surface	Force to start sliding (N)		
	1	2	3
Glass	1.4	1.5	1.7
Metal	1.5	1.6	1.7
Polished wood	2.0	2.3	2.2
Plastic	2.9	3.0	2.9
Paper	4.5	3.8	4.0

DV in columns

repeated

Peer review: ★★★

Peers (people of a similar level of knowledge) test the results for quality.

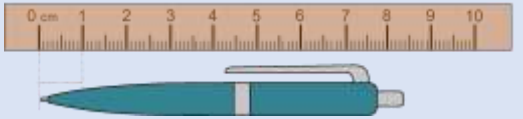
Repeatability: Same group, same results

Reproducibility: Different group, same results

Observing by measurement

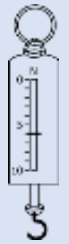
Using a scale

- set of lines at equal increments
- Labelled with numbers and units



Measuring instruments

- Include rulers, balances, clocks and thermometers.
- Force is measured using a force-meter.



Quantities: and their units

Base quantities: length (m), mass (kg), time (s) and temperature (K).

Derived quantities include force (N).

Fundamentals in physics

Glossary

- **air resistance:** (noun phrase) a contact force arising from an interaction between air and a moving object
- **analogy:** (noun) a similarity between two things that can be used as a comparison
- **balanced forces**: (noun phrase) when forces acting on an object have equal size and act in opposite directions
- **chemical reaction pathway:** (noun phrase) the energy pathway that transfers energy during a chemical reaction
- **chemical store:** (noun phrase) the energy store an object has if it possesses chemicals that can react
- **compression:** (noun) the process of forces pushing towards each other on an object
- **conclusion:** (noun) a summary and explanation of what has been found during an investigation
- **conservation of energy:** (noun phrase) a scientific law stating that energy cannot be created or destroyed
- **contact force:** (noun phrase) force that is caused to act on an object because it is touching a surface
- **contract:** (verb) to make smaller or shorter
- **control measure:** (noun phrase) a safety precaution that is put in place to reduce the likelihood of harm
- **deformation:** (noun) a change in shape or size as a result of applied forces
- **dissipate:** (verb) scatter or break up
- **elastic store:** (noun phrase) the energy store that stretched or squashed objects have
- **electrical pathway:** (noun phrase) the energy pathway that transfers energy when an electrical current flows
- **end-point analysis:** (noun phrase) a comparison of the amount of energy in energy stores at the start of an event and the end
- **energy diagram:** (noun phrase) diagram to show energy transfers between objects during an event (bar, box and arrow, Sankey)
- **energy store:** (noun phrase) a representation of where energy is ‘kept’ in an object
- **energy pathway:** (noun phrase) a description of the path by which energy is transferred
- **energy transfer:** (noun phrase) the relocation of energy from one place to another
- **explanation:** (noun) a statement that gives reasons for an observation to have occurred

- **extend:** (verb) to make longer or bigger
- **force:** (noun) an action that pushes or pulls on an object
- **force arrow:** (noun phrase) an arrow drawn to represent the force acting on an object, whose length and direction equate to that of the force
- **force-meter:** (noun) device used to measure force
- **free-body force diagram**: (noun phrase) drawing to show all forces acting on an object
- **friction force:** (noun phrase) force acting at points of contact between an object and a surface which resists the sliding motion
- **gravitational store:** (noun phrase) the energy store possessed by an object that is high up
- **gravity force:** (noun phrase) a non-contact force arising from an interaction between two objects
- **hazard:** (noun) something that is potentially harmful
- **heating pathway:** (noun phrase) the energy pathway that transfers energy when there is a temperature difference between places
- **hypothesis:** (noun) a statement about a research question, that suggests the result of the investigation
- **interaction:** (noun) when tow objects affect each other at the same time
- **interaction pair:** (noun phrase) the two forces that arise due to an interaction
- **kinetic store:** (noun phrase) the energy store that moving objects have
- **lift force:** (noun phrase) a contact force arising from an interaction between air moving and a curved object
- **limiting friction:** (noun phrase) the maximum friction that can occur between a surface and an object before it starts to slide
- **lubricant:** (noun) substance that helps to reduce friction forces acting between an object and a surface
- **magnetic force:** (noun phrase) a non-contact force arising from an interaction between magnets or a magnet and a magnetic material
- **mass:** (noun) a measure of how much matter something contains; it is measured in grams or kilograms
- **measurement result:** (noun phrase) a value attributed to the quantity being measured, reported at the end of the measurement process
- **mechanical pathway:** (noun phrase) the energy pathway that transfers energy when a force is exerted over a distance
- **newton:** (noun) name of the unit for the quantity 'force'
- **non-contact force:** (noun phrase) force that can act at a distance between two objects
- **normal contact force:** (noun phrase) force arising from an interaction between two objects in contact and acting perpendicular to the surface
- **observation:** (noun) the act of noticing facts about things happening or existing in the world

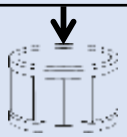
- **opposing forces:** (noun phrase) forces that act in opposite directions
- **peer review:** (noun phrase) process where scientific research is checked for quality so that it can be trusted
- **quantity**: (noun) any property that can be given a size by counting or measuring
- **radiation pathway:** (noun phrase) for example, the energy pathway that transfers energy by lighting up an area
- **repeatability**: (noun) a measure of the closeness of experimental results by the same person using the same method
- **reproducibility:** (noun) a measure of the closeness of experimental results by different people or using different methods
- **resultant force:** (noun phrase) the single force that could replace all the forces acting on an object and have the same effect
- **risk:** (noun) likelihood anyone will come to harm if a planned action is carried out, and to what extent
- **stand, clamp and boss:** (noun phrase) apparatus used for support and stability when holding equipment at a desired height and position
- **scientific method:** (noun phrase) the application of an objective approach to collect high-quality data and use the data to explain phenomena
- **scientific model:** (noun phrase) a representation of reality that can be used to explain observations
- **system:** (noun) an object or a group of objects
- **systematic:** (adjective) organised, leaving no gaps, logical
- **temperature:** (noun) a measure of how hot or cold something is; it can be measured using a thermometer; its units are degrees Celsius, °C
- **tension:** (noun) the process of forces pulling away from each other on an object
- **thermal store:** (noun phrase) the energy store that objects that are hot have
- **thrust force:** (noun phrase) a contact force arising from an interaction between two objects which are free to move apart
- **unbalanced forces**: (noun phrase) when one force acting on an object is greater in size than another force and acts in the opposite direction
- **unit:** (noun) standard used to compare measurements
- **upthrust:** (noun) a contact force arising from an interaction between an object and a fluid in which it is or could be immersed
- **value:** (noun) an expression of the size of a quantity; may be a number or a number and a unit
- **variable:** (noun) a quantity or characteristic that can change
- **water resistance:** (noun phrase) a contact force arising from an interaction between a fluid and an object moving through it
- **weight:** (noun) the gravity force acting on an object exerted by a large body

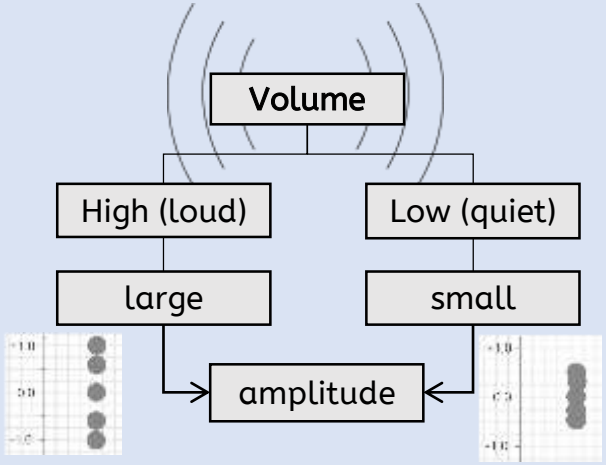
Sound and Light

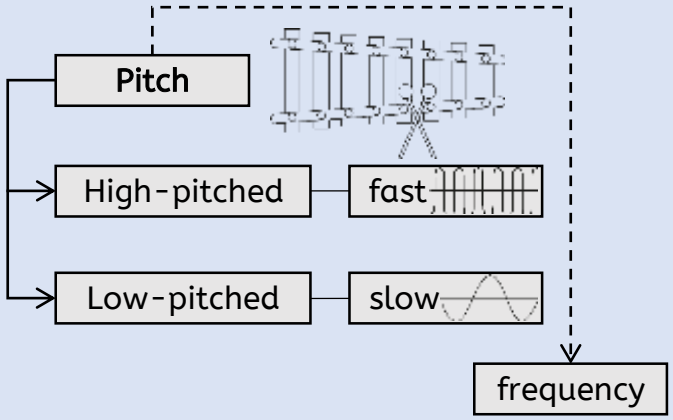
7.06: Sound and light

Describing sound

Sources of sound

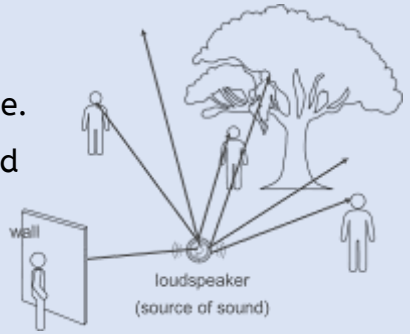
		
No sound	**Force** exerted	**Vibrating** matter





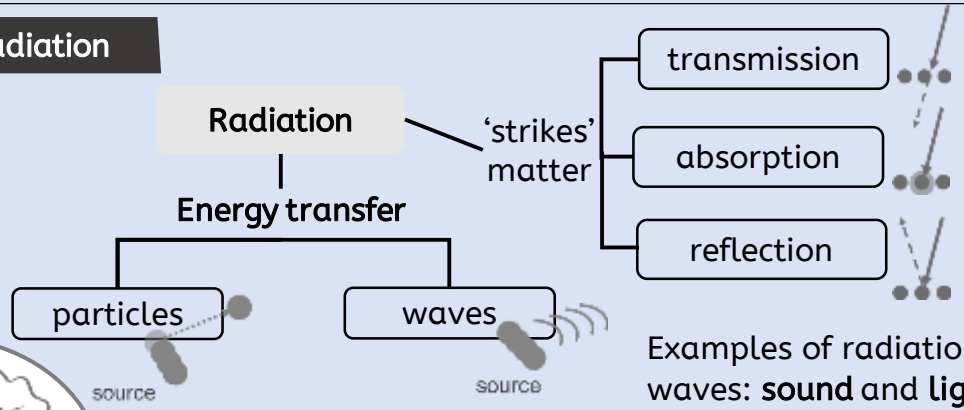
Vibrations travel through matter

- Travel in **all directions** from a source.
- Can be observed by **detectors** placed at a distance.
- If blocked, a **shadow region** occurs.
- Fastest in solids, slowest in gases.



- Gas ✓
- Liquid ✓
- Solid ✓
- Vacuum ×

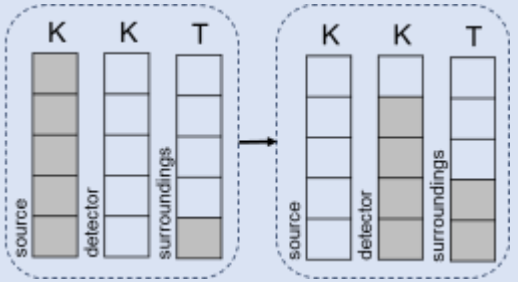
Radiation



Examples of radiation by waves: **sound** and **light**.

Energy transfer

- As vibrations travel, the energy store of the source decreases.
- The energy store of the matter increases.
- The kinetic store of any detector increases.
- By the **mechanical** pathway.



- The thermal store of the surroundings also increases.

7.06: Sound and light

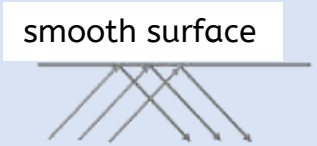
Vibrations get less with distance

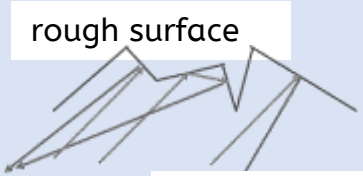
best absorbers

softer | thicker

- Energy **spreads out** among more particles.
- Each **particle absorbs** some energy, not passing it all on.
- If **all energy** is absorbed, a shadow region occurs.

Reflections





Surfaces

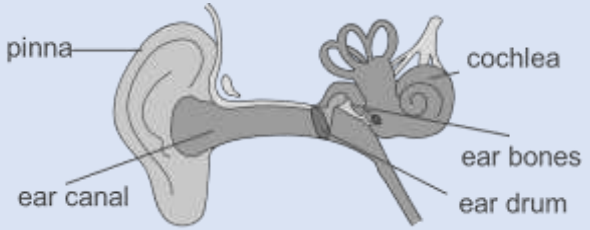
- Smooth surfaces can build **noise**.
- Rough surfaces scatter sound so that it spreads out and quietens.
- Noise can be made worse by many reflections interacting, and better by using rough surfaces.

Echoes

- A reflected sound is an echo.
- Some animals use echoes.

Hearing

The ear



Sound in the ear

- The function:
  - **transfer energy** to the nervous system, as much as possible
  - from the vibrations in the air
  - to the inner ear,
  - so that the brain can perceive and interpret it.
- Energy transfer from the tiny hairs in the cochlea to the nerves is by the **electrical** pathway.

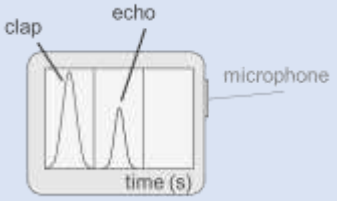
Differences in hearing

- The **audible range** of human hearing is from about 20 Hz to 20 000 Hz.
- Above this is **ultrasound** and below this is **infrasound**.
- Different animals have different ranges of hearing.
- Exposure to loud sounds and ageing can contribute to hearing differences, e.g. deafness.

7.06: Sound and light

Using technology to improve data quality

Measuring short times

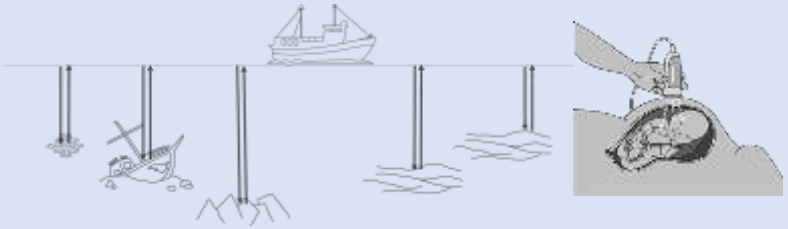


- **Digital** clock reduces systematic error (no scale).
- **Datalogging** equipment:
  - reduces difficulty observing quiet sounds e.g. echoes
  - reduces difficulty judging when sound arrives (measures directly)
  - reduces reflex action delays
  - allows 'zoom in' on time scale.

Using scientific knowledge

Echolocation

- Finding an object



Acoustic imaging

- Deep in the sea
- Inside living organisms (foetal scan)
- Inside solid objects

We have more information, of better quality, with much less risk.

Hearing technology examples

- Hearing aids
- Hearing implants
- Hearing loops

Reduce the chance of hearing damage by wearing ear protection and reducing volume of sounds.

Observing by measurement

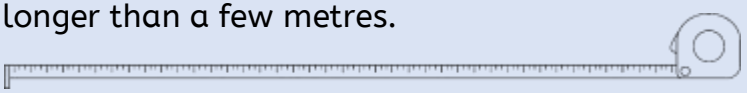
Quantities: and their units

Base quantities: length (m), mass (kg), time (s), temperature (K).

Derived quantities include force (N), **frequency (Hz)**, **loudness (dB)**.

Measuring instruments

- Include rulers, balances, clocks and thermometers.
- Measuring tapes are used to measure distances longer than a few metres.

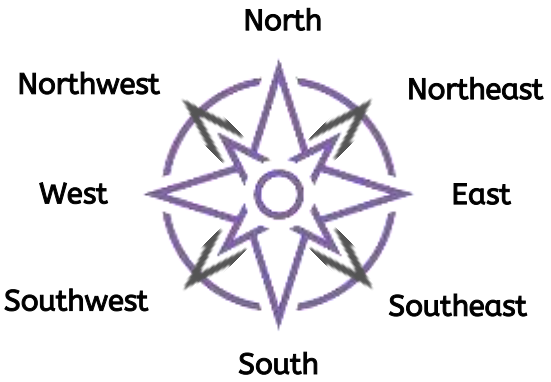


Unit prefixes

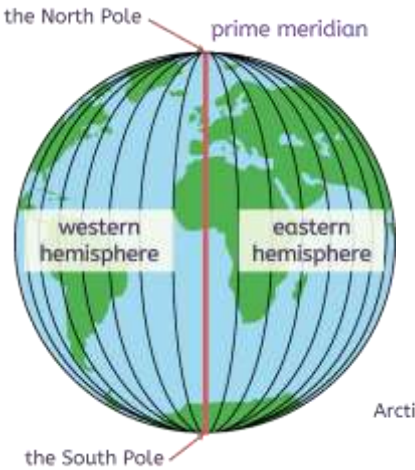
- Standard prefixes change a number by multiples of 1 000, e.g. one *kilo*metre is equal to 1 000 metres.
- The prefix ***milli***- uses a multiple of 0.001, it means one thousandth:
  - one **millisecond** is one thousandth of a second (1 ms is easier to use than 0.001 s).
- A non-standard but common prefix is ***centi***-, to mean one hundredth.
  - one centimetre is one hundredth of one metre (1 cm is easier to use than 0.001 m).

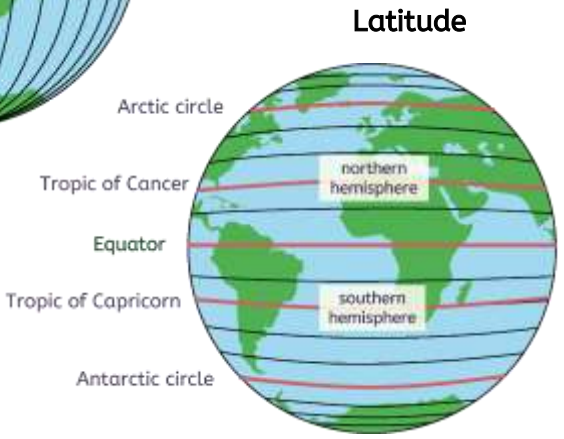
Year 7 Introduction to geographical skills

Continents, oceans and countries in the UK



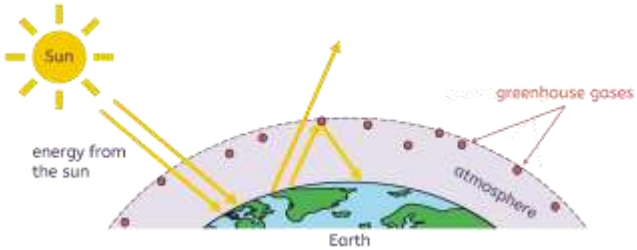
Longitude and latitude





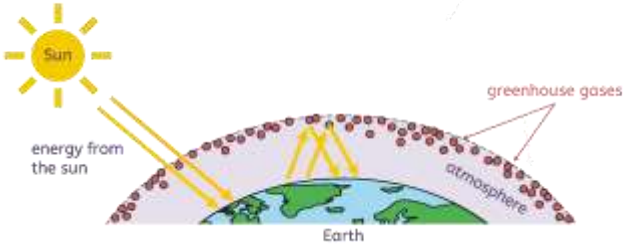
Year 7 Introduction to global climate

Global warming



The **greenhouse effect** is the **natural process, which** has always taken place, that keeps the Earth warm. Without it, the Earth would be too cold to live on.

The light and heat energy are trapped in the atmosphere by greenhouse gases, such as carbon dioxide. This warms the Earth.



The **enhanced greenhouse effect** causes an **unnatural increase in temperature**. Human activities (such as burning fossil fuels, transport, waste, agriculture, deforestation) increase the amount of greenhouse gases in the atmosphere. The Earth warms more quickly, and global warming increases.

Accelerated global warming can also lead to other changes in the Earth's long-term weather patterns, such as precipitation, wind and storms. The changes to the Earth's wider climate – not just temperature – are called **climate change**.

The causes of climate change

Climate change is caused by:

- burning fossil fuels for transport and electricity generation, which releases greenhouse gases
- deforestation, which reduces the absorption of greenhouse gases
- agriculture and waste disposal, which release greenhouse gases


deforestation


electricity generation


transport


agriculture


waste

The effects of climate change

Climate change can cause:

- more extreme weather events, such as heatwaves
- melting sea ice and ice caps
- rising sea levels and flooding of coastal areas

Year 7 Development

Background

Across the world, the standard of living and quality of life can be very different.

A	Countries therefore have different classifications based on the quality of life within them.
B	How developed a country is can be measured in different ways.
C	Development levels can vary within and between countries. There are many reasons why some countries are more developed than others.
D,E	Countries can become more developed in many ways, including through economic growth from tourism, top-down development projects and bottom-up development projects.

A) Country classification

1	**developed**	(n) countries with high standards of living, advanced infrastructure and strong economies.
2	**emerging**	(n) countries transitioning between developing and developed, showing rapid improvements in infrastructure.
3	**developing**	(n) countries with lower standards of living, less advanced infrastructure and economies that are growing but not yet strong.

B) Measuring development

1	**GNI per capita**	(n) the average income of a country's citizens.
2	**infant mortality rate**	(n) the number of babies that do not survive to one year old per 1,000 births.
3	**life expectancy**	(n) the average number of years a person is expected to live.
4	**literacy rate**	(n) the percentage of people in a specific age group, typically aged 15 and above, who can read and write.
5	**average years of schooling**	(n) the average number of years of education that individuals aged 25 and older have completed.
6	**Human Development Index (HDI)**	(n) a composite measure of development that is used to categorise the development of countries using GNI per capita, life expectancy and average years of schooling.

C) Factors that hinder development

Human	Physical
uneven distribution of income	challenging relief
corruption	extreme climate
conflict	lack of natural resources
low-value goods and services for trade	landlocked
high levels of debt	tectonic hazards
poor education systems	extreme weather
poor healthcare systems	lack of water resources

D and E) Development Projects

D) Top-down project: The Grand Inga Dam DRC

Advantages	Disadvantages
It provides a reliable source of renewable energy for the DRC.	It would flood 22,000 hectares of land in the Bundi Valley.
It provides electricity for Kinshasa at a lost cost.	Natural habitats will be destroyed by the reservoir.
It produces electricity that the DRC can sell the other countries.	35,000 people would be displaced from their homes by the dam reservoir.
It produces electricity to power more coltan and copper mines.	Electricity will be sold to other countries, and many people in rural DRC will still be without electricity.

E) Bottom-up project: WECAN DRC

Advantages	Disadvantages
It protects the habitats of 100,000 species of animals and plants.	It is small scale, so it has limited reach.
It empowers indigenous women.	It does not stop illegal logging.
Women earn money from selling fruit and herbs from the trees planted.	The project currently supports only 700 women.
It reduces the impact of climate change through reforestation.	It takes a long time for the full benefits to be achieved.

Year 7 Rivers

Background

Rivers affect the landscape and the lives of the people who live near them.

A	**Rivers are found within their own drainage basin and have their own distinct features.**
B	**As a river moves from its source in the upper course to its mouth in the lower course, its profile changes.**
C	**There are many different river processes that can impact the landscape.**
D–F	**The processes of erosion and deposition can lead to the formation of different river landforms.**
G	**Flooding is a key feature of rivers, and drainage basin processes play a significant role in this. By altering the drainage basin of a river, we can interfere with these processes.**
H	**There are many examples of floods. Today, many strategies have been put in place to manage the flood risk.**

A) Drainage basin features

1	**drainage basin**	**(n)** an area of land drained by a river and its tributaries
2	**source**	(n) the start of a river
3	**mouth**	(n) the place where the river enters a lake, sea or ocean
4	**tributary**	(n) a smaller river that joins a larger river
5	**confluence**	(n) the point at which two or more rivers meet
6	**watershed**	(n) the dividing line between two drainage basins

B) The river profile

1	**upper course**	the narrow, steep, upper part of a river, which contains waterfalls
2	**middle course**	the wider, deeper channel, which contains meanders and oxbow lakes
3	**lower course**	the widest, flattest part of the river near the mouth, which contains the floodplain.

C) River processes

	river load	(n) the material carried along in the river
1	**erosion**	(n) the breaking down or wearing away of material.
	vertical erosion	(n) erosion which takes place downwards into the land.
	lateral erosion	(n) when erosion moves across the land from side to side, causing the bends of meanders to widen.
2	**transportation**	(n) when rivers carry rocks and sediment along their journey
3	**deposition**	(n) when a river drops its load

D) River features - waterfalls

1	**waterfalls**	**(n)** water falling from a height when a river or stream flows over a steep drop (upper course)
2	**plunge pool**	(n) an area at the base of a waterfall that undercuts the hard rock layer
3	**gorge**	(n) a steep sided valley left behind when a waterfall retreats upstream

E) River features - meanders

1	**meander**	(n) a bend in a river (middle course)
2	**slip-off slope**	(n) the sloping bend of a meander from the inside (shallow) to the outside (deep)
3	**river cliff**	(n) the undercut bank on the outside bend of a meander

F) River features - floodplains

1	**floodplain**	(n) a wide, flat area of land that is flooded frequently when a river bursts its banks (lower course)
2	**levee**	(n) banks found at the side of a river in the lower course
3	**silt**	(n) the fine, fertile eroded material transported by a river

G) The drainage basin system

1	**precipitation**	(n) water falling to the ground in all forms (rain, snow, sleet and hail)
2	**interception**	(n) when the leaves of trees stop precipitation reaching the ground
3	**surface runoff**	(n) the movement of water over the surface of the land back into a river
4	**surface storage**	(n) water stored on the surface in lakes or puddles
5	**infiltration**	(n) the movement of water from the surface into the soil
6	**throughflow**	(n) the movement of water through the soil back into the river

H) Case study: Somerset levels UK

Where/when	Southwest England, flood 2014 Rivers Parrett and Tone

Causes	Effects	Responses
deforestation on the floodplain	600 homes flooded	20,000 sandbags provided to protect homes
saturated ground from heavy rainfall	£200 million lost from the collapse of the tourist industry	65 pumps installed to drain millions of cubic metres of floodwater
low-lying land with four rivers flowing through it	6,800 hectares of agricultural land flooded	Hundreds of people were evacuated from their homes.
build-up of sediment in the channel from lack of dredging	Native bird species couldn't hunt on the flooded ground.	The Environmental Agency is spending £6 million a year on dredging the rivers Parrett and Tone.

Year 7 World of work

Background

A	**The world of work can be classified into four different employment sectors.**
B	**Many factors influence the type of employment sector which will be found within a particular country.**
C	**Industrial location is influenced by some key factors, which are more important for some industries in comparison to others.**
D	**Employment structure within countries varies based upon the level of development.**
E	**Trade, imports and exports.**
F	**Employment sectors and impact of industry in Russia.**

A) Employment sectors

1	**employment**	(n) when people are in work, receiving a wage and paying tax.
2	**unemployment**	(n) when people are not in work, therefore do not receive a wage and do not pay tax.
3	**primary industries**	(n) industries which collect or extract natural resources from the environment, such as farming or fishing.
4	**secondary industries**	(n) industries which manufacture goods into products, such as builders, car manufacturers or food processing
5	**tertiary industries**	(n) industries that provide a service, such as teachers, doctors, sales, hairdressers or bus drivers.
6	**quaternary industries**	(n) industries that involve using technology, design and research, including computer scientists, game designers, computer engineers and research scientists.

B) Influences on employment structures

1	**industrialisation**	(n) a move from primary employment to secondary employment, with a rise in manufacturing.
2	**mechanisation**	(n) when machinery begins to do the jobs which once required humans.
3	**disposable income**	(n) the money a person has left to spend after they have paid all their bills.
4	**public services**	(n) a service that is given or funded for the benefit of the community.

C) The location of industries

1	**site**	(n) the actual place where a settlement first grew up. This refers mainly to its physical setting.
2	**situation**	(n) the location of a place relative to other features nearby.
3	**footloose**	(adj) industries which are not tied to a specific location and can operate from anywhere.
4	**raw materials**	(n) natural resources that are used to make other things.
5	**labour**	(n) workers, employed people.
6	**market**	(n) a place where things are bought and sold.

E) Trad

1	**trade**	(n) the exchange of goo… …rials …een countries.
2	**impo**	
3	**export**	…country for
4	**trade b**	…rticipant …one
5	**tariff**	…a tax imposed on … …y are imported or exported bet… …tries.

D) Er… …ment structures and… …lopment

Coun…	In…
developing countries	h… …y sector and a
emerging countries	l… …lling primary sector
develop… countries	…ary sector, …condary and primary … …y sector, …s low.

Change	Cause
Falling primary a… secondary sector	…import. … …n certain areas
Growing tertiary s…	1… …e a greater …ic sector … …tion, …igh tax revenue.

…tudy: World o… …Russia

	…ng tr…	
Oppo…		…ges
With a working populati… million people, Rus… largest workf…		…th Ukraine which …tionships.
The Steppe… of western R…	…lands …e and flat.	Russia h… any country. …ass of
Russia ho… roads,	…ork of …s.	Russia… …rm water p…
Russia has vast re… resources including oil… gas.		…to buy and use …tural gas in the future …effects of climate
Russia… strong fo… engineering…	…nology, (STEM).	

Y7 History

Topic	This is what we learned in lessons - the list below is not ALL you need to learn – please use your exercise book too.	Revision Completed
Worldviews from the year 1000	1. What does Constantinople reveal about the world in 1000? 2. What does the location and building of Medieval Baghdad reveal about the Muslim world? 3. What does the House of Wisdom reveal about the Muslim world? 4. What does the development of knowledge in Medieval Baghdad reveal about the Muslim world? 5. What do developments in science and medicine in medieval Baghdad reveal about the Muslim world?	
Norman Conquest and control	1. What was England like in 1066? 2. Who were the claimants to the throne? 3. What happened at the Battle of Stamford Bridge? 4. Why did William win at Hastings? 5. How did William control his kingdom? a. Castle building. b. Harrying of the North. c. Domesday survey. **d.** Feudal System.	
Religion and Medieval Life	1. What was the role of the Church in medieval England? 2. What was the role of monks in medieval society? 3. Why did people go on crusades? 4. Why was religion significant in the Middle Ages?	
Challenges to medieval monarchs	1. Why was it so difficult for monarchs to control the Church? (Becket). 2. What was the Magna Carta and what was its impact? 3. Does King John deserve to be known as John as 'bad King John'? 4. What was the Black Death and what was its impact? 5. Was the Peasants revolt more significant than the other challenges?	

This QR code will send you **DIRECTLY** to BBC Bitesize where there are podcasts, videos and all sorts of resources to help you.

Music

KS3 Music	Topic	Revision Completed
Notation & Theory	1.1 Note names and duration	
	1.2 The 8 elements of music	
Film Music	2.1 Orchestral instruments	
	2.2 Creating a character theme	
Keyboard Skills	3.1 Keyboard note names (letters)	
	3.2 Score reading (key terms & symbols)	
World Music	4.1 World instruments	
	4.2 World rhythms	
The Guitar/Bass	5.1 Hooks & riffs	
	5.2 The evolution of strings	
Music technology	6.1 Music technology through time	
	6.2 Popular effects	

You will be given knowledge organisers for these topics. Please collect these from your music teacher.

Y7 (plus 8 and 9 groups 3 and 4)

- Unit 1 – The basics (name and age; nationality and languages; birthdays; free time activities)
- Unit 2 – My family (family and ages; physical description; personality; free time activities; opinions; animals)
- Unit 3 – School (subjects and teachers; opinions with reasons; rooms in school; activities in the future)

Y8 (groups 1 and 2 only)

- Unit 5 – Holidays (past holidays and activities; usual holidays and opinions; future plans)
- Unit 6 – Going out and staying in (free time activities in present, past and future; clothes and food in a party; tv and films; music)
- Unit 7 – Daily routine, health and fitness (daily routine in present and past; healthy life; health and fitness advice; illness and advice)

Y9 (groups 1 and 2)

- Unit 9 - Relationships (physical and personality descriptions; relationships; free time activities; ideal partner and friend; future plans; past activities)
- Unit 10 – Festivals and celebrations (food and times; opinions; festivals and celebrations; a festival in the past; what festival you would like to visit)
- Unit 11 – City or region in a Spanish-speaking country (my city and region now and in the past; a city in Spain now and in the past; comparisons; a shopping trip in the past; what country you would like to visit in the future)

RELIGIOUS STUDIES:

Y7: CHRISTIANITY

• The Nativity	
• Jesus' ministry	
• Sermon on the Mount	
• The Resurrection	
• Original Sin	

Y8: PHILOSOPHY

• Ways to describe God (Omni- words)	
• William Paley's Design Argument	
• Criticisms of William Paley's Design Argument	
• Thomas Aquinas' Cosmological Argument	
• Theodicies	

Y9: ISSUES OF LIFE AND DEATH

• Different views on life – sanctity and quality	
• Thomas Aquinas' Natural Law Theory	
• Joseph Fletcher's Situation Ethics Theory	
• Abortion	
• Euthanasia	

Y7 Drama Revision

A3 Assessment:
Performing a Piece of Devised Drama

The Assessment

The assessment will be to **perform** a devised piece of drama. You will try to achieve the following **I Can** statements;

- I can perform a devised character
- I can effectively use the stage space when performing

Checklist

To revise for this assessment you should check that you understand the vocabulary that will be used.

- Devising
- Character
- Performance
- Stage / Stage Space

Glossary	
Devising	**Devising** means creating an original performance. It is your own or your groups idea for a performance.
Character	A **character** is a person in a play or a film. We will perform characters who are different to our real self. We should try to show how these characters are different by using our physical and vocal acting skills.
Performance	To present a play to an audience. To act out the storyline.
Stage / Stage Space	A set area for performance. You should effectively use the stage by showing you are 'audience aware'. This means that you must have clear on and off stage areas. You should use 'centre stage' and 'downstage' for important action. You should face the audience the majority of the time. You should avoid acting in corners and blocking the audience's view.