

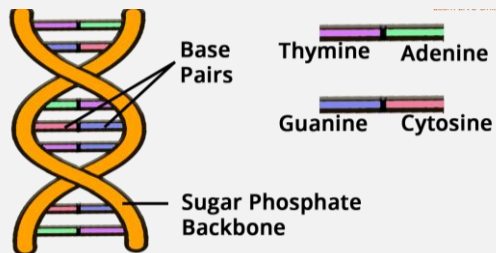
Inheritance and Genetics: Knowledge Organiser

Variation

Type	Description	Examples
Inherited	Passed on genetically from parents through DNA	Eye colour, blood group, hair type
Environmental	Caused by surroundings or lifestyle	Accent, piercings, scars
Both (Mixed)	Influenced by both genes and environment	Height, weight, sporting ability

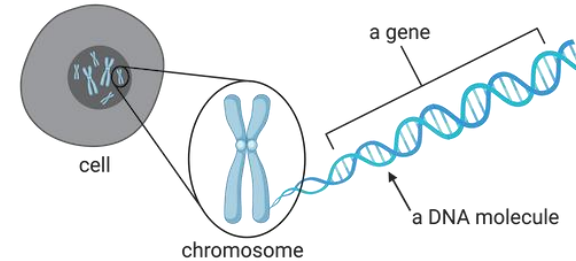
Structure of DNA

- Made of 4 bases: A (adenine), T (thymine), C (cytosine), G (guanine).
- A pairs with T, C pairs with G.
- Found in the **nucleus** of all cells.



DNA, Genes & Chromosomes

- DNA (Deoxyribonucleic Acid):** A molecule shaped like a double helix that carries instructions for all living things.
- Gene:** A short section of DNA that codes for a protein or characteristic (e.g. eye colour).
- Chromosome:** A long strand of DNA, tightly coiled. Humans have 46 chromosomes (23 pairs) in each cell.



Famous Scientists

Watson & Crick (1953): Created the first accurate DNA model (double helix).

Rosalind Franklin: Took X-ray images of DNA (Photo 51) that helped discover the double helix structure. Often overlooked in her time.



Inheritance

Gametes: Sex cells (Sperm = male humans, Egg = female humans).

Fertilisation: When sperm and egg combine, mixing DNA to form a new cell.

Allele: A different version of a gene (e.g. blue eye allele, brown eye allele).

Genotype: The combination of alleles (e.g. Bb, BB, bb).

Phenotype: The physical characteristic shown (e.g. brown eyes).

Inheritance and Genetics: Knowledge Organiser

Alleles

Type	Description
Dominant	Only one copy needed to show trait (e.g. B = brown eyes)
Recessive	Two copies needed to show trait (e.g. bb = blue eyes)

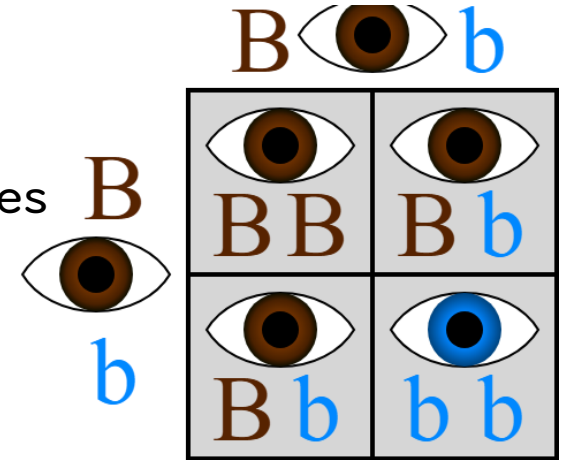
Punnett Squares

Used to predict the chance of offspring inheriting certain traits.

Example:

If both parents have Bb for eye colour:

- 75% chance of offspring having brown eyes (BB or Bb)
- 25% of offspring having blue eyes (bb)



Selective breeding

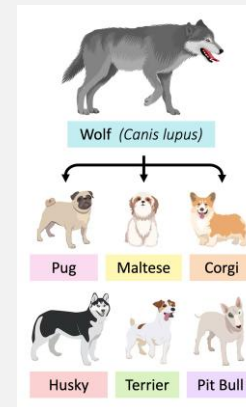
Key Definition: Selective breeding (artificial selection) is when humans breed plants or animals with desirable inherited characteristics.

How it works:

1. Choose parents with desired traits.
2. Breed them.
3. Repeat for several generations to strengthen the traits.

Examples:

1. Breeding cows for more milk or meat.
2. Breeding dogs for temperament or appearance.
3. Breeding wheat for high yield and disease resistance.



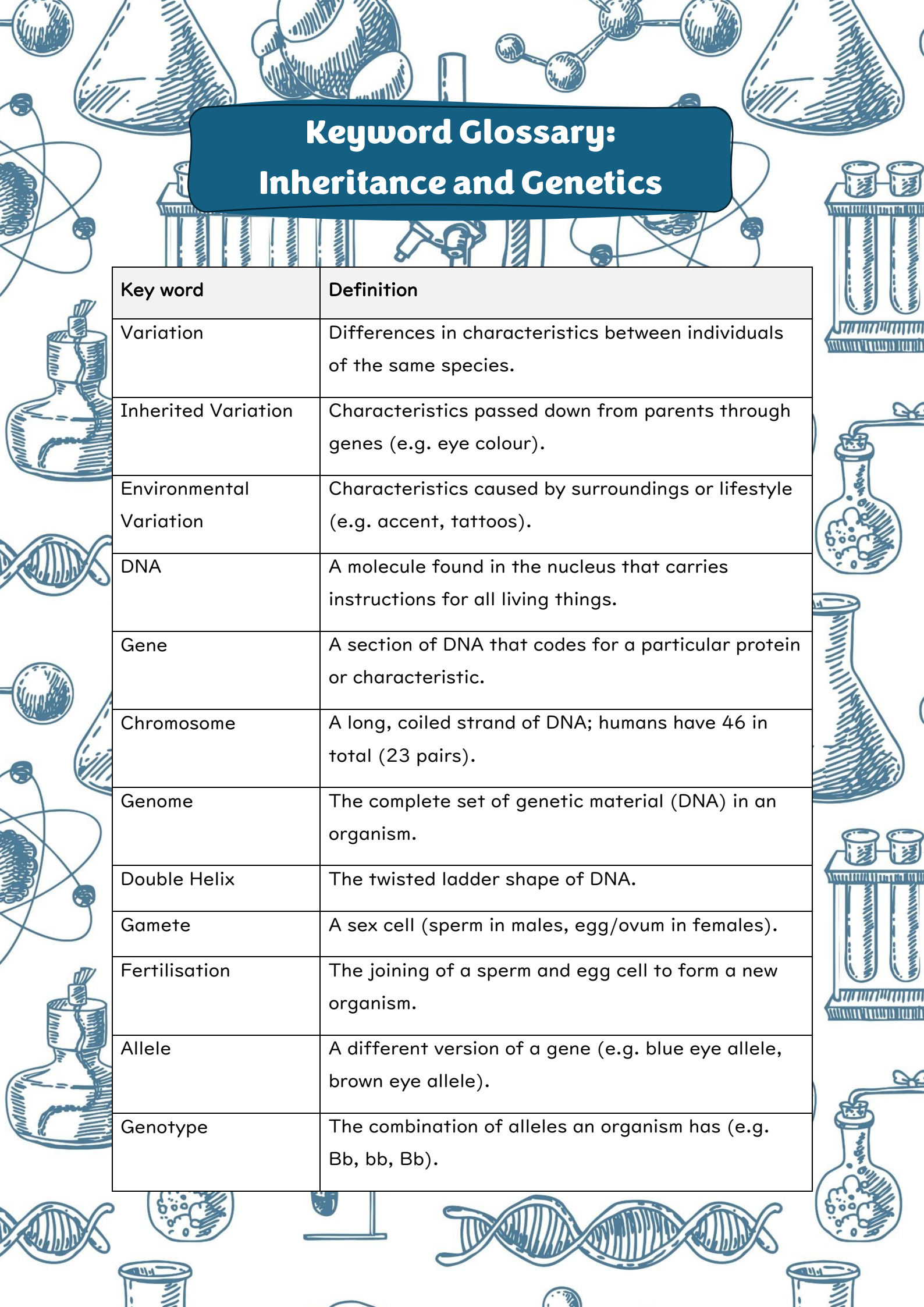
Advantages and Disadvantages of Selective breeding

Advantages:

- ✓ Increased yield
- ✓ Better quality food
- ✓ Specific traits passed on

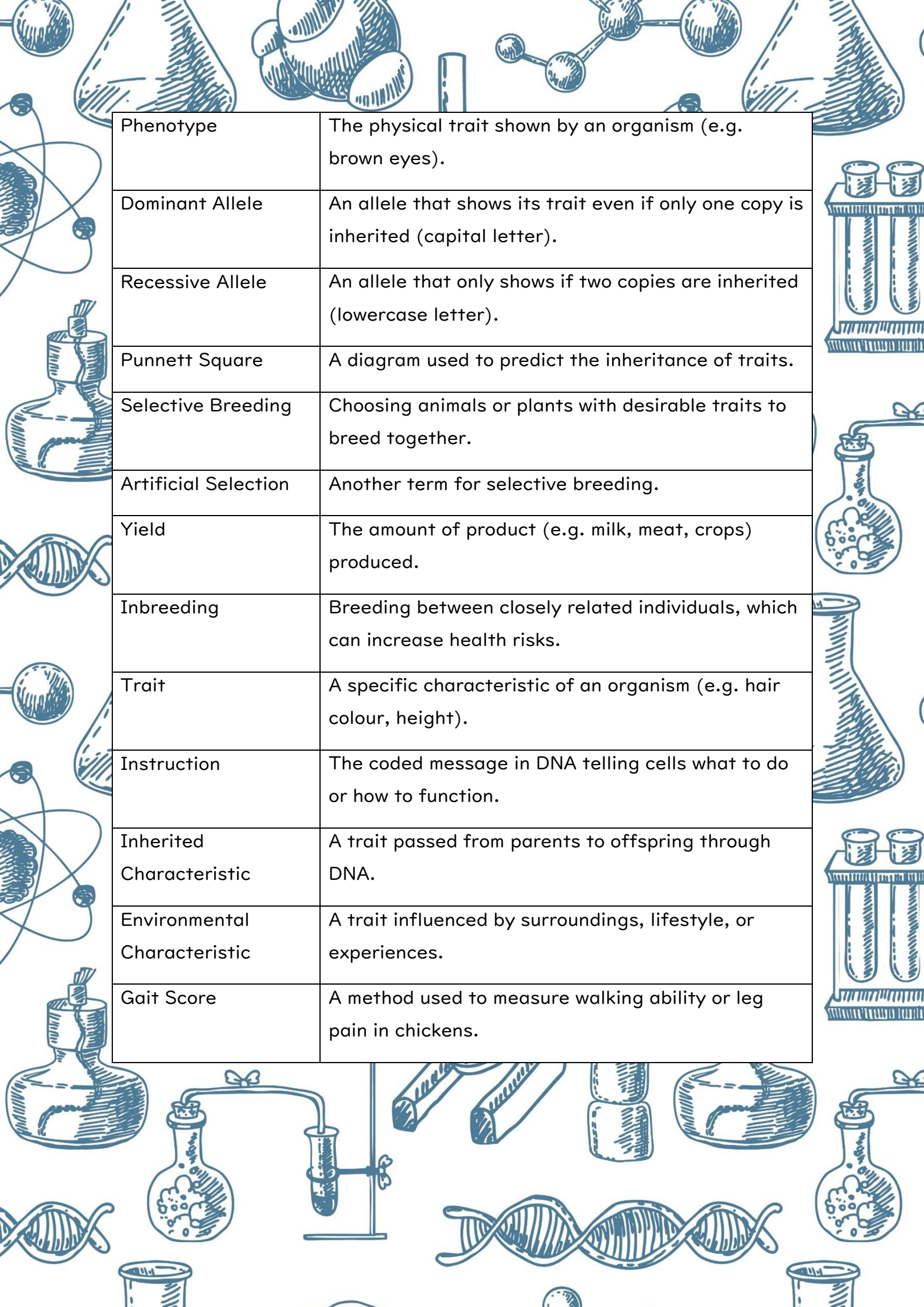
Disadvantages / Ethical Issues:

- Inbreeding increases genetic disorders
- Animal welfare concerns (e.g. chickens bred to grow too fast can suffer leg pain)
- Reduced genetic diversity



Keyword Glossary: Inheritance and Genetics

Key word	Definition
Variation	Differences in characteristics between individuals of the same species.
Inherited Variation	Characteristics passed down from parents through genes (e.g. eye colour).
Environmental Variation	Characteristics caused by surroundings or lifestyle (e.g. accent, tattoos).
DNA	A molecule found in the nucleus that carries instructions for all living things.
Gene	A section of DNA that codes for a particular protein or characteristic.
Chromosome	A long, coiled strand of DNA; humans have 46 in total (23 pairs).
Genome	The complete set of genetic material (DNA) in an organism.
Double Helix	The twisted ladder shape of DNA.
Gamete	A sex cell (sperm in males, egg/ovum in females).
Fertilisation	The joining of a sperm and egg cell to form a new organism.
Allele	A different version of a gene (e.g. blue eye allele, brown eye allele).
Genotype	The combination of alleles an organism has (e.g. Bb, bb, Bb).



Phenotype	The physical trait shown by an organism (e.g. brown eyes).
Dominant Allele	An allele that shows its trait even if only one copy is inherited (capital letter).
Recessive Allele	An allele that only shows if two copies are inherited (lowercase letter).
Punnett Square	A diagram used to predict the inheritance of traits.
Selective Breeding	Choosing animals or plants with desirable traits to breed together.
Artificial Selection	Another term for selective breeding.
Yield	The amount of product (e.g. milk, meat, crops) produced.
Inbreeding	Breeding between closely related individuals, which can increase health risks.
Trait	A specific characteristic of an organism (e.g. hair colour, height).
Instruction	The coded message in DNA telling cells what to do or how to function.
Inherited Characteristic	A trait passed from parents to offspring through DNA.
Environmental Characteristic	A trait influenced by surroundings, lifestyle, or experiences.
Gait Score	A method used to measure walking ability or leg pain in chickens.

Competition and Evolution: Knowledge Organiser

Key Words

- Competition - when organisms struggle for the same resources.
- Adaptation - a feature that helps an organism survive and reproduce.
- Natural selection - the process where the best adapted survive and pass on their genes.
- Evolution - the gradual change in species over generations.
- Extinction - when no individuals of a species remain.

Competition

Organisms compete for limited resources.

Plants: light, water, space, minerals.

Animals: food, water, territory, mates.

Winners of competition are more likely to survive and reproduce.

Adaptations

Adaptations = special features or behaviours that improve survival.

Three types:

- **Structural** - physical features (fur, spines, camouflage).
- **Behavioural** - actions or habits (migration, nocturnal hunting).
- **Functional** - internal processes (venom)

Adaptations in Plants

- Cactus - no leaves (reduces water loss), spines for protection, deep roots.
- Rainforest plants - large leaves to absorb light in dark forests.
- Deciduous trees - drop leaves in winter to conserve energy.

Adaptations in Animals

- Polar bears - thick fur, small ears, fat layer to keep warm.
- Camouflage - e.g. tigers' stripes hide them from prey.
- Desert foxes - large ears to lose heat.
- Migratory birds - travel to find food in different seasons.

CAMEL



Physiological Adaptation

Camels survive in dry, arid conditions as it stores fat in its humps which allows for better regulation of its body temperature.

RATTLESNAKE



Physiological Adaptation

Rattlesnake has a rattle on its tail that distracts and discourage predators.

Physiological Adaptation

A highly toxic poison oozes out of its pores when it is threatened.



LION



Behavioral Adaptation

The lion puffs up its mane to signify that it has peaceful intentions.

PEACOCK



Behavioral Adaptation

The male peacock spreads its brightly colored tail to attract a mate.

Behavioral Adaptation

Some armadillos can even roll up into a ball to cover their less protected undersides.



PENGUIN



Behavioral Adaptation

To signify solidarity and ensure survival, penguins huddle together and share their body warmth.

ELEPHANT



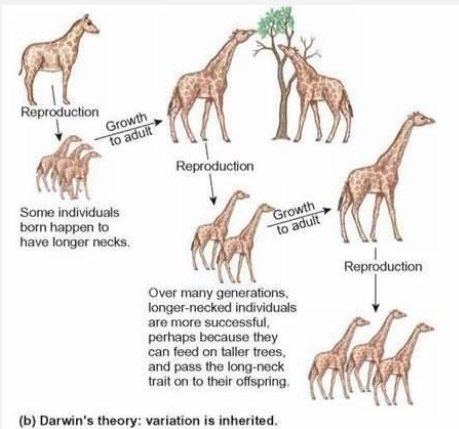
Behavioral Adaptation

The elephant regularly bathes to cool itself during hot days.

Competition and Evolution: Knowledge Organiser

Natural Selection

1. In every species there are differences (variation) between individuals. These differences come from their genes.
2. Some individuals have features that give them an advantage in their environment (for example, better camouflage or being able to survive on less food).
3. These individuals are more likely to survive longer and have babies.
4. They pass on the genes for these useful features to their offspring.
5. Over many generations, more and more individuals in the species have these features.
6. Gradually, the whole species changes to become better suited (adapted) to its environment.

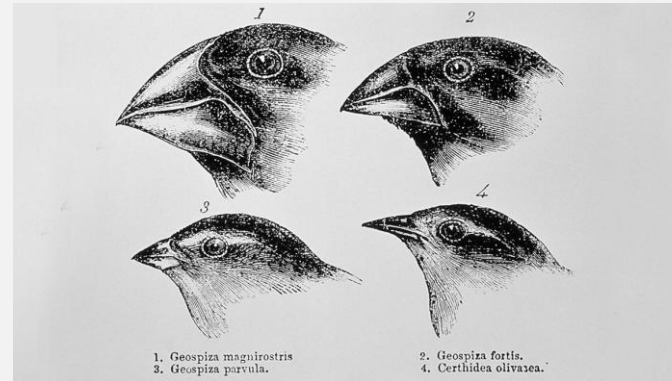


Evolution

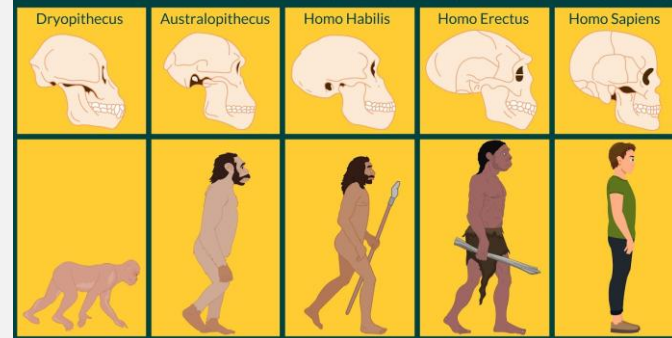
Evolution is the gradual change in species over millions of years driven by natural selection.

It can lead to new species being made if populations change so much they can no longer breed together.

Example: Darwin's finches with different shaped beaks.



HUMAN EVOLUTION - STAGES OF EVOLUTION OF HUMAN BEINGS



Extinction

Extinction = when no members of a species are left.

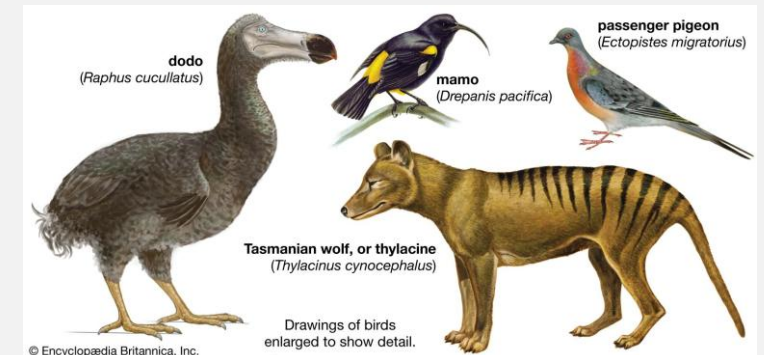
- Loss of species reduces biodiversity.
- Whole food webs and ecosystems can collapse.

Natural Causes

- Climate change in Earth's history (e.g. Ice Ages).
- Disease outbreaks. New predators or competition.
- Natural disasters (volcanoes, earthquakes, tsunamis).
- Asteroid impacts (e.g. wiped out most dinosaurs)

Human Causes

- Habitat destruction - deforestation, draining wetlands, building cities.
- Pollution - plastics, chemicals, air pollution.
- Overhunting/overfishing - species cannot recover quickly enough.
- Invasive species - non-native species outcompete or kill natives.
- Climate change - rapid global warming makes habitats unliveable.





Keyword Glossary

Competition and Evolution

Key word	Definition
Adaptation	A feature that helps an organism survive in its environment.
Advantage	A trait that gives an organism a better chance of surviving and reproducing.
Behavioural adaptation	How an organism behaves to help it survive (e.g. migration, nocturnal activity).
Charles Darwin	A scientist who developed the theory of evolution by natural selection after studying species like finches on the Galápagos Islands.
Climate change	Long-term changes in Earth's weather that affect survival.
Competition	When organisms try to get the same things they need to survive, like food, water, or space.
DNA	The molecule that carries genetic information passed from parents to offspring.
Ecosystem	A community of living things that interact with each other and their non-living environment, such as air, water, and soil.
Environmental pressure	A challenge in the environment such as predators, disease, or lack of food that affects survival.
Evolution	The process by which species change over long periods of time, sometimes leading to new species forming.
Extinction	When a species completely dies out.
Extremophile	An organism that can live in extreme conditions such as very hot, cold, or salty environments.

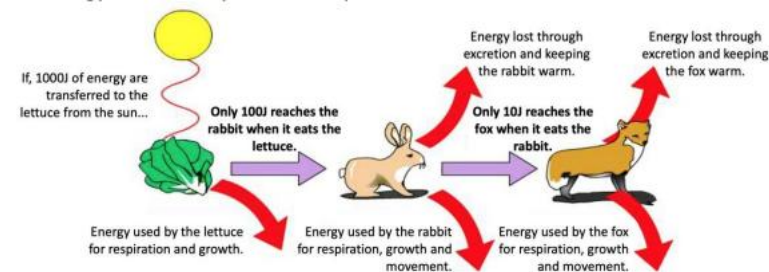
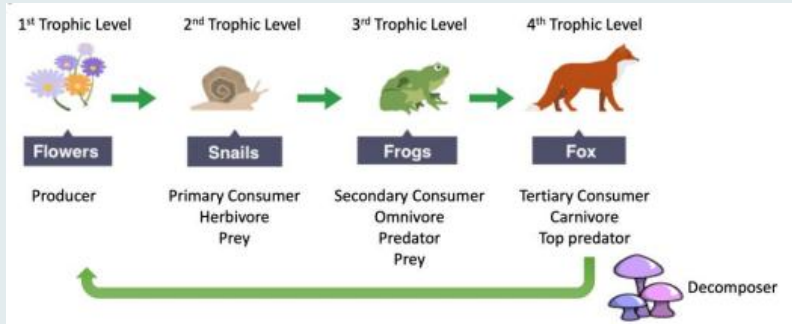


Functional adaptation	Internal processes or functions that help an organism survive (e.g. hibernation, producing venom).
Genetic variation	Differences between individuals caused by mutations and the mixing of genes during reproduction.
Inheritance	Passing down traits from parents to offspring through DNA.
Interspecific competition	Competition between members of different species (e.g. a lion and a hyena both trying to catch the same prey).
Intraspecific competition	Competition between members of the same species (e.g. two lions fighting over food).
Mutation	A random change in DNA that can lead to a new trait.
Mutualism	When two different species work together and both benefit from the relationship.
Natural selection	When organisms with the best adaptations survive and reproduce, passing on those traits.
Pollution	Harmful substances in the environment that can kill wildlife.
Resources	The things that plants and animals need to live and grow, like food, light, water, space, and mates.
Selective advantage	A trait that makes an organism more likely to survive and reproduce in its environment.
Species	A group of living things that are similar and can reproduce to make fertile offspring.
Structural adaptation	A physical feature of an organism's body (e.g. thick fur, long neck).
Survival of the fittest	The idea that the best adapted organisms survive and pass on their traits.
Variation	Differences between individuals in a species, often caused by mutations or mixing of genes.

Ecology : Knowledge Organiser

Food Chains and Energy Flow

- **Food chains** show how energy is passed from one organism to another through feeding relationships.
- **Producers** (like green plants and algae) make their own food using sunlight in photosynthesis.
- **Consumers** eat other organisms: herbivores eat plants, carnivores eat animals, omnivores eat both.
- Each step in a food chain is a **trophic level**.
- **Food webs** show how multiple food chains are connected in an ecosystem.
- Only about **10% of energy** is passed to the next trophic level.



Human Impact

- Humans harm ecosystems through pollution, deforestation, and climate change.
- These actions reduce biodiversity and destroy habitats.
- Key species loss can disrupt food chains and ecosystem balance.
- Solutions include recycling, conservation, and using clean energy.
- Everyone can help by reducing waste and protecting nature.

Biodiversity

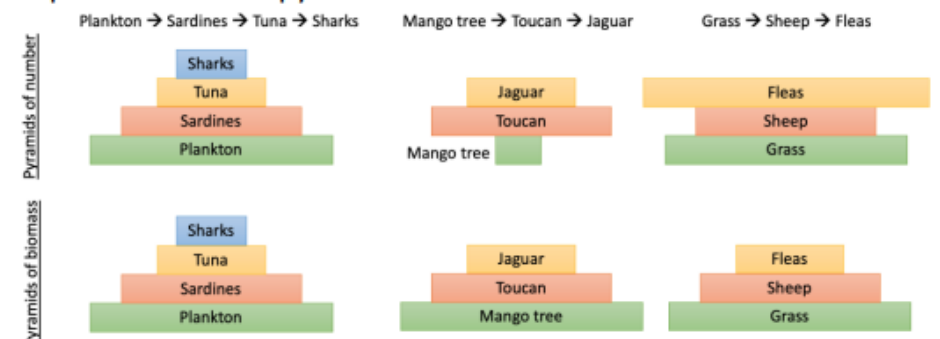
- An **ecosystem** includes all living things in an area and their non-living environment.
- **Biodiversity** is the variety of living organisms in a place; high biodiversity keeps ecosystems healthy.
- **Sampling methods** (e.g. quadrats, pitfall traps) help measure biodiversity in habitats.
- **Conservation** protects species and habitats to prevent extinction and maintain biodiversity.
- A **gene pool** is the range of genetic material in a species; a larger gene pool helps species adapt.
- **Gene banks** store seeds, embryos, and DNA to protect genetic diversity.
- **Zoos and breeding programmes** help conserve endangered species and maintain variation.

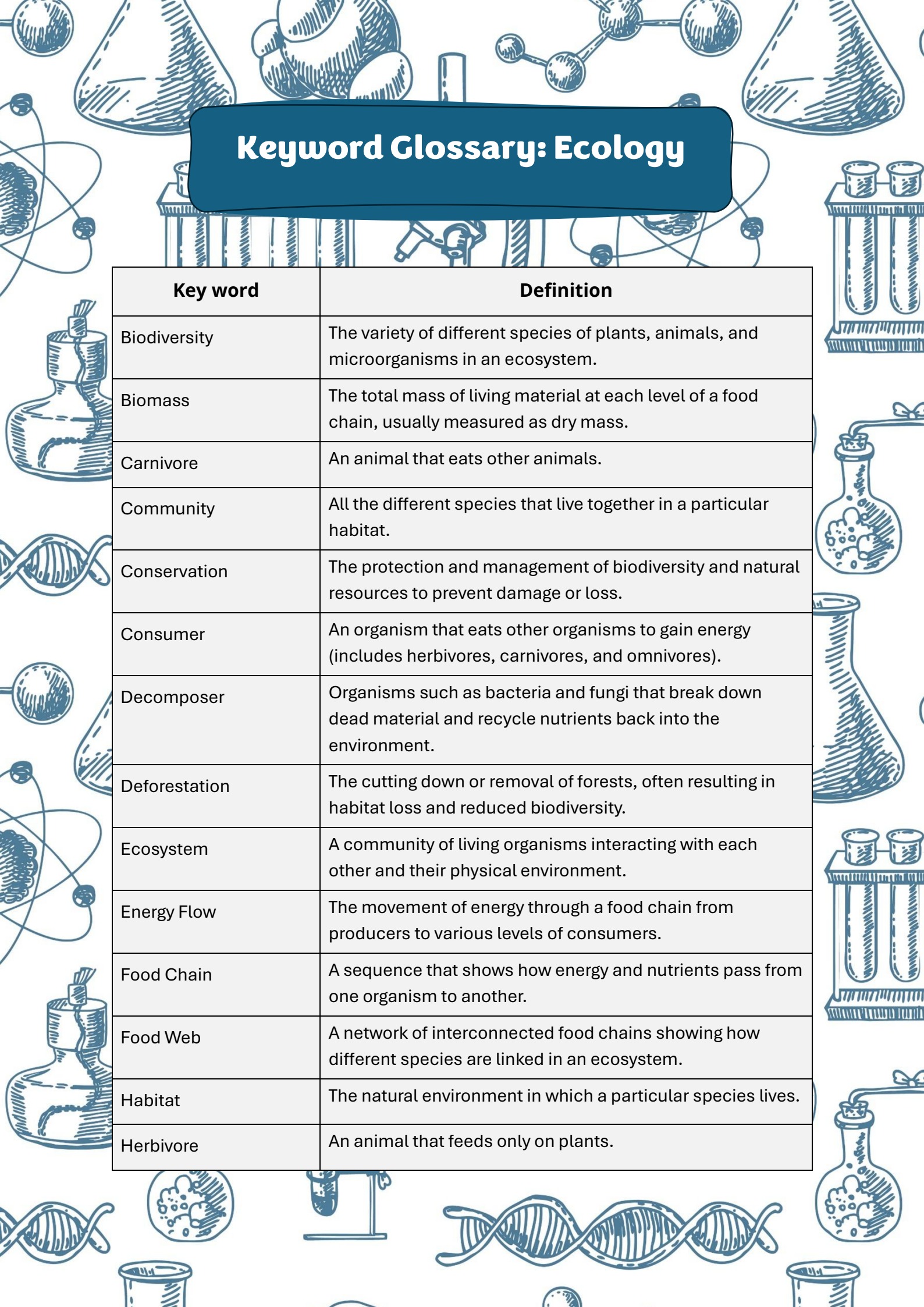
Climate change

- **Climate change** is a long-term rise in Earth's average temperature and changes in weather patterns, mainly caused by human activities.
- The **greenhouse effect** traps heat in the atmosphere; gases like carbon dioxide and methane contribute to this warming.
- **Human actions** such as burning fossil fuels, deforestation, and pollution increase greenhouse gas levels.
- **Impacts already seen** include more extreme weather, melting ice, rising sea levels, and damage to ecosystems like coral reefs.
- **Future risks** include more heatwaves, flooding, species loss, and increased poverty—especially in vulnerable communities.

Pyramids

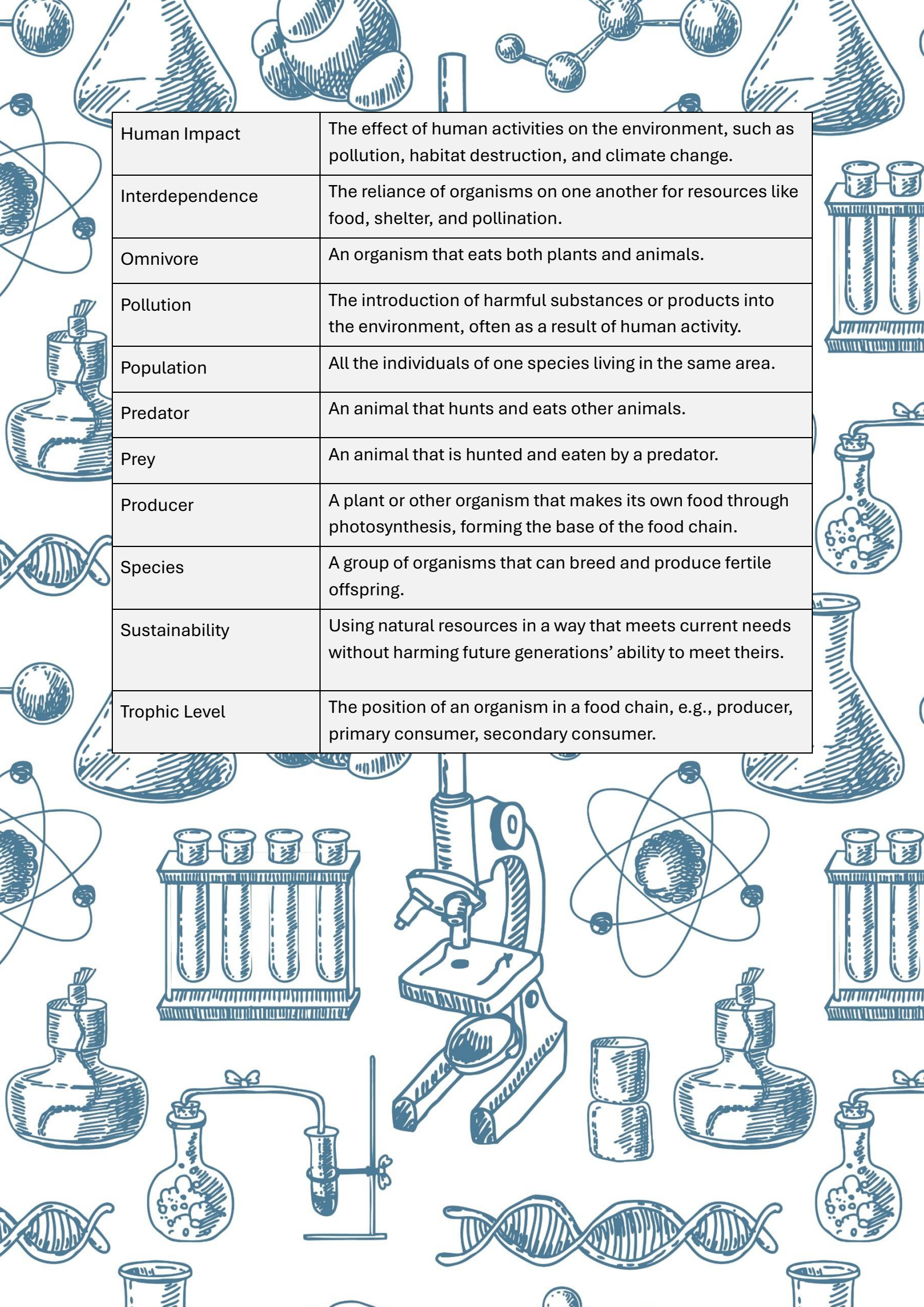
- **Pyramids of number** show how many organisms are at each trophic level.
- **Pyramids of biomass** show the total mass of living material at each level.
- **Biomass** is estimated by multiplying the number of organisms by their average mass.





Keyword Glossary: Ecology

Key word	Definition
Biodiversity	The variety of different species of plants, animals, and microorganisms in an ecosystem.
Biomass	The total mass of living material at each level of a food chain, usually measured as dry mass.
Carnivore	An animal that eats other animals.
Community	All the different species that live together in a particular habitat.
Conservation	The protection and management of biodiversity and natural resources to prevent damage or loss.
Consumer	An organism that eats other organisms to gain energy (includes herbivores, carnivores, and omnivores).
Decomposer	Organisms such as bacteria and fungi that break down dead material and recycle nutrients back into the environment.
Deforestation	The cutting down or removal of forests, often resulting in habitat loss and reduced biodiversity.
Ecosystem	A community of living organisms interacting with each other and their physical environment.
Energy Flow	The movement of energy through a food chain from producers to various levels of consumers.
Food Chain	A sequence that shows how energy and nutrients pass from one organism to another.
Food Web	A network of interconnected food chains showing how different species are linked in an ecosystem.
Habitat	The natural environment in which a particular species lives.
Herbivore	An animal that feeds only on plants.



Human Impact	The effect of human activities on the environment, such as pollution, habitat destruction, and climate change.
Interdependence	The reliance of organisms on one another for resources like food, shelter, and pollination.
Omnivore	An organism that eats both plants and animals.
Pollution	The introduction of harmful substances or products into the environment, often as a result of human activity.
Population	All the individuals of one species living in the same area.
Predator	An animal that hunts and eats other animals.
Prey	An animal that is hunted and eaten by a predator.
Producer	A plant or other organism that makes its own food through photosynthesis, forming the base of the food chain.
Species	A group of organisms that can breed and produce fertile offspring.
Sustainability	Using natural resources in a way that meets current needs without harming future generations' ability to meet theirs.
Trophic Level	The position of an organism in a food chain, e.g., producer, primary consumer, secondary consumer.

Introduction to Science Knowledge Organiser

A science laboratory is used for carrying out practical investigations. This can involve using hazardous chemicals and equipment such as Bunsen burners.

Some practical equipment, such as test tubes, are easily breakable so care must be taken.

Thinking about the students' and teacher's health and safety is very important so that no one gets hurt.

Laboratory Safety Rules

Your teacher will have made the safety rules for the laboratory very clear. Below are some important safety rules, which should always be followed, but there may be others which you need to consider in addition to these.

- Always wear eye protection during a practical.
- Carry out a practical while standing up.
- Do not eat or drink in the laboratory.
- Tie long hair back and tuck loose clothing in during practicals.
- If something is spilled or broken, tell the teacher.
- Ensure that the floor and work space is clear of obstacles.



Hazard Symbols

Hazard symbols show people how dangerous a chemical is, and what care should be taken when handling them.

Symbols can be used all over the world and are immediately recognisable, so it does not matter which language is used.

flammable	acute toxicity	corrosive	explosive
moderate health hazard	serious health hazard	harmful to the environment	

Scientific Equipment

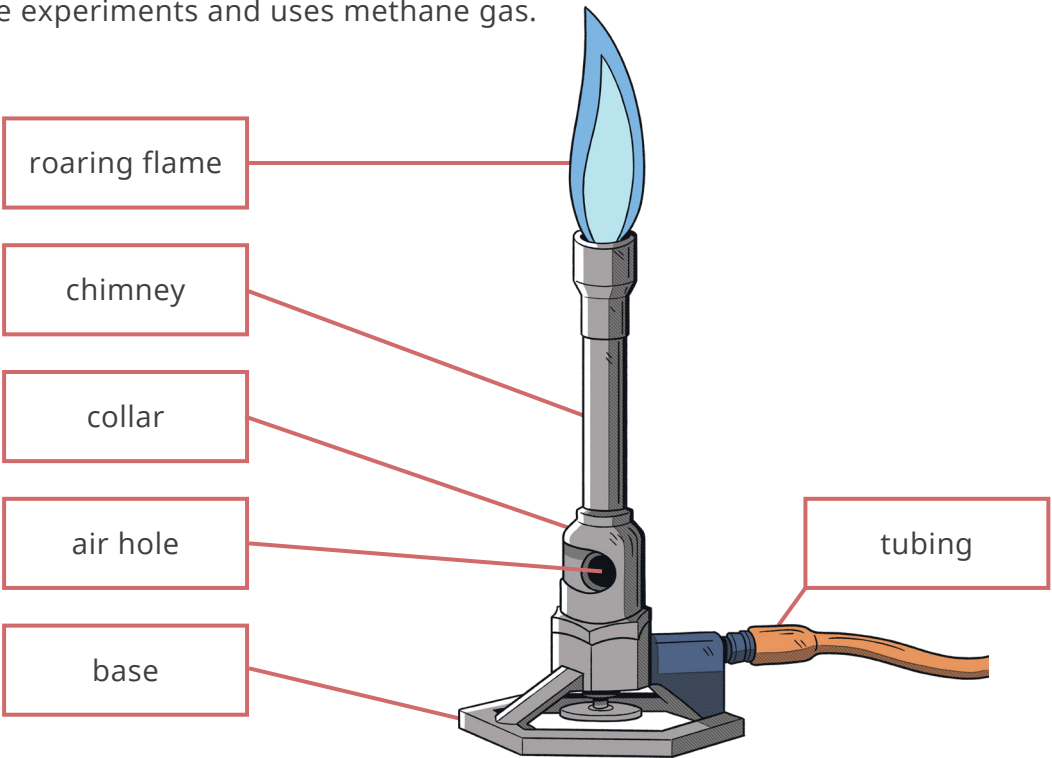
Diagrams are used when drawing practical equipment to make it easier and quicker to draw.

beaker	Bunsen burner	tripod	evaporating basin	clamp stand, boss and clamp	conical flask
test tube	funnel	measuring cylinder	thermometer	heatproof mat	gauze
					XXXXXXXXXXXXXX

Introduction to Science Knowledge Organiser

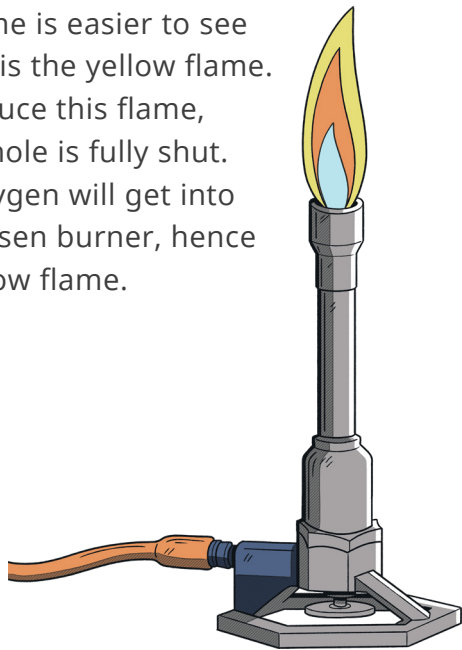
Bunsen Burner

The Bunsen burner is an important piece of scientific equipment. It is used in many science experiments and uses methane gas.



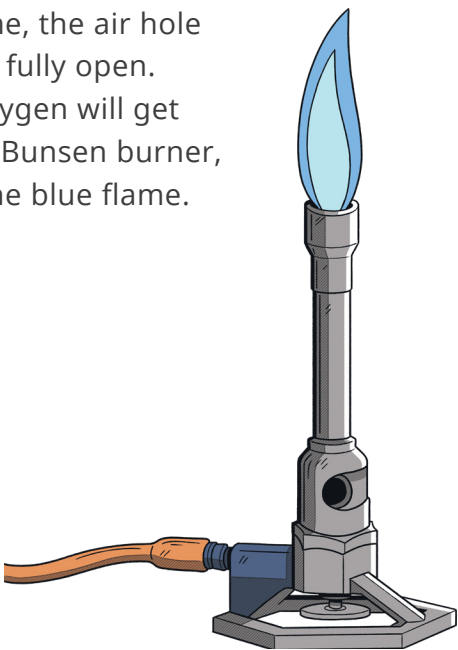
The Safety Flame

The safety flame is used when the Bunsen burner is not in use. The flame is easier to see when it is the yellow flame. To produce this flame, the air hole is fully shut. Less oxygen will get into the Bunsen burner, hence the yellow flame.



The Roaring Flame

The roaring flame is used to heat things quickly. To produce this flame, the air hole must be fully open. More oxygen will get into the Bunsen burner, hence the blue flame.

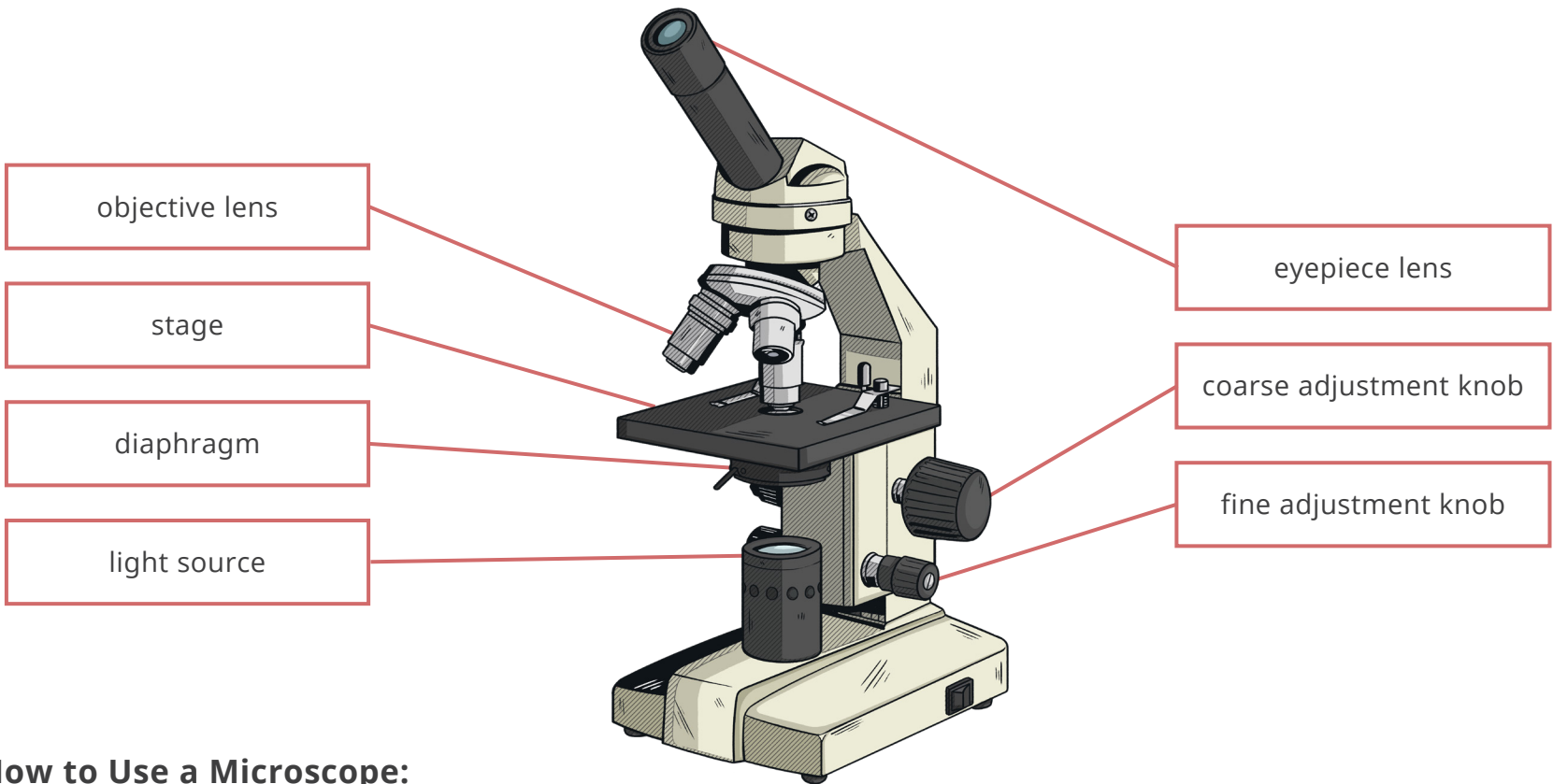


Microscope

Microscopes have been used for years to observe objects that are too small to see with the naked eye.

Over time, the magnification of microscopes has significantly improved due to developments in technology. We now have microscopes that can examine specimens at an atomic level.

We have made many important scientific discoveries thanks to microscopes.



How to Use a Microscope:

1. Plug in the microscope and turn on the light. If your microscope has a mirror, you may need to adjust it so light is directed through the diaphragm.
2. Place your specimen (the object you want to observe) on the stage and secure it with the stage clips.
3. Turn the objective lens to the lowest magnification (usually $\times 4$).
4. Turn the coarse adjustment knob until the objective lens is almost touching the microscope slide. Look from the side of the microscope as you do this, not through the eyepiece, so you do not damage the slide.
5. Looking through the eyepiece, turn the coarse adjustment knob to move the stage away from the objective lens until the image comes into focus.
6. Use the fine adjustment knob to make the image clearer.
7. Turn to a higher power objective lens ($\times 10$ or $\times 40$) and refocus the image using the fine adjustment knob.
8. Make a scientific drawing of the specimen or write down any observations.

Introduction to Science Knowledge Organiser

Investigation Skills

Independent variable: The variable that you change or select the values for.

Dependent variable: The variable that is measured for each change of the independent variable.

Control variable: A variable that may, in addition to the independent variable, affect the outcome of the investigation and therefore must be kept constant.

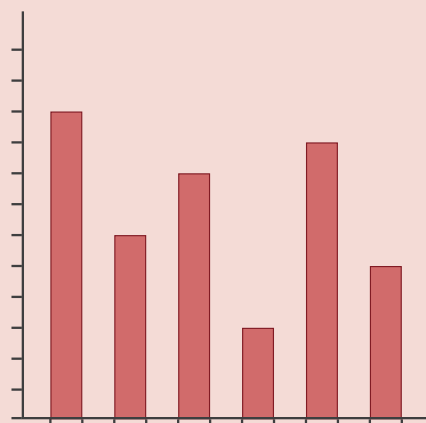
Prediction: What you think will happen and why.

Risk assessment: Identify hazards, the harms they can do and how you will minimise any risks in a practical investigation.

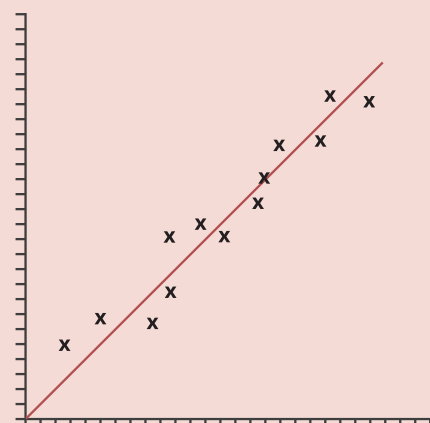
Method: Step-by-step instructions for how to carry out a practical investigation.

Results table: As the practical is carried out, write the results in a table.

Bar chart: used to display data when at least one variable is discrete or categoric.



Scatter graph: used to display data when both the independent and the dependent variables are continuous.



Conclusion: An explanation of what you found out in your investigation.

Evaluation: Where you consider the quality of your method and the data you collected.

The Flame Test

This test is used to find out which metal ion is in a compound. Each metal ion will produce a different coloured flame.

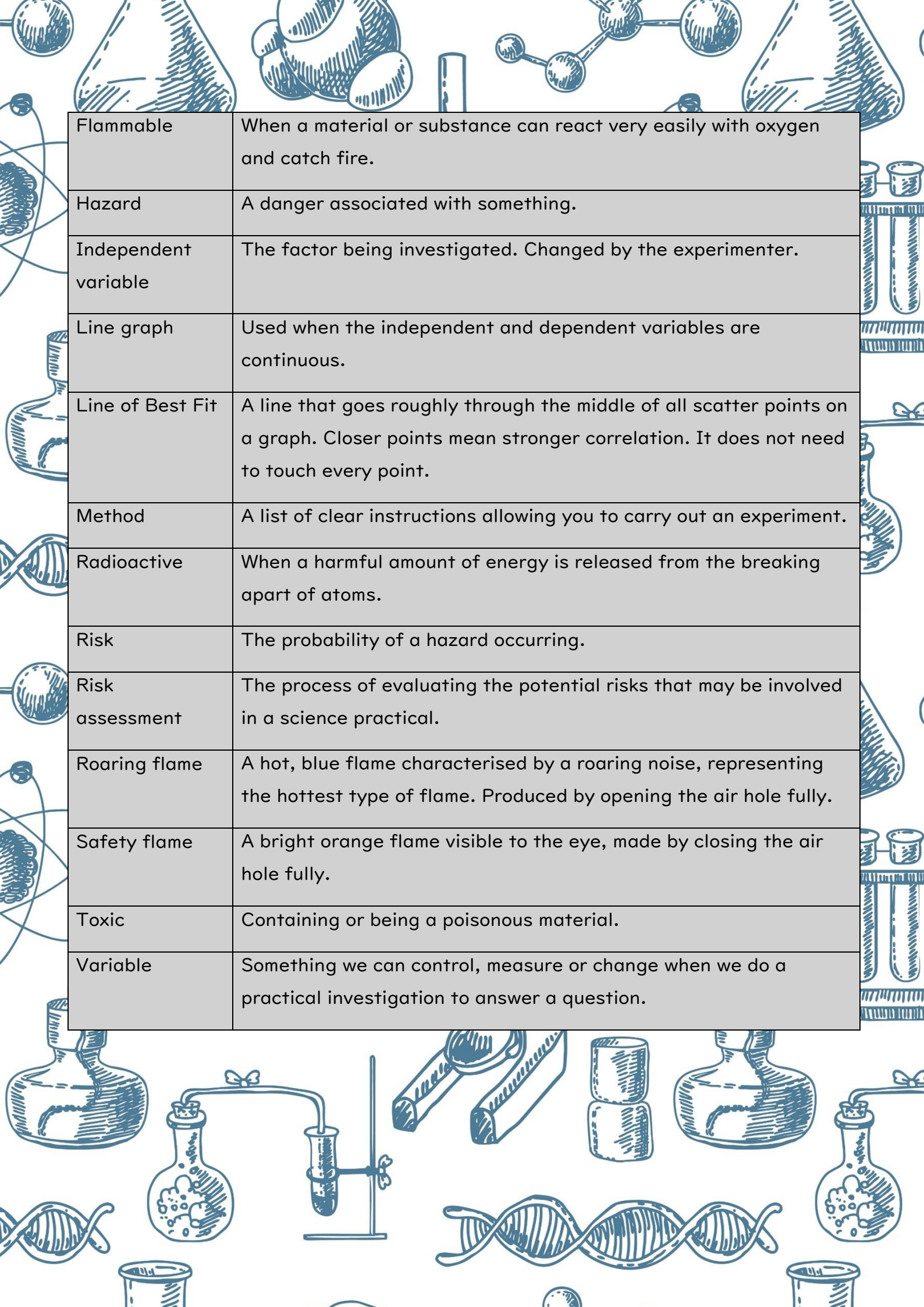
1. Dip a wooden splint into a test tube of a metal chloride solution, e.g. copper chloride.
2. Turn the Bunsen burner to the blue flame and carefully place the end of the splint with the metal chloride solution into the flame.
3. Write down any observations/colours in the results table.
4. Repeat with different metal chloride solutions.

Metal Ion	Flame Test Colour
potassium (K)	purple
calcium (Ca)	red-orange
lithium (Li)	crimson red
sodium (Na)	orange-yellow
copper (Cu)	green

Keyword Glossary

Working Scientifically

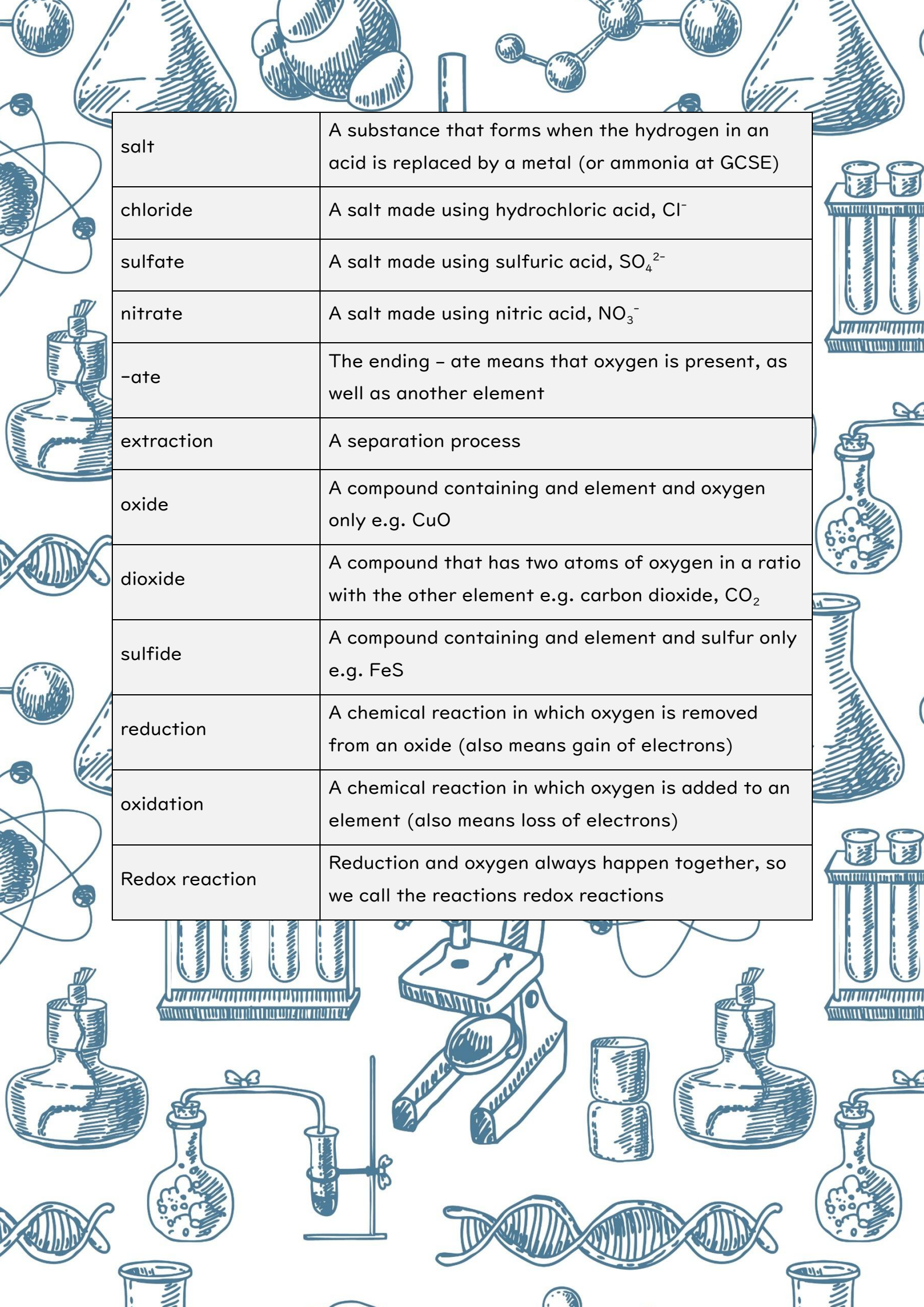
Key word	Definition
Air hole	The part of the Bunsen which allows air to flow into it.
Bar chart	Used when the independent variable is categoric or discrete.
Categoric	Data described by words (e.g. colour 'red' or 'blue', texture such as 'rough' or 'smooth').
Chimney	Long metal tube of a Bunsen which allows methane gas and air to travel up.
Collar	The part of the Bunsen burner that controls the size of the air hole into the Bunsen.
Combustion	A chemical reaction that involves burning in oxygen, releasing heat and light.
Continuous data	Numeric data that can have any value within a range (e.g. time, height, temperature).
Control variable	Something we keep the same during an investigation to ensure only one thing is tested at a time.
Corrosive	A substance which is capable of wearing away or burning surfaces, materials and skin.
Dependent variable	The factor being measured; the results of the experiment.
Discrete data	Numeric data that can only have certain values (e.g. shoe size, number of people).
Explosive	A very rapid reaction accompanied by a large expansion in gases.



Flammable	When a material or substance can react very easily with oxygen and catch fire.
Hazard	A danger associated with something.
Independent variable	The factor being investigated. Changed by the experimenter.
Line graph	Used when the independent and dependent variables are continuous.
Line of Best Fit	A line that goes roughly through the middle of all scatter points on a graph. Closer points mean stronger correlation. It does not need to touch every point.
Method	A list of clear instructions allowing you to carry out an experiment.
Radioactive	When a harmful amount of energy is released from the breaking apart of atoms.
Risk	The probability of a hazard occurring.
Risk assessment	The process of evaluating the potential risks that may be involved in a science practical.
Roaring flame	A hot, blue flame characterised by a roaring noise, representing the hottest type of flame. Produced by opening the air hole fully.
Safety flame	A bright orange flame visible to the eye, made by closing the air hole fully.
Toxic	Containing or being a poisonous material.
Variable	Something we can control, measure or change when we do a practical investigation to answer a question.

Keyword Glossary: Metals, Reactivity and Reactions

Key word	Definition
metal	Elements on the left of the stepped line of the Periodic Table. Most elements are metals. They are good conductors of energy and electricity.
ore	A rock that contains enough of a metal or metal compound to make extracting the metal economic. (Most ores are oxides)
property	The characteristics or qualities that can be used to describe a substance.
reactive	A substance is reactive if it reacts vigorously with substances such as dilute acids and water.
reactivity	The ability of a substance to react (GCSE link: for metals, how easily they lose electrons)
displace	Take the place of
displacement reaction	A more reactive metal displaces a less reactive element from its compound. In other words, a more reactive metal takes the place of a less reactive element in its compound
acid	A substance which contains hydrogen and has a pH below 7



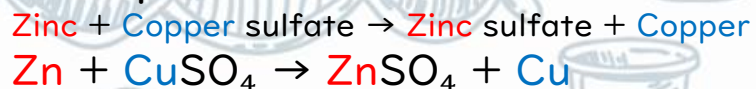
salt	A substance that forms when the hydrogen in an acid is replaced by a metal (or ammonia at GCSE)
chloride	A salt made using hydrochloric acid, Cl^-
sulfate	A salt made using sulfuric acid, SO_4^{2-}
nitrate	A salt made using nitric acid, NO_3^-
-ate	The ending -ate means that oxygen is present, as well as another element
extraction	A separation process
oxide	A compound containing an element and oxygen only e.g. CuO
dioxide	A compound that has two atoms of oxygen in a ratio with the other element e.g. carbon dioxide, CO_2
sulfide	A compound containing an element and sulfur only e.g. FeS
reduction	A chemical reaction in which oxygen is removed from an oxide (also means gain of electrons)
oxidation	A chemical reaction in which oxygen is added to an element (also means loss of electrons)
Redox reaction	Reduction and oxidation always happen together, so we call the reactions redox reactions

Metals, Reactivity and Reactions: Knowledge Organiser

Displacement Reactions

Displace – take the place of
A more reactive metal displaces a less reactive metal from its compound.

Example:



Metals + water

Metal + water → metal hydroxide + water



This is a type of displacement reaction, where a metal more reactive than hydrogen displaces hydrogen from water.

Therefore, only metals above hydrogen react with water. Most of them very slowly.

Metals + oxygen

Metal + oxygen → metal oxide

Magnesium + oxygen → magnesium oxide



Metals + acids

When a metal reacts with an acid, a salt plus hydrogen form:

Metal + acid → salt + hydrogen (MASH)

e.g. Magnesium + hydrochloric acid → magnesium chloride + hydrogen
 $\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$

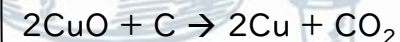
Only metals above hydrogen in the reactivity series will react with acids.

Hydrochloric acid makes chloride salts
Sulfuric acid makes sulfate salts
Nitric acid makes nitrate salts

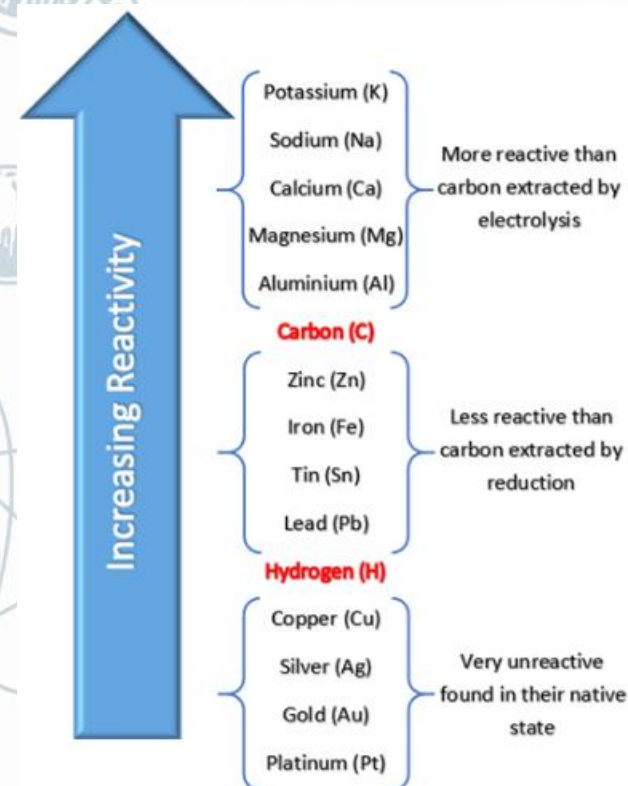
Extracting Metals Using Carbon

If a metal is less reactive than carbon, it can be extracted from its ore by heating it up with carbon

Copper oxide + carbon → copper + carbon dioxide



This is called a redox reaction. Copper oxide is reduced because oxygen is removed. Carbon is oxidised because oxygen is added to it.



Useful Formulae – Metals, reactivity and reactions

Common metal elements

sodium	Na
lithium	Li
potassium	K
iron	Fe
aluminium	Al
zinc	Zn
magnesium	Mg
lead	Pb
copper	Cu
silver	Ag
gold	Au
calcium	Ca
tin	Sn
platinum	Pt

Common metal compounds

Metal oxides	Metal Hydroxides	Metal carbonates	Metal chlorides	Metal nitrates	Metal sulfates
Na ₂ O	NaOH	Na ₂ CO ₃	NaCl	NaNO ₃	Na ₂ SO ₄
Li ₂ O	LiOH	Li ₂ CO ₃	LiCl	LiNO ₃	Li ₂ SO ₄
K ₂ O	KOH	K ₂ CO ₃	KCl	KNO ₃	K ₂ SO ₄
FeO iron(II) Fe ₂ O ₃ iron (III)	Fe(OH) ₂ Fe(OH) ₃	FeCO ₃ Fe ₂ (CO ₃) ₂	FeCl ₂ FeCl ₃	Fe(NO ₃) ₂ Fe(NO ₃) ₃	FeSO ₄ Fe ₂ (SO ₄) ₂
Al ₂ O ₃	Al(OH) ₃	Al ₂ (CO ₃) ₂	AlCl ₃	Al(NO ₃) ₃	Al ₂ (SO ₄) ₂
ZnO	Zn(OH) ₂	ZnCO ₃	ZnCl ₂	Zn(NO ₃) ₂	ZnSO ₄
MgO	Mg(OH) ₂	MgCO ₃	MgCl ₂	Mg(NO ₃) ₂	MgSO ₄
PbO	Pb(OH) ₂	PbCO ₃	PbCl ₂	Pb(NO ₃) ₂	PbSO ₄
CuO		CuCO ₃	CuCl ₂	Cu(NO ₃) ₂	CuSO ₄
Ag ₂ O		Ag ₂ CO ₃	AgCl	AgNO ₃	Ag ₂ SO ₄
AuO		AuCO ₃	AuCl ₂	Au(NO ₃) ₂	AuSO ₄
CaO	Ca(OH) ₂	CaCO ₃	CaCl ₂	Ca(NO ₃) ₂	CaSO ₄
SnO	Sn(OH) ₂	SnCO ₃	SnCl ₂	Sn(NO ₃) ₂	SnSO ₄
Pt ₂ O		Pt ₂ CO ₃	PtCl	PtNO ₃	Pt ₂ SO ₄

Acids

hydrochloric	HCl
sulfuric	H ₂ SO ₄
nitric	HNO ₃

Other useful

Carbon dioxide	CO ₂
hydrogen	H ₂
oxygen	O ₂
carbon	C
water	H ₂ O