



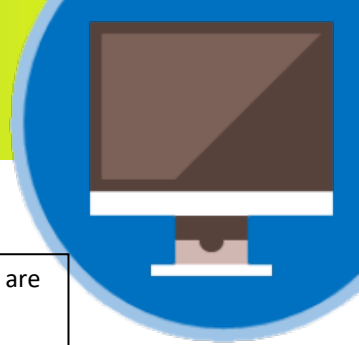
***AUTUMN
KNOWLEDGE
ORGANISER***

YEAR 8

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Computer Science Knowledge Organiser



COMPUTING SYSTEMS

Modern computer systems receive an input, process that data and then produce an output. The data can be stored in memory. They are designed to automate any process by a program. To execute programs that operate on data.

Computing systems need a **processor**, **memory**, and **storage**. Modern systems also rely heavily on **communication** between them.

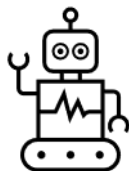
Modern computer systems receive an input, process that data and then produce an output. The data can be stored in memory. They are designed to automate any process by a program. To execute programs that operate on data.

Communication Computing systems exchange information and form networks
Programs and **data** are transferred between computing systems, when required.

Artificial Intelligence (AI)

Machine Learning

"AI has by now succeeded in doing essentially everything that requires 'thinking' but has failed to do most of what people and animals do 'without thinking' – that, somehow, is much harder!"
Donald Knuth, author of *The Art of Computer Programming*, in **1981**
Programming computers to learn from experience



Hardware Components

CPU – Central Processing Unit

It is known as the 'brains of the computer' that processes program instructions

An instruction may:

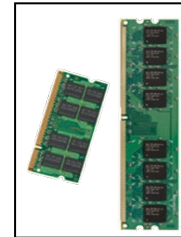
- Perform arithmetic or logic operations on data
- Perform input/output of data
- Control program flow



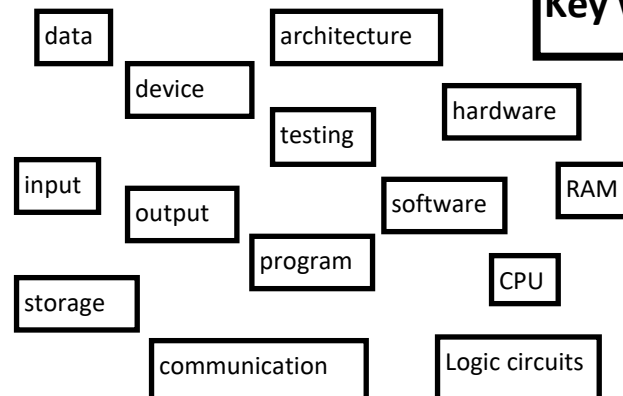
The **storage** (secondary memory) is the set of components that **stores** programs and data.
Storage is **persistent**: it retains its contents when the power is off.

Volatile (RAM) - Only stores information to run programs when computer is on

Non-volatile (ROM) - retains data even when the computer is switched off

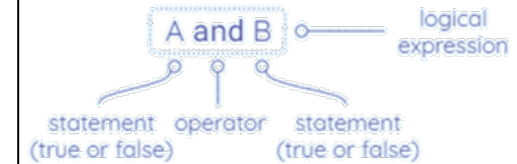


Key words



Logical Operators

Logical operations operate on statements that are **true** or **false**. There are three basic logical operations. AND OR NOT



Logical expressions — **logic circuits** can be represented using diagrams

Logical operations — **logic gates** can be represented using symbols



AND



OR



NOT

Operating Systems

All hardware needs an operating system. It is responsible for managing the hardware and providing an environment for programs to run in.

It manages: Files, Hardware, software, memory

Examples: IOS, Windows, Android, MacOS, Linux

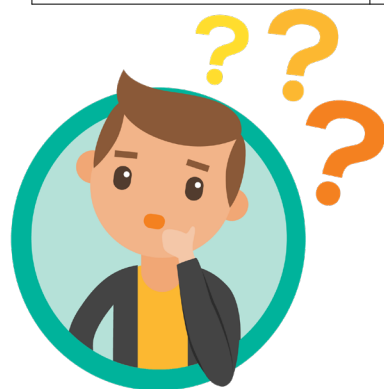


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Binary – Data Representation

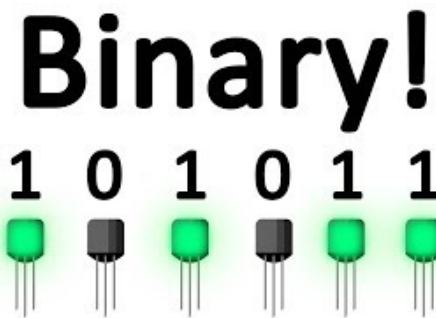
Key Words	
Binary number	A number system that contains two symbols, 0 and 1. Also known as base 2
Base 2	A number system where there are only 2 digits to select from. 0 – 1 as this is all binary can understand.
data	Units of information. In computing there can be different data types, including integers, characters and Boolean. Data is often acted on by instructions.
Denary (also known as decimal)	The number system you use. It contains 10 unique digits 0 to 9. Also known as decimal or base 10
Base 10	The number systems that we/humans use. Numbers 0-9 as it can make any number combination from that.



Binary Rules	Carry
0 + 0 = 0	0
0 + 1 = 1	0
1 + 0 = 1	0
1 + 1 = 0	1

Conversion table	128	64	32	16	8	4	2	1
Example binary number	0	0	0	1	0	1	1	1

0 → OFF
1 → ON



Representing information with sequences of symbols, is necessary for storing, exchanging and processing information. Information in computers must be represented in a form convenient for processing.



Humans have invented lots of different ways to code information using different sounds, symbols or even lights!

Computers represent all data, including numbers, letters, symbols, images, videos and sounds using binary numbers. All binary numbers are made up of the digits 0 and 1.

0s and 1s are called binary digits, or bits. All characters are represented using sequences of bits.

Computers only use the two symbols 0 and 1 because all computers are built out of electrical switched which can only be on (1) or off (0).

ASCII – American Standard Code for Information Interchange
ASCII is a character set that uses numeric codes to represent characters. These include upper and lowercase English letters, numbers, and punctuation symbols.
Example: a capital "T" is represented by 84, or 01010100 in binary.

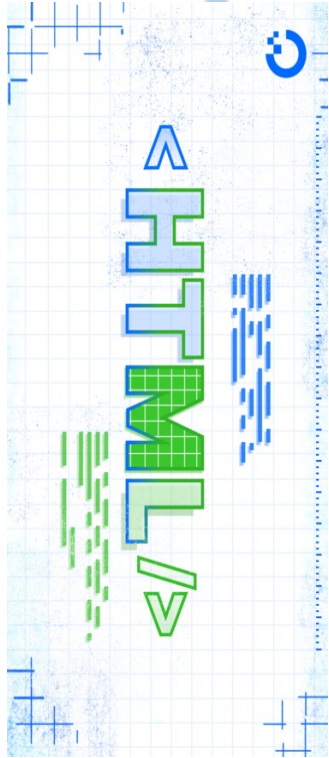


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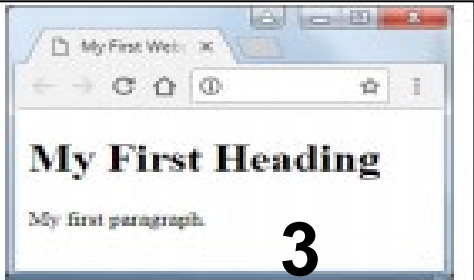
HTML

Key Words	
World Wide Web	Collection of webpages connected together by hyperlinks, using the Internet (Usually shortened to WWW)
Internet	A global network of computers all connected together
Webpage	A hypertext document connected to the world wide web
Website	A collection of webpages with information on a particular subject
Web browser	The software which displays a webpage or website on a computer
Uniform Resource Locator (URL)	An address that identifies a particular file or webpage on the internet
HTML	Hyper Text Mark-up Language – describes and defines the content of a webpage
Web script	A type of computer programming language used to add dynamic features to a webpages
Multimedia	Content that uses a combination of different types of media – for example, text, audio, images
Hyperlink	A link from a hypertext document to another location, activated by clicking on a highlighted word or image
Hotspot	An area on a computer screen which can be clicked to activate a function, especially an image or piece of text acting as a hyperlink
Navigation	The elements of a website that allows the user to move around the website. This is usually in the form of a menu or hyperlinked text or buttons
JPG	The main file type used for mages on the world wide web – uses lossy compression
PNG	Another type of image file used on the world wide web – supports transparency and uses lossless compression

Definitions: What does it do?	
<html>	Root of a HTML document
<body>	Contents of the page
<head>	Information about a page
<title>	Table title/defines title
<h1>,<h2>,<h3>	Headings
<p>	Paragraph
	Image
<a>	Anchor (used in hyperlinks with href)
,	Order/unordered list
	List item
<table>	Creates and defines table
<tr>	Table row
<td>	Table data
	Bold
 	Linebreak
<div>	Divider
<!-- -->	Comment



```
<!DOCTYPE html>
<html>
<head>
<title>My First Webpage</title>
</head>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```





Computer Science Knowledge Organiser

Year 8 Intro to Python

Python is a **text** based **programming language**. That can be used to create programs, games, applications and much more!

A **program** is a set of precise instructions, expressed in a **programming language**. **Translating** the programming language is necessary for a machine to be able to **execute** the instructions.

To execute a Python program, you need a **Python interpreter**.

This is a program that translates and executes your Python program.

A **selection** statement allows a computer to **evaluate** whether an **expression** is 'true' or 'false' and then perform an action depending on the outcome.

Arithmetic operators

- + addition
- difference
- * multiplication
- / division
- // integer division

Key terms

selection

algorithm

iteration

sequence

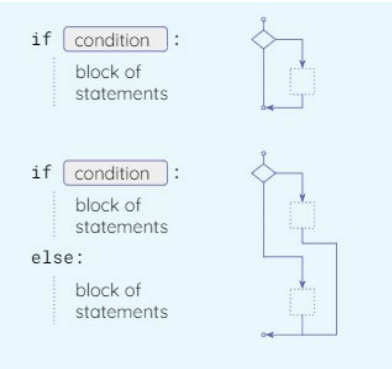
input

variable

logical operators

Arithmetic

output



You can use multiple branches using if, elif and else

Python helps by telling the programmer where the error is. So if you see red error text—read it first.

Keywords	
Variable	Stores a value/data – Can be changed during the program
Float (FLOAT)	Decimal point
Integer (INT)	Whole number
Boolean (BOOL)	True or False
String (STR)	Letters, numbers, symbols inside speech marks
Data types	The different data that can be stored in a variable
Sequence	A set of instructions or rules that an algorithm uses have to be in the right order.
Syntax Error	A syntax error is a mistake in your Python program that prevents it from running (executing). Syntax errors are like spelling/grammar errors or logic error

Some common syntax errors in selection

- use if and else—no capitals
- A colon : is always required after the condition and after else.
- Use **indentation** to indicate which statements 'belong' to the if block and the else block.
- The == operator checks for equality.
- A single = is only used in assignments

Syntax Errors

All programming languages have rules for **syntax**, i.e. how statements can be assembled.

Programs written in a programming language must follow its syntax.

Programs with **syntax errors** cannot be translated and executed.



python™



Computer Science Knowledge Organiser

YEAR 8

MOBILE APP



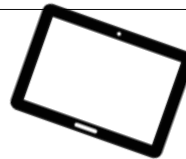
Key Words	
abstraction	Identify the important aspects to start with
algorithm	Precise sequence of instructions
Application (app)	Software designed to run on a mobile device
Computational thinking	Solving problems with or without a computer
debugging	Looking at where a program might have errors or can be improved
blocks	Scratch bricks that we can use to code algorithms
decomposition	Breaking down a problem into smaller parts
execute	A computer precisely runs through the instructions
GUI	Graphical User Interface
iteration	Doing the same thing more than once
selection	Making choices
sequence	Running instructions in order
variable	Data being stored by the computer

Sequence, **selection** and **iteration** are all processes. In order for computers to perform tasks there is more that is needed. For example a computer will take an **input** (this might be automatic or via human input) which the computer will then **process** and the **output** will be visible on the computer monitor.



A mobile application, most commonly called an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer.

App Lab is a **block or text based programming language**. This allows creation and sharing of apps.



The point of an app is to connect and interact with users. App creators tend to have an idea, a problem or a task that they want to develop user an app. These can be huge or relatively small ideas. **Decomposing** the problem helps us make the task less daunting and more achievable. This involves breaking down the task into smaller more manageable parts to start with.

Most computers have an environment with tiles, icons and/or menus. These allow users to interact. This type of interface is called the **graphical user interface (GUI)** because the user interacts with images through a mouse, keyboard or touchscreen. The GUI needs careful design consideration so that the user experience is a positive one so they want to continue to use it.

Making sure the app is successful and actually does what it was intended to do is important. Setting **success criteria** should be determined at the start of the project and can be revisited frequently. The success criteria should be clear and easy to follow.

Evaluating and **debugging** allow for judging the quality of the app and enables errors to be corrected and improvements to be made.



Design and Technology:

Literacy / key



Ergonomics: The study of how products and environments are designed to minimise effort and discomfort.

Primary, Secondary, Tertiary recycling – know the differences



Appliqué: Pieces of fabric in different shapes and colours are attached to a larger piece of fabric to make a picture or pattern.

Embroidery: is the art of decorating fabric or other materials using a needle to stitch thread or yarn. Embroidery may also incorporate other materials such as pearls, beads, quills, and sequins.

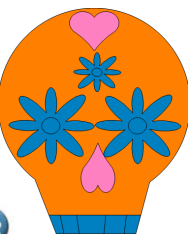
Fast fashion: is replicating trends and mass-producing them at a low cost, bringing them to retail quickly while demand is at its highest: throwaway fashion.



The 6 r's of Sustainability



Advantage of CAD: Ideas can be drawn and developed quickly, where as...



A disadvantage would be that it needs a skilled workforce.

We use **ACCESS FM** to help us write a **specification** - a list of requirements for a design - and to help us **analyse and describe** an already existing product.

A is for **Aesthetics**
C is for **Cost**
C is for **Customer**
E is for **Environment**
S is for **Size**
S is for **Safety**
F is for **Function**
M is for **Material**

ACCESS FM - Helpsheet Properties of fabric:

Aesthetics means **what does the product look like?**
 What is the: Colour? Shape? Texture? Pattern? Appearance? Feel? Weight? Style?

Cost means **how much does the product cost to buy?**
 How much does it: Cost to buy? Cost to make?
 How much do the different materials cost? Is it good value?

Customer means **who will buy or use your product?**
 Who will buy your product? Who will use your product?
 What is their: Age? Gender?
 What are their: Likes? Dislikes? Needs? Preferences?

Environment means **will the product affect the environment?**
 Is the product: Recyclable? Reusable? Repairable? Sustainable?
 Environmentally friendly? Bad for the environment?
6R's of Design Recycle / Reuse / Repair / Rethink / Reduce / Refuse

Size means **how big or small is the product?**
 What is the size of the product in millimeters (mm)? Is it the same size as similar products? Is it comfortable to use? Does it fit?
 Would it be improved if it was bigger or smaller?

Safety means **how safe is the product when it is used?**
 Will it be safe for the customer to use? Could they hurt themselves?
 What's the correct and safest way to use the product? What are the risks?

Function means **how does the product work?**
 What is the products job and role? What is it needed for? How well does it work? How could it be improved? Why is it used this way?

Material means **what is the product made out of?**
 What materials is the product made from? Why were these materials used? Would a different material be better? How was the product made? What manufacturing techniques were used?

Elasticity - The ability of a material to stretch and then return to its original shape and size when the stretching force is removed.

Flexibility - The ability of a fabric to regain its shape when stretched can be improved by adding elastic fibres into the blend,

Softness - Describes the clothing comfort performance. Along with compression, smoothness and flexibility of fabrics being handled and their end-uses.

Insulation - A material that reduces or prevents the transmission of heat or sound or electricity.

Absorbency - To take in moisture and retain liquids within its structure, affects skin comfort, static build-up, shrinkage, water repellency and wrinkle recovery.

Weight - How heavy or light a fabric is, usually measured in grams per square meter (GSM). It's a crucial factor influencing the drape, durability, and functionality of a fabric.

Natural Fibres



Extra - Read/watch/do



Fast Fashion and how the way we dress impacts the environment.
 What is meant by Fairtrade?

Create a login for Tinker Cad



You will be assessed on:

- Fast fashion and sustainability.
- How to write a design specification
- Electronic circuit construction.
- Final piece and evaluation.



Links to curriculum:
 Computing
 Science
 Mathematics
 Art and Engineering



Design and Technology:



Synthetic Textiles

Material	Properties	Common Uses
Polyester  POLYESTER	Strong, wrinkle-resistant, quick-drying	Sportswear, outerwear, home furnishings
Nylon  NYLON	Elastic, abrasion-resistant, lightweight	Activewear, hosiery, parachutes, backpacks
Acrylic 	Soft, warm, lightweight, fade-resistant	Knitwear, blankets, imitation wool products
Elastane (Spandex/Lycra) 	Highly stretchable, resilient	Sportswear, swimwear, fitted garments
Rayon (semi-synthetic)  RAYON	Soft, absorbent, drapes well	Dresses, blouses, linings, upholstery



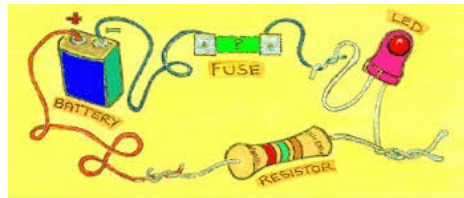
Natural Textiles

Material	Properties	Common Uses
Cotton 	Soft, breathable, absorbent, durable	T-shirts, jeans, bedding, casual wear
Wool 	Warm, insulating, elastic, moisture-wicking	Sweaters, coats, suits, blankets
Silk 	Smooth, lustrous, strong, lightweight	Luxury clothing, ties, scarves, lingerie
Linen 	Crisp, breathable, quick-drying, strong	Summer clothing, tablecloths, upholstery
Hemp 	Durable, breathable, eco-friendly	Bags, eco-fashion, ropes, canvas

Design and Technology:

Literacy / key

Collaboration and design fixation: Collaborative design is an excellent way of gaining feedback for designs from your peers. This helps with design fixation, where a designer might get stuck or not know how to develop their design further. This brings fresh ideas and new innovation to any project.



Electrical circuit: is a loop through which an electrical current can flow. It consists of a power source, wires and components.



A **prototype** is an early model built to test a concept or process. It is a term used in a variety of contexts, including semantics, design, electronics, and software programming. A prototype is generally used to evaluate a new design to enhance precision by system analysts and users. The quantities voltage, current and resistance are linked by the

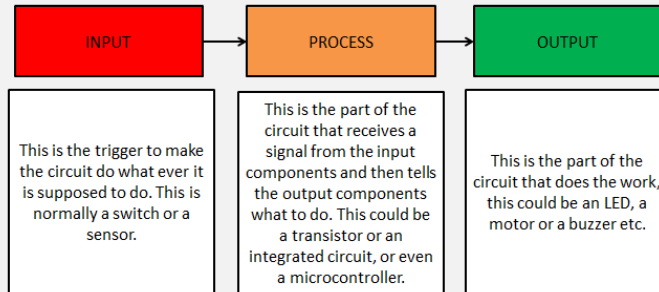
relationship:

To find voltage:	To find current:	To find resistance:
$V = IR$	$I = \frac{V}{R}$	$R = \frac{V}{I}$

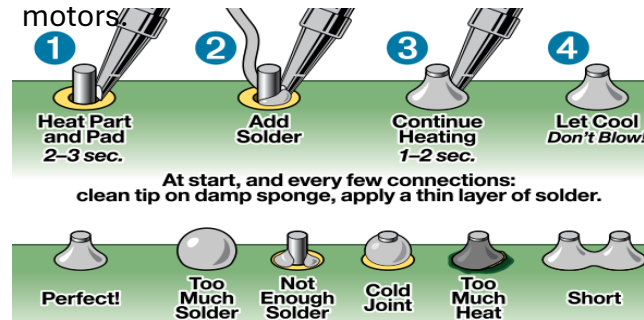
Ohm's law

Electronic Systems

When designing electronic systems, electrical engineers start with a block diagram called a systems diagram. Systems diagrams help the designers to work out how the electronic system will work and which parts need to be connected together.



A good example of **components** would be: Light emitting diodes (LED's), buzzers and motors.



Safety rules when soldering:

- Never touch the hot tip of the soldering iron.
- Take great care to avoid touching the mains flex with the tip of the iron.
- Always return the soldering iron to its stand when not in use. Never put it down on your workbench.
- Work in a well-ventilated area.



Light can be produced in different ways; a **light-emitting diode (LED)** Light-emitting diodes (LEDs) glow when current passes through them. Are the most common component used for producing light.

Resistors are an example of a processing device. Resistors are used to restrict the flow of current around a circuit and can prevent damage to components.

A **buzzer** or beeper is an audio signalling device, which may be mechanical, electromechanical, or piezoelectric (piezo for short). Typical uses of buzzers and beepers include alarm devices, timers, train and confirmation of user input such as a mouse click or keystroke.



Switches: A push-to-make (PTM) switch allows current to flow (or a signal to be passed on for processing) when pressed - therefore 'making' the circuit. A push-to-break (PTB) switch does the reverse and 'breaks' the circuit.

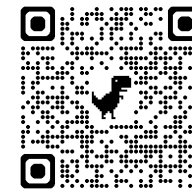


Lamps contain a thin coil of wire called the filament. This heats up when an electric current passes through it and produces light as a result.



Speaker: When an electrical signal is sent to the voice coil, it creates a magnetic field that interacts with the magnetic field of the permanent magnet. This interaction causes the voice coil to move back and forth, which in turn causes the diaphragm to vibrate and produce sound waves.

Further your knowledge on electronic systems here.



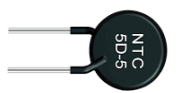
Transistors are a type of processing device and a special type of switch. When a small amount of volts are applied to the **Base** leg, a large current is allowed to flow from the **Collector** leg to the **Emitter** leg.



A **capacitor** is a device for storing electrical energy, consisting of two conductors in close proximity and insulated from each other.



A **thermistor** is a component where resistance changes with its temperature. Usually, increasing temperature decreases the resistance. We can use a thermistor to turn a heater off when a house reaches certain temperatures.



DRAMA

Keywords – The Island

Characterisation - The way an actor interprets and performs their character, through the use of vocal and physical skills

Status - A character's social or professional position. The amount of respect, admiration, or importance given to a character.



Body part isolation - An actor chooses a particular part of the body to lead with or exaggerate / draw attention to. For example, some people lead with their nose or might exaggerate their muscly arms.

Dramatic tension - You create a sense of suspense, anticipation of anxiety in the audience through some or all of:

- the story or plot
- characterisation
- production elements like lighting and sound

Cliff Hanger - When a conflict isn't fully resolved, leaving the audience wondering what happens next.

Physical Theatre - A form of theatre which emphasizes the use of physical movement, putting the human body at the centre of the storytelling process



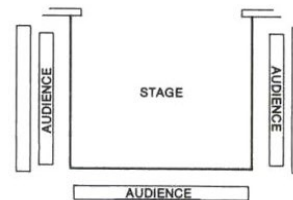
Stage Positioning

Upstage Right	Upstage Centre	Upstage Left
Centre Stage Right	Centre Stage	Centre Stage Left
Downstage Right	Downstage Centre	Downstage Left

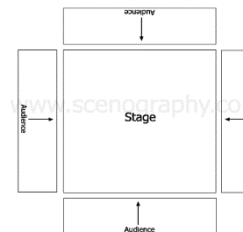
Audience

Stage Configurations

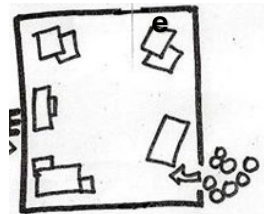
Thrust



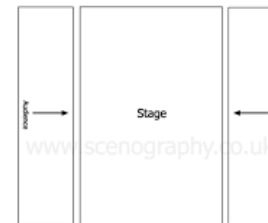
In-the-round



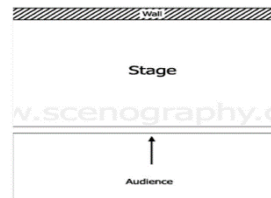
Promenad



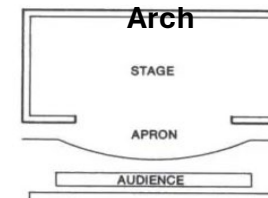
Traverse



End on



Proscenium



Keywords – Identification

Role Play - You pretend to be someone else by putting yourself in a similar position and imagining what the person might say, think and feel.



Split Stage - When the stage is split into different areas representing different places or times.



Cross-cutting - Switching between two or more scenes which take place at different times or in different places. Often used to compare and contrast characters in different settings.



Conscience Alley - Used to explore a character's multiple thoughts. To reflect in detail on the underlying issues and dilemmas of a character at that particular moment.



DRAMA

Autumn 2: *Romeo and Juliet*

Literacy (spellings)

1. Verona
2. Shakespeare
3. Elizabethan
4. Stereotype
5. Expectation
6. Feud
7. Montague
8. Capulet
9. Fate
10. Romantic

Adjectives - character

- Impulsive
- Romantic
- Idealistic
- Aggressive
- Patriarchal
- Loving/ kind
- Mercurial (extreme emotional swings)
- Emotional
- Despairing/ desperate
- Mature/ immature
- Abusive/ controlling

Context

Verona: The setting of *Romeo and Juliet*. It is the second-largest city in Northern Italy

Shakespeare: playwright who wrote *Romeo and Juliet* probably in 1597

Elizabethan era: the period in history when Elizabeth I was Queen of England and Ireland is often called the “Elizabethan era”. This was the period when *Romeo and Juliet* was written

Montague: Romeo’s wealthy family

Capulet: Juliet’s wealthy family

Duel: a fight (often to the death) to defend your own or your families honour; wealthy young men were trained how to fight and violence was expected

Petrarchan love = an idealised (not necessarily realistic!) view of love that believe men should ‘worship’ women and long for them.

Feud: a long-standing, violent grudge; the Montague and Capulet families have one which makes their relationship forbidden

Fate: belief your destiny is pre-planned, usually by God; Elizabethans believed astrology (star signs) could tell you your future!

Tragedy: play that ends in death/disaster often caused by the ‘fatal flaw’ of the characters; despite their flaws, we like the tragic heroes and so feel upset when they die

Patriarchy/ patriarchal: society controlled by men: Elizabethan women were expected to obey husbands/fathers

Marriage: Wealthy Elizabethans would be expected to have arranged marriages by their parents and not marry for love



TIF Words!

- **Hamartia** = a flaw in a character’s personality that leads them to make bad decisions that result in their death: **what do you think Romeo and Juliet’s is?**
- **Anagnorisis** = moment the tragic hero realises they have doomed themselves
- **Peripeteia** = sudden downfall/ change in luck leading to disaster

Sentence Starters:

Try to include one of each colour! (**What**, **How**, **Why**)

Key characters:

Romeo Montague- Son of Lord & Lady Montague.

Juliet Capulet- Daughter of Lord & Lady Capulet.

Nurse- Juliet's nanny/maid and primary carer.

Friar Laurence- Priest & friend of the Montagues and Capulets. Marries the lovers in secret.

Tybalt- Juliet's violent and aggressive cousin.

Mercutio – Romeo's impulsive and aggressive best friend

Paris- The wealthy man Lord Capulet wants Juliet to marry.

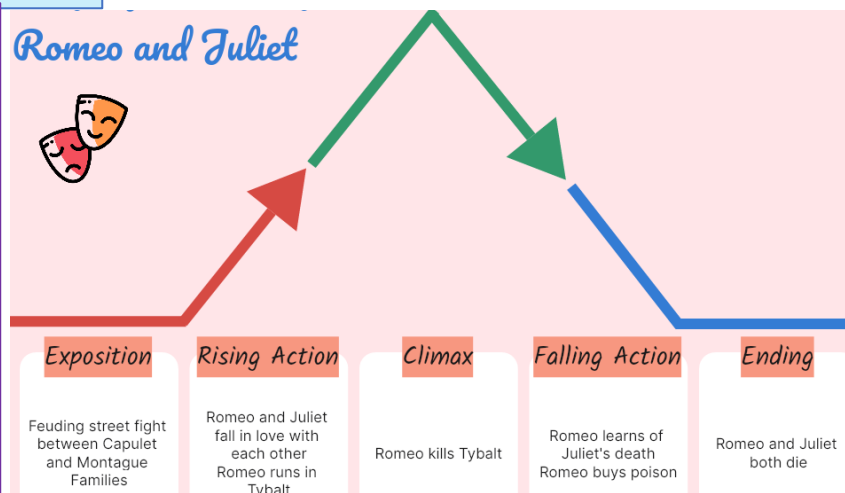
Autumn 2: *Romeo and Juliet*

Methods:

- **Simile** – comparing with like/as
- **Metaphor** – comparing directly (is/are)
- **Sonnet** – 14-line love poem with set rhyme scheme
- **Juxtaposition** - clear contrast of opposites
- **Iambic pentameter** – poetic metre of alternating stressed/unstressed syllables (di-DUM, di-DUM)
- **Emotive language** – language with strong emotion
- **Personification** – describe non-human as human
- **Motif** - pattern of repeated imagery
- **Oxymoron** – contradictory phrase e.g. 'bittersweet'
- **Soliloquy** –speech where characters speak their thoughts aloud on stage alone
- **Hyperbole** – deliberate over-exaggeration for effect
- **Dramatic irony** – information the audience knows but the characters do not!

Extra - Read/watch/do

- Lührman's *Romeo and Juliet* (film)
- *Gnomeo and Juliet* (animated comedy adaptation!)
- *Rosaline* (film about Romeo's ex-girlfriend!)
- *Noughts and Crosses*, Malorie Blackman (book)
- *"These Violent Delights"* by Chloe Gong (book)
- *"Juliet Immortal"* by Jennifer L.



Verbs of Inference: (What)

- Present/ show/ convey
- Creates/ illustrates
- Establishes/ develops/ concludes

Verbs of analysis: (How)

- Emphasise/ highlight
- Has connotations of/ makes you think of
- Imply/ suggest

Verbs of intent: (Why)

- Makes the audience think/feel/ like/dislike
- Warns
- Criticises
- Sympathises with
- Shocks/ horrifies/ saddens
- Encourages the audience to/has a message of

Y8 AUTUMN 1 KO: Gothic Fiction (Dracula)

Spelling

1. Convention
2. Stoker
3. Dracula
4. Grotesque
5. Macabre
6. Characterisation
7. Antagonist
8. Archetype
9. Ominous
10. Foreboding



Bram Stoker's *Dracula* follows a group of English characters who unite to stop Count Dracula, an ancient vampire seeking to spread his influence into modern Britain. Jonathan Harker travels to Transylvania to assist Dracula with a property purchase but becomes a prisoner in the castle, discovering the Count's supernatural nature. After Harker escapes, Dracula arrives in England and preys on Lucy Westenra, whose mysterious illness leads Professor Van Helsing to suspect vampirism. Despite attempts to save her, Lucy dies and becomes undead, forcing the group to destroy her to free her soul.

Dracula then targets Mina, Jonathan's fiancée, creating a psychic link that helps the group track him. Using diaries, letters, and Mina's visions, they pursue Dracula back to Transylvania. In a final confrontation, they kill him, ending his threat. The novel closes with Mina and Jonathan's peaceful family life, symbolising hope after horror.

Thematic Vocabulary

26	supernatural	(adj) beyond scientific explanation or human logic
27	The 'New Woman'	a feminist ideal that became popular in the late 19th century and influenced feminism in the 20th century
28	gender	(n) socially constructed perceptions of how men and women are expected to behave
29	patriarchal	(adj) a society, family or system in which men have all or most of the power and importance

Subject-Specific Vocabulary

1	Gothic fiction	(n) a genre of literature that is characterised by themes of mystery, terror, gloom and romance
2	epistolary	(adj) written as a series of letters
3	connotation	(n) an idea or feeling created by a word that adds to its literal meaning
4	antagonist	(n) the character who opposes the protagonist
5	dramatic irony	(np) when the audience is aware of the importance of a character's words or actions, but the character is not
6	conjunctive adverbial	adverbs of one or more words that act as conjunctions, linking sentences or clauses
7	semantic field	(n) a group of words or phrases that are connected by topic or meaning
8	participle phrase	a modifying phrase that uses the participle form of a verb (-ing or -ed) to describe a noun
9	simile	(n) a literary method in which a writer describes a person or thing as being similar to someone or something else
10	metaphor	(n) a comparison in which a person, object or action is used to represent or symbolise another person, object or action
11	extended metaphor	(n) a metaphor that unfolds across multiple lines or even paragraphs of a text
12	foreshadowing	(n) when the writer gives advance hints of what is to come later in the story
13	cliffhanger	(n) a moment of suspense when characters are left in a difficult situation without offering any resolution
14	allusion	(n) an expression that refers to another person or thing
15	juxtaposition	(n) two things placed closely together for a contrasting effect
16	symbolism	(n) when a writer takes an action, object, place, person, animal or word and gives it a much more metaphorical meaning

Food Technology

Literacy / key words

Microorganisms:

An organism that can be seen only through a microscope. They include bacteria, mould, and fungi.

Fermentation: Yeast + FATTOM = Carbon dioxide & Alcohol.

Pathogens: Bad bacteria which can cause illness.

Danger Zone: The range at which bacteria will grow 5°C to 63°C.

Eat Well Guide:

The Eatwell Guide shows how much of what we eat overall should come from each food group to achieve a healthy, balanced diet. You do not need to achieve this balance with every meal, but try to get the balance right over a day or even a week.

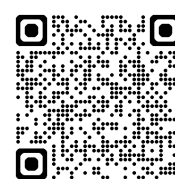
Extra - Read/watch/do

<https://www.youtube.com/watch?v=9HOk8A-j4Es>



<https://www.bbc.co.uk/teach/class-clips-video/article/s/zby76v4>

GCSE Design and Technology: Eight tips for healthy eating



8 Tips for Eating Well

To grow and be healthy we need to eat a variety of foods. We should choose more of some and less of others:

1. Base your meals on starchy foods



2. Eat lots of fruit and vegetables



3. Eat more fish: Including 1 portion of oily fish / week



4. Cut down on saturated fat and sugar

5. Try to eat less salt: no more than 6g a day for adults



6. Get active and try to be a healthy weight



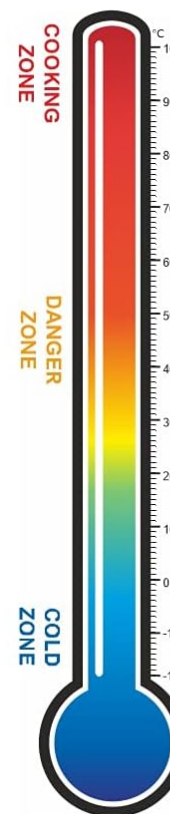
7. Drink plenty of water



8. Don't skip breakfast

SAFE TEMPERATURES

To prevent food poisoning



100 °C

at boiling point bacteria will be destroyed

83 °C

the internal temperature of reheated food should reach 83 °C

75 to 80 °C

poultry and meat are safest between these internal temperatures

63 °C

bacteria is gradually killed above this temperature

37 °C

ideal temperature for bacteria to grow

2 to 4 °C

stored food is safe at 4 °C for short periods of time but it's better stored at 2 °C

-18 °C

at deep freeze bacteria won't grow but may not die either

72 to 100 °C

most bacteria are killed quickly at these temperatures

DANGER ZONE

5 to 63 °C

never leave perishable foods in the danger zone for more than two hours

The above is only a guide - always check the core temperature of food with a probe thermometer

You will be assessed on:

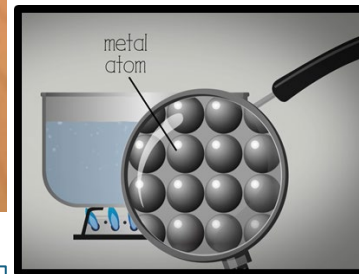
- Food Science Investigation; Yeast.
- Heat Transfer with popcorn.
- Eat well guide and Amy's diet.
- Nutrients in food

Links to curriculum:

Model exemplary practical skills and food safety and hygiene processes, including personal hygiene



Effect of cooking on protein



Why food is cooked:

1. To make it safe to eat
2. To improve the shelf life
3. To develop flavour
4. To improve texture
5. To give variety



Methods of heat transfer

Convection - when the environment (air, water or oil) is heated up.

e.g. - baking a cake
- boiling an egg

Conduction - when heat is transferred directly.

e.g. - frying an egg

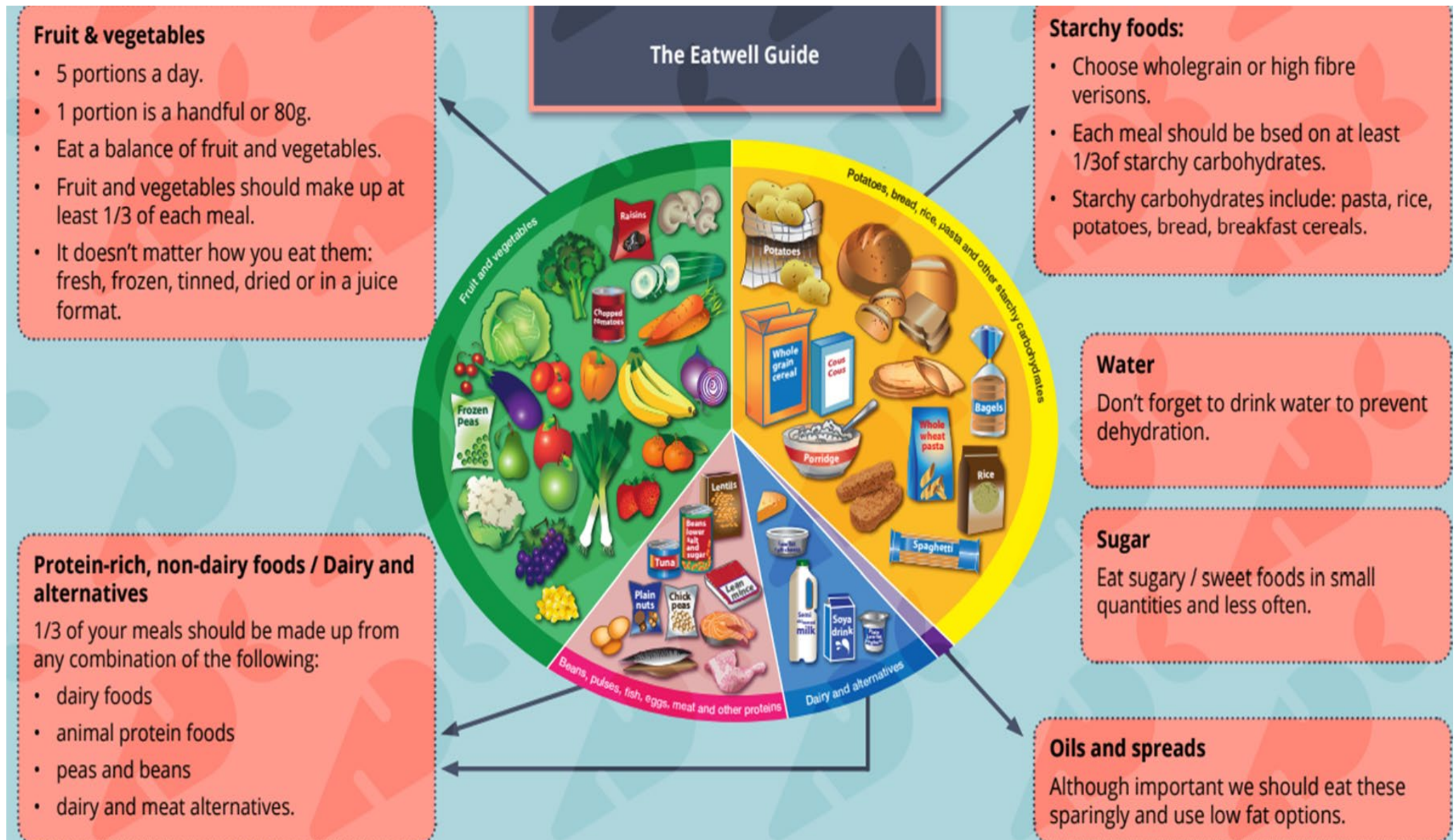
Radiation - when heat radiates

e.g. - toast

Functional and chemical properties of ingredients in cake and bread making

Cupcakes	
Self raising flour	Make the cake rise, Structure, dextrinises –add colour
Caster sugar	Sweetness, aeration
Margarine	Makes the cake moist, aeration
Egg	Binds mixture

Bread	
Strong flour	Structure, Gluten stretches helps bread rise and sets shape
Yeast	Produce CO ₂ when all conditions provided so makes bread rise.
Water	Binds ingredients, provides moisture for yeast.



Food Technology

Nutrient		Functions	
Protein		Growth – known as the body's building blocks. For growth, particularly during pregnancy & adolescence. Repair body cells and tissues, including recovery after illness or injury. To produce enzymes needed for digestion. To produce hormones that control body functions.	Animal products – meat, fish, dairy; plants – lentils, nuts, seeds
Carbo-hydrates		Source of energy. Divided into: 1. Sugars and complex 2. Starches and dietary fibre. Starches provide slow releasing energy & add bulk	complex – wholemeal bread, pasta, rice, potatoes with the skin
Fats		Source of energy, insulation and Helping your body absorb fat-soluble vitamins (A, D, E, & K). Four types: 1. Monounsaturated 2. Polyunsaturated (omega 3 and 6) 3. Saturated 4. Trans fats. Fats are stored under the skin and are essential for health. Too much fat can cause health problems	Monounsaturated – olive oil, avocados; polyunsaturated – oily fish, nuts, sunflower oil, soya beans; saturated – full-fat dairy, fatty meats; and trans fats – many snack foods
Vitamins A, D & C		A: For healthy eyes, skin and immune system D: The main function is to help the body absorb calcium for strong teeth & bones C: Helps heal wounds and prevents scurvy and helps absorb iron.	A – dairy, oily fish, yellow fruit; D – oily fish, eggs, fortified cereals C – citrus fruit, broccoli, sprouts, berries, kiwi
Minerals- Calcium		Essential for many processes, e.g. bone growth/strength, nervous system, red blood cells, immune system. Only needed in small amounts.	Calcium: milk, canned fish, broccoli; Iron: watercress, brown rice, meat; Zinc: shellfish, cheese, wheatgerm; Potassium: fruit, pulses, white meat

Extra - Read/watch/do

https://www.youtube.com/watch?v=xtFx55a-j0Y&list=PLSXnX8lDffhTq41shvMiA7n9xCVlt7_pN&t=5s



Links to curriculum: Discuss the importance of energy balance and how to maintain a healthy weight throughout life; Demonstrate how to analyse a diet and make improvements; Perform nutritional analysis and use the results to plan recipes, meals and diets; Promote the benefits of a healthy diet and active lifestyle.

Food Technology

Types of Microorganisms

Yeast, Mould, Bacteria (Bad bacteria are known as **Pathogens**)

Some Pathogens that causes Food Poisoning:

Campylobacter - Raw or undercooked meat, particularly raw poultry, unpasteurised milk, untreated water.

E. Coli - Raw or undercooked meat and poultry or related products (eg gravy), raw seafood products, unpasteurised milk or products made from it (eg cheese) contaminated water.

Listeria - Unpasteurised milk or products made from it
Soft cheeses (eg camembert, brie) ready-to-eat foods (eg pre-packed sandwiches, pâté, deli meats) unwashed vegetables contaminated with soil.

Staphylococcus Aureus - humans carry this in their nose & throat; it can be transmitted by coughing or sneezing. Ready-to-eat foods that are hand-made (e.g. sandwiches), cooked meats, unpasteurised milk and related products.

Salmonella - raw or undercooked poultry and meat, eggs and unpasteurised milk.

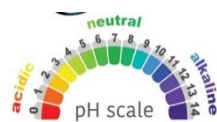
Conditions for growth of Micro-organisms explained (F A T T O M)

F



Food - Food provides energy and nutrients for bacteria to grow. High risk foods particularly protein foods such as chicken and dairy products are rich in nutrients and moisture and so promote bacterial growth.

A



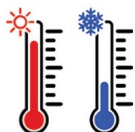
Acid - Most bacteria reproduce best at a neutral pH level of 7. Acidic foods with a pH below 7, or alkaline foods with a pH above 7, may stop or slow down the rate of bacterial growth.

T



Time - If provided with the optimum conditions for growth, bacteria can multiply to millions over a small period of time via binary fission. This is when a bacterium divides in two every 20 minutes.

T



Temperature - Bacteria need warmth to grow. The temperature a food is stored, prepared and cooked at is crucial. If this is not followed correctly then the food will not be safe to eat. The optimum temperature range for bacterial growth is between 5-63°C. This is known as the **danger zone** as it is dangerous for some foods to be in this temperature range for prolonged periods of time.

O



Oxygen - Microorganisms that require oxygen to grow are called aerobic such as most yeast.

M



Moisture - Bacteria need moisture in order to grow. This is why they grow on foods with high moisture content such as chicken. Foods that are dehydrated or freeze-dried can be stored for much longer as the moisture has been removed.

8.01: Population



Population distribution

1	population density	(n) the number of people who live within one square kilometre (km ²)
2	population distribution	(n) how people are spread out over a particular area
3	densely populated	(n) many people per km ²
4	sparsely populated	(n) few people per km ²

Population change

1	birth rate	(n) the number of live births per 1,000 people in a population per year
2	death rate	(n) the number of deaths per 1,000 people in a population per year
3	natural increase	(n) the difference between the birth rate and death rate
4	population explosion	(n) the rapid increase in the world's population since the 1950s
5	overpopulation	(n) when the number of people in a region exceeds the capacity of that region's resources to support them

Managing population

1	ageing population	(n) a population with a high and increasing proportion of people aged 65 and over, often due to low birth rates and longer life expectancy
2	youthful population	(n) a population with a high proportion of young people (typically under the age of 15), often found in countries with high birth rates and lower life expectancy

Population structure

1	population structure	(n) the number/proportion of people in each age range, for each gender
2	population pyramid	(n) a graphical representation of a country's population structure, showing the distribution of different age groups and sexes
3	working - age population	(n) the group of people typically aged 15 – 64 who are considered old enough to work and support the economy
4	young dependents	(n) children and young people aged 0 – 14 who are usually not working and depend on others for care and support
5	elderly dependents	(n) older adults, usually aged 65 and over, who are often retired and may rely on others or the government for financial and healthcare support

Migration

1	voluntary migration	(n) when people choose to move to another place, often for reasons such as better job opportunities, education or lifestyle
2	forced migration	(n) when people are made to move due to conflict, natural disasters, persecution or other dangers beyond their control
3	international migration	(n) when people move from one country to another
4	internal migration	(n) when people move within the same country, e.g. from rural areas to cities
5	push factor	(n) factor that makes people want to leave an area
6	pull factor	(n) factor that makes people want to move to an area
7	source country	(n) the home country of a migrant
8	host country	(n) the destination country for a migrant



8.01: Population



Factors influencing population distribution

1 physical	1. relief of the land 2. availability of natural resources 3. climate 4. fertility of soil 5. access to fresh water
2 human	1. transport network 2. job opportunities 3. investment in basic and wider services

Factors affecting birth and death rates

1 birth rate	1. cost of childcare 2. access to contraception 3. children seen as an economic asset 4. average age of marriage
2 death rate	1. access to safe drinking water 2. access to food
3 both	1. access to healthcare 2. infant mortality rate 3. access to education 4. war

Population structure and development

1 developing countries	1. high birth rates, so a large young dependent population 2. a lower life expectancy, so a small elderly dependent population
2 developed countries	1. a declining birth rate, so a small young dependent population 2. a rising life expectancy, so a large elderly dependent population

Ageing population

1 Advantages	1. the grey pound 2. family support with childcare 3. jobs in health and social care
2 Disadvantages	1. pressure on public services, including healthcare 2. strain on housing supply 3. increased tax revenue required for pensions
3 Management strategies	1. increasing the retirement age 2. increasing tax for the working - age population 3. access to free or funded childcare

Youthful population

1 Advantages	1. large future workforce 2. increased tax revenue in the future 3. future business development
2 Disadvantages	1. strain on natural resources 2. overpopulation 3. education requirements
3 Management strategies	1. investing in healthcare 2. family planning 3. investment in education 4. improving women's rights

Factors affecting migration

Push factors	Pull factors
war and conflict	peace (no war)
low wages	higher wages
education difficult to access	good education system
droughts and water scarcity	better access to healthcare
gender inequality	good job opportunities



8.02: Coasts



Geology

Wave features

1	swash	(n) the movement of a wave up the beach. The direction is dependent upon the wind direction.
2	backwash	(n) the movement of water down a beach. This is caused by gravity and happens at 90 degrees to the shore.
3	constructive wave	(n) waves that have a strong swash and a weak backwash. Deposition is the dominant process.
4	destructive wave	(n) waves that have a weak swash and a strong backwash. Erosion is the dominant process.
5	fetch	(n) the distance a wave has travelled
6	prevailing wind	(n) the direction that the wind usually comes from in a particular area over a long period of time

Weathering and erosion

1	hydraulic action	(n) the erosion caused by the force of the water hitting the rocks, which traps and compresses air in the cracks and causes the cracks to weaken and break
2	abrasion	(n) the erosion caused when rocks and sediment carried by waves (or a river) are thrown against a cliff or riverbank
3	attrition	(n) the erosion caused when rocks and sediment carried by waves (or a river) hit each other and cause each other to break into smaller pieces
4	weathering	(n) the slow breakdown of rocks while they are in place

1	geology	(n) the scientific study of the Earth, including its structure, materials (such as rocks and minerals) and the processes that act upon it
2	igneous rock	(n) rocks formed from the cooling and crystallisation of molten rock. Examples include basalt and granite.
3	metamorphic rock	(n) rocks formed when very high temperature and pressure cause existing rocks to change. Examples include slate and marble.
4	sedimentary rock	(n) rocks formed when sediments of rock are transported, deposited, compacted and cemented together in layers. Examples include chalk, clay and limestone.

Coastal processes

1	transportation	(n) the movement of sediment
2	deposition	(n) when waves drop the sediment they are transporting, either due to a loss of energy or change in the direction of the coastline
3	longshore drift	(n) the process by which sediment (such as sand and pebbles) is transported along a coastline by the action of waves. It creates beaches.

Headlands and bays

1	resistant	(a) does not easily erode or wear away
2	headland	(n) a piece of land that sticks out into the sea and is usually made of hard, resistant rock
3	bay	(n) a curved or indented area of the coastline where the land curves inward
Alternating hard and soft rock → destructive waves → hydraulic action → soft rock less resistant → erodes quickly → hard rock more resistant → erodes slowly → soft rock retreats → bay forms → hard rock remains → headland forms		

Caves, arches, stacks and stumps

1	cave	(n) a hollow or opening in a cliff face, usually at the base, formed when waves erode a weakness in the rock, such as a fault or crack
2	arch	(n) a natural bridge of rock with an opening underneath, formed when a cave is eroded all the way through a headland.
3	stack	(n) a tall, isolated pillar of rock that is left standing in the sea after the roof of an arch collapses
4	stump	(n) the remains of a collapsed stack, which has been eroded by waves down to a small, flat rock just above or below sea level
Weakness or crack in headland → destructive waves → hydraulic action and abrasion → cave formed → headland erodes through → arch formed → unsupported roof collapses → vertical stack left → stack collapses leaving a stump		



8.02: Coasts



Beaches and longshore drift

1	sand	(n) loose material made up of fine rock particles, usually smaller than 2 mm in diameter
2	shingle	(n) loose, rounded pebbles and small stones found on beaches, usually between 2 mm and 200 mm in size
3	sediment	(n) solid material that is moved and deposited in a new location
4	beach	(n) a landform made of loose material, such as sand, pebbles or shingle, that lies along the edge of a sea, ocean or lake
5	longshore drift	(n) the process by which sediment (such as sand and pebbles) is transported along a coastline by the action of waves. It creates beaches.

Direction of prevailing wind at an angle → swash happens at an angle → transports material up the beach → backwash takes material down the beach at 90 degrees → due to the force of gravity → process repeats → sediment moves across the beach → zigzag pattern

Coastal management

1	soft engineering	(n) adaptations to work with nature beach nourishment – Sand and shingle from elsewhere are added to the beach. managed retreat – Engineers do nothing, people are moved and the coast is left to erode and flood naturally.
2	hard engineering	(n) human-made structures that help to deal with coastal erosion seawalls – concrete walls that reflect the waves' energy back out to sea groynes – wooden posts that trap sediment and interrupt longshore drift

Other threats to the coast

1	plastic pollution	(n) when plastic waste ends up in the environment, especially in the sea
2	sewage pollution	(n) when untreated or poorly treated wastewater (including human waste) is released into rivers or the sea
3	oil spill	(n) when oil accidentally leaks into the sea, usually from a ship or drilling platform
4	sea level rise	(n) the increase in the average level of the world's oceans
5	sustainability	(n) meeting the needs of the present without compromising the ability of future generations to meet their own needs

Coastal erosion case study: Happisburgh, Norfolk coast

Background: Norfolk coast in between Cromer and Sea Palling.
A small village with a population of approx. 1400 people.

Vulnerability: soft boulder clay, long fetch, longshore drift, limited sea defences

Impacts	Management strategies
homes destroyed or had to be knocked down	1950s: groynes and revetments
roads lost to the sea	
car parks relocated	
homes valued at £1 on Beach road	2000s: rock armour
farmland lost: 1 field per year	2007 onwards: managed retreat
businesses lost, e.g. caravan parks	



Topic 1 – The Tudors

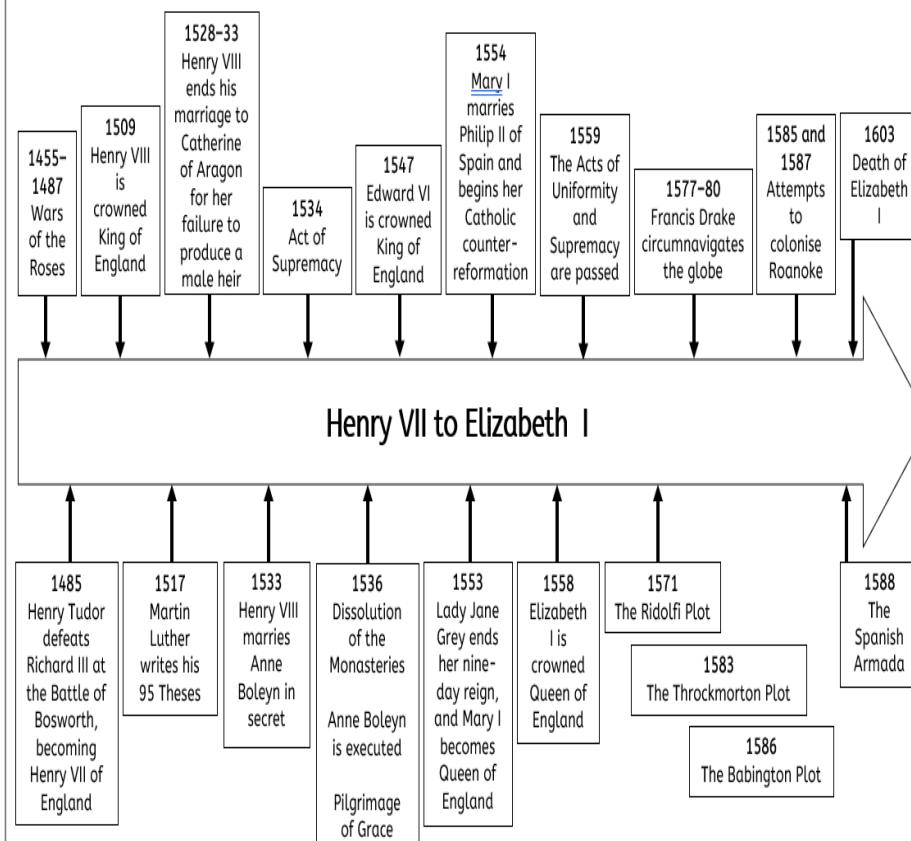
Key Vocabulary

1 annulment	(n) to declare that a marriage never actually existed
2 armada	(n) fleet of Spanish warships
3 counter-reformation	(n) the Catholic fights against the spread of Protestantism
4 dissolution	(n) the ending of an organisation
5 heretic	(n) someone with religious views that disagree with official Church teaching
6 indulgences	(n) a payment to the Catholic Church to forgive a person's sins
7 papal bull	(n) an official order from the Pope
8 plot	(n) secret plan or scheme, often to do something harmful or illegal
9 reformation	(n) a movement which led to a break with the Catholic Church and the beginning of the Protestant Church
10 vestments	(n) robes worn by priests

Key Individuals

Henry VII	founder of the Tudor dynasty
Henry VIII	Tudor King 1509–47 who started the Protestant Reformation
Katherine of Aragon	first wife of Henry VIII and mother of Mary I
Mary I	Catholic Queen of England 1553–1558
Anne Boleyn	second wife of Henry VIII and mother of Elizabeth I
Edward VI	Protestant successor of Henry VIII 1547–1553
Elizabeth I	Protestant Queen of England 1558–1603
Mary Queen of Scots	Catholic cousin of Elizabeth I executed in 1587
Francis Drake	first Englishman to circumnavigate the globe
Walter Raleigh	established the first English colony of Roanoke
Walsingham	Elizabeth I 'spymaster'

Chronology



Themes and Threads

Power

The control a person or group has in a country.

For example, Henry VIII disliked the power of the pope and his refusal to grant an annulment.

This includes threads such as succession.

Identity

The qualities and characteristics that make a person who they are and what they value as important.

For example, Mary I was a devout Catholic.

This includes threads such as the role of women.

Connectivity

The act of joining or being linked to somewhere, someone or something else.

For example, we have evidence of African Tudors in the court of Henry VIII.

This includes threads such as medicine.

Topic 2 – The English Civil War

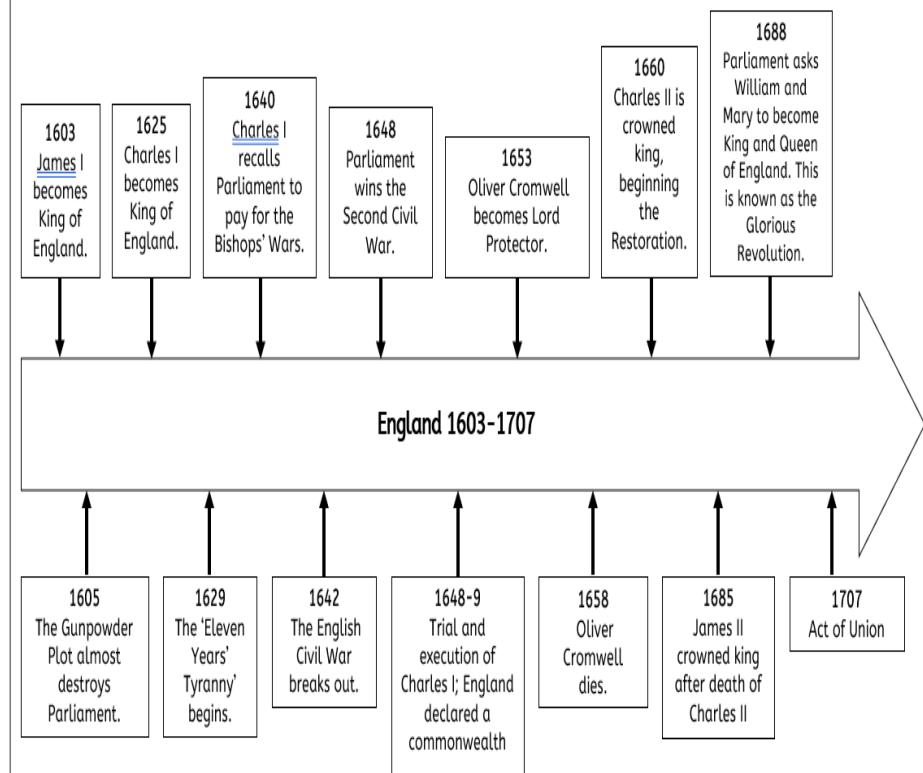
Key Vocabulary

1 army	(n) an organised force for fighting
2 commonwealth	(n) a group of people organised under a single government
3 dissenters	(n) people who disagree with or oppose something, especially a religious or political authority
4 flank	(n) side
5 interregnum	(n) a period between reign
6 regicide	(n) the deliberate killing of a monarch, or the person responsible for doing so
7 republic	(n) a form of government where power is held by elected individuals and not a monarch
8 restoration	(n) the return of a monarch to the throne
9 treason	(n) a crime against the monarch or state
10 union	(n) the joining together
11 witch	(n) a person believed to have magic powers used for evil

Key Individuals

Charles I	King of England 1625-1649, executed for treason
Oliver Cromwell	Leader of the New Model Army who became Lord Protector in 1653
Thomas Fairfax	Commander of the New Model Army
Prince Rupert	Nephew of Charles I who led the Cavalier cavalry
Richard Cromwell	Son of Oliver Cromwell who succeeded his father as Lord Protector in 1658
Charles II	Eldest son of Charles I and heir to the throne
James II	Catholic younger brother of Charles II, crowned king in 1685
William III and Mary II	Protestant daughter of James II and her husband, who were invited by Parliament to take the throne

Chronology



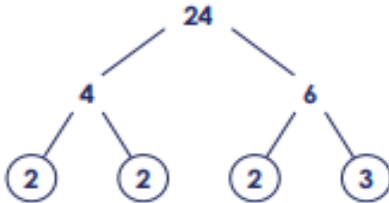
Themes and Threads

Power	Identity	Connectivity
The control a person or group has in a country For example, a cause of the Civil War was the struggle for power between Parliament and King Charles I. <i>This includes threads such as warfare and protest.</i>	The qualities and characteristics that make a person who they are and what they value as important For example, Oliver Cromwell was a Puritan, and this affected his rule as Lord Protector. <i>This includes threads such as beliefs.</i>	The act of joining or being linked to somewhere, someone or something else For example, the Act of Union in 1707 created the United Kingdom. <i>This includes threads such migration.</i>

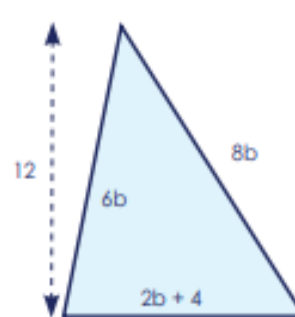
KPI 8.01 Powers and Roots

1) Square number	The result of multiplying a number by itself. It will always be positive. The first 12 square numbers are: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144.	2) Square root	The opposite of squaring a number to find the original factor. E.g. $\sqrt{64} = 8$ or -8 because $8^2 = 64$ and $(-8)^2 = 64$
3) Cube number	The result of multiplying a number by itself, then itself again. The first 10 cube numbers are: 1, 8, 27, 64, 125, 216, 343, 512, 729, 1000.	4) Cube root	The opposite of cubing a number to find the original factor. E.g. $\sqrt[3]{8} = 2$ because $2^3 = 8$ Note: $(-2)^3 = -8$ so $\sqrt[3]{-8} = -2$
5) Index notation	Example $a \times a \times a \times a = a^4$. The number 4 is called the index (plural indices). This tells us how many times the "base" a has been multiplied by itself.		
6) Multiplying powers	$a^m \times a^n = a^{m+n}$ ADD the powers only if the bases are the same. E.g. $a^5 \times a^3 = a^{5+3} = a^8$	7) Dividing powers	$a^m \div a^n = a^{m-n}$ SUBTRACT the powers only if the bases are the same. E.g. $a^6 \div a^2 = a^{6-2} = a^4$
8) Indices with brackets	$(a^m)^n = a^{m \times n}$ MULTIPLY the powers. E.g. $(a^3)^5 = a^{3 \times 5} = a^{15}$	9) Indices with brackets	$(ab)^n = a^n \times b^n$ Raise each number or variable to the same power. E.g. $(2p)^4 = 2^4 \times p^4 = 16p^4$
10) Power of 0	$a^0 = 1$. Any number or variable to the power of zero equals 1.	11) Power of $\frac{1}{2}$	$a^{\frac{1}{2}} = \sqrt{a}$ E.g. $16^{\frac{1}{2}} = \sqrt{16} = 4$

KPI 8.02 Prime Factorisation

1) Prime numbers	A prime number only has two distinct factors: 1 and itself. 2 is the only even prime number. 1 is not a prime number. Prime numbers between 1 and 100: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.		
2) Prime factor decomposition	The process of expressing a number as a product of its prime factors. $24 = 2 \times 2 \times 2 \times 3 \rightarrow 24 = 2^3 \times 3$	3) Prime factor trees	

KPI 8.05 Solving Equations 1

1) Inverse operations	Addition and Subtraction are inverse operations. Multiplication and Division are inverse operations. Squaring and taking the square root are inverse operations.		2) Variable	A letter used to represent any number.
3) Coefficient	The number to the left of the variable. This is the value that we multiply the variable by. $4x \rightarrow$ The coefficient of x is 4. $x \rightarrow$ The coefficient of x is 1.		4) Term	A single number, variable or numbers and variables multiplied together.
5) Collecting like terms	Combining the like terms in an expression. $7x + 3y - 2x$ is simplified to $5x + 3y$.		6) Expression	A mathematical statement which contains one or more terms combined with addition and/or subtraction signs E.g. $4x + 3y$.
7) Linear equation	Contains an equals sign (=) and has one unknown. E.g. $5x - 2 = 2x + 7$.			
8) Solve	Use inverse operations to find the solution of an equation.			
	E.g. 1. (One step) $\begin{array}{r} \frac{x}{4} = 12 \\ \times 4 \qquad \times 4 \\ x = 48 \end{array}$	E.g. 2. (Two step) $\begin{array}{r} 3p - 7 = 8 \\ +7 \qquad \qquad +7 \\ 3p = 15 \\ \div 3 \qquad \qquad \div 3 \\ p = 5 \end{array}$	E.g. 3. (Unknown on both sides) $\begin{array}{r} 2x + 10 = 19 - 9x \\ +9x \qquad \qquad +9x \\ 11x + 10 = 19 \\ -10 \qquad \qquad -10 \\ 11x = 9 \\ \div 11 \qquad \qquad \div 11 \\ x = \frac{9}{11} \end{array}$	
9) Form and solve a linear equation	E.g. 1 Jake is y years old. Lily is 15. Kobe is 3 years younger than Jake. They have a total age of 36. Work out their individual ages. $\begin{array}{l} y + 15 + y - 3 = 36 \\ 2y + 12 = 36 \\ 2y = 24 \\ y = 12 \end{array}$ Jake: 12, Lily: 15, Kobe: 9		E.g. 2 The area of the triangle is 120 cm^2 . Find the value of b .  $\begin{array}{l} \frac{12(2b + 4)}{2} = 120 \\ \frac{24b + 48}{2} = 120 \\ 12b + 24 = 120 \\ 12b = 96 \\ b = 8\text{cm} \end{array}$	

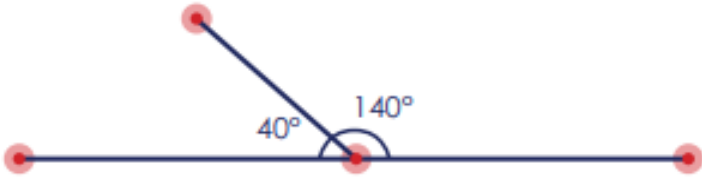
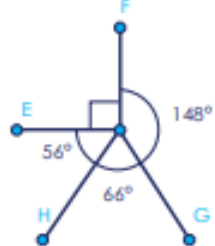
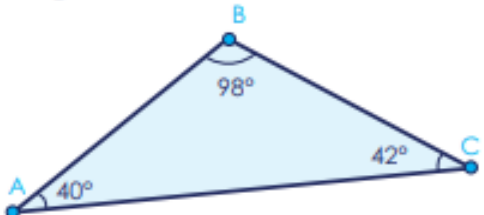
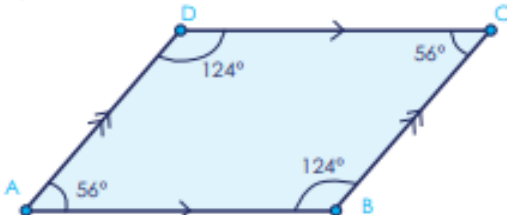
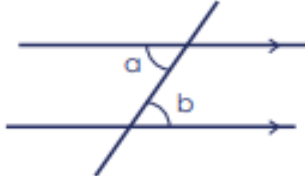
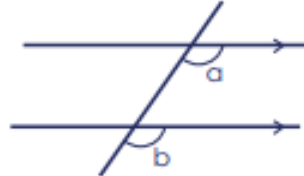
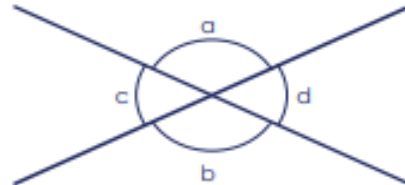
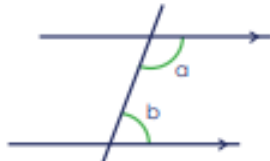
KPI 8.03 Rounding

1) Significant figures	The total number of digits in a number, not counting zeros at the beginning of a number or at the end of a decimal number. 345 000 has 6 significant figures. 0.3047 has 4 significant figures. 10.500 has 3 significant figures.																			
2) Rounding to significant figures	<table border="1"> <tr> <td>Round to...</td><td>0.007638 to 3 sf</td><td>0.007638 to 2 sf</td><td>0.007638 to 1 sf</td><td>2.0507 to 3 sf</td><td>2.0507 to 2 sf</td><td>2.0507 to 1 sf</td></tr> <tr> <td>Answer</td><td>0.00764</td><td>0.0076</td><td>0.008</td><td>2.05</td><td>2.1</td><td>2</td></tr> </table>						Round to...	0.007638 to 3 sf	0.007638 to 2 sf	0.007638 to 1 sf	2.0507 to 3 sf	2.0507 to 2 sf	2.0507 to 1 sf	Answer	0.00764	0.0076	0.008	2.05	2.1	2
Round to...	0.007638 to 3 sf	0.007638 to 2 sf	0.007638 to 1 sf	2.0507 to 3 sf	2.0507 to 2 sf	2.0507 to 1 sf														
Answer	0.00764	0.0076	0.008	2.05	2.1	2														
3) Estimate	Find a rough or approximate answer by calculating with numbers rounded to one significant figure. e.g. $2.3 \times 18.4 = 2 \times 20 = 40$ = "approximately equal to"																			

KPI 8.04 Fractions

1) Converting an improper fraction to a mixed number	$\frac{15}{7} = 2\frac{1}{7}$	2) Converting a mixed number to an improper fraction	$3\frac{4}{5} = \frac{(3 \times 5) + 4}{5} = \frac{19}{5}$
3) Adding and subtracting fractions	Make the denominators the same (find the LCM). Use equivalent fractions to ensure fractions have a common denominator. Add/subtract the numerators only.	$\frac{2}{7} + \frac{2}{5} = \frac{10}{35} + \frac{14}{35} = \frac{24}{35}$	
4) Multiplying fractions	Multiply the numerators. Multiply the denominators. Simplify where possible.	$\frac{4}{5} \times \frac{3}{8} = \frac{12}{40} = \frac{3}{10}$	
5) Dividing fractions	Keep the first fraction the same. Change the second to its reciprocal. Multiply the fractions. Simplify or convert to a mixed number where possible.	$\frac{4}{5} \div \frac{3}{8} = \frac{4}{5} \times \frac{8}{3} = \frac{32}{15} = 2\frac{2}{15}$	

KPI 8.06 Angles in Parallel Lines 1

1) Parallel lines	Always equidistant. Parallel lines have the same gradient. They never meet however far they are extended.		
2) Angles on a straight line	Angles on a straight line sum to 180° 	3) Angles around a point	Angles around a point sum to 360° 
4) Angles in a triangle	Angles in a triangle sum to 180° 	5) Angles in a quadrilateral	Angles in a quadrilateral sum to 360° 
6) Alternate angles	Alternate angles are equal, so $a = b$ 	7) Corresponding angles	Corresponding angles are equal, so $a = b$ 
8) Vertically opposite angles	Vertically opposite angles are equal, so, $a = b$ and $c = d$ 	9) Co-Interior angles	Co-interior angles sum to 180° , so $a + b = 180^\circ$ 

KPI 8.07 Circumference

1) Diameter	A straight line going straight through the centre of the circle and touching the circumference at each end.		
2) Radius Plural: radii	A straight line joining the centre to the circumference.		
3) Chord	A straight line joining any two parts of the circumference.		
4) Tangent	A straight line that touches the circumference at a single point.		
5) Arc	A section of the circumference.		
6) Sector	The area bound by two radii and an arc.		
7) Segment	The area bound by the circumference and a chord.		
8) Circumference	The perimeter of the circle. $C = \pi \times \text{diameter}$ $C = \pi d$ $d = 5\text{cm}$ $c = \pi d$ $c = \pi \times 5$ $c = 5\pi \text{ cm}$ $c = 15.70796327\text{cm}$ $c = 15.7\text{cm (3sf)}$	9) π (Pi)	The ratio of a circle's circumference to its diameter. It has an estimated value of $\frac{22}{7}$ or 3.14 rounded to 3 significant figures.
10) Revolution	A revolution is a full turn of a circle. The distance covered by one revolution is equal to the circumference of the circle.	13) Semi circle	Perimeter $\frac{\pi d}{2} + d$
12) Quarter- circle	Perimeter $\frac{\pi r}{2} + 2r$	14) Three-quarter circle	Perimeter $\frac{3\pi r}{2} + 2r$



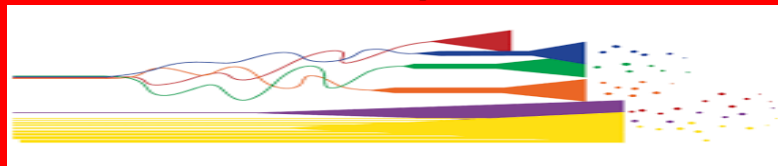
Year 8 Autumn Term

What is a Soundscape?

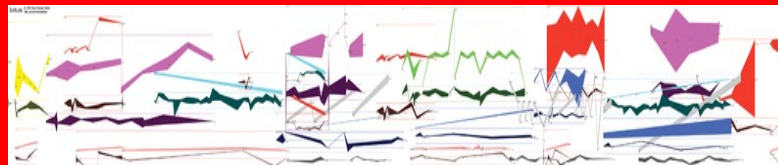
A soundscape can be made up of various elements including the sound of nature (birds chirping or running water), artificial sounds (traffic or machinery) and also more traditional instrumental sounds including melodies, rhythms and harmonies.

KEY WORDS – test yourself! (definitions on the next page)				
Soundscape	Graphic Score	Pitch	Acoustic Environment	
Musical Experimentation	Foley Technique	Duration	Structure	
Texture	Tone	Dynamics	Post-production	

What is a Graphic Score?

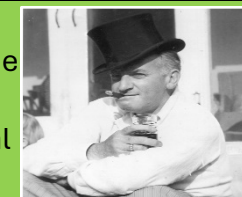


Graphic notation (or **graphic score**) is the representation of music through the use of visual symbols. Composers often rely on graphic notation in experimental music, where standard musical notation can be ineffective. Graphic notation relies heavily on the imagination to interpret the visual content. Because of this the pieces usually vary from performer to performer. Graphic notation can show effective use of PITCH, DURATION, STRUCTURE, TEXTURE, TONE and DYNAMICS.



Foley Artists:

In filmmaking, **Foley** is the reproduction of everyday sound effects and special effect sounds that are added to films, videos, and other media in post-production (after the film has been made). These reproduced sounds, named after sound-effects artist Jack Foley, can be anything from the swishing of clothing and footsteps to squeaky doors and light sabres. Sounds can also be used to cover up unwanted sounds such as aeroplanes, passing traffic or an accidental sneeze from the crew!



Interesting examples for you to look at:

Create a Live Soundscape to a Story (Mr McGee) <https://vimeo.com/360684227>
The Magic of Making Sound - https://www.youtube.com/watch?v=UO3N_PRlgX0
Where the Sounds From the World's Favourite Movies Are Born <https://www.youtube.com/watch?v=0GPGfDCZ1EE>

KEY WORDS AND MEANINGS

Soundscape	Music that is created to tell a story or create an impression of something specific. This can be through the use of instruments, voice, electronic or natural sounds.
Graphic Score	Using shapes and symbols to represent sounds. It is a modern form of notation.
Acoustic Environment	An acoustic environment is the naturally occurring sounds around you e.g. the sounds of street life through an open window during the daytime or sounds of nature (birdsong, flowing water).
Musical experimentation	Trying several different combinations of sound before using the best version.
Foley artist	Someone who creates sounds for film, game or radio – pioneered by Jack Foley.
Pitch	How high/low a sound is.
Duration	How long/ short a sound is.
Structure	How the music is organised from start to finish (e.g. introduction, verse-chorus song structure).
Texture	How many layers of sound are present (thick/ thin texture).
Tone	The sound quality – scratchy, smooth, mellow, thundering.
Dynamics	The volume – changes can be sudden or gradual.
Post-production	This is the time in the process when mistakes are corrected – AFTER the film has been completed.

8.01: Religious Authority

1	Abraham	The first person to believe in one God (monotheism); considered the founder of Judaism.
2	apostles	Jesus's followers who were sent out to spread his teachings.
3	apostolic succession	The belief that Catholic Church leadership has been passed down from the apostles, starting with Peter, to today's Church leaders.
4	covenant	A special agreement or promise made between God and Abraham and his descendants.
5	crucifixion	The method of execution used by the Romans to kill Jesus by nailing him to a cross.
6	Gospels	The first four books of the New Testament that tell the story of Jesus's life and teachings.
7	literal	Taking something exactly as it is written or said, without interpreting it symbolically.
8	Messiah	A person promised by God who would bring peace and justice; Christians believe Jesus was the Messiah.
9	monotheism	Belief in one God.
10	Moses	A key prophet in Judaism who led the Israelites out of Egypt and received the Ten Commandments.
11	New Testament	The second part of the Christian Bible, which tells the story of Jesus and the early Church.
12	Old Testament	The first part of the Christian Bible, which includes the Jewish scriptures like the Torah.
13	Oral Torah	Jewish teachings passed down by word of mouth before being written down in the Talmud.
14	Paul	An important apostle who spread Christianity and wrote letters to early Christian communities.
15	Pope	The leader of the Catholic Church, believed to be the successor of Peter.
16	Promised Land	The land God promised to Abraham and his descendants.
17	prophets	People chosen by God to deliver messages and guide others back to God's ways.
18	rabbis	Jewish teachers who study and explain the Torah and help people understand how to live by its laws.
19	Reformation	A movement in the 16 th century that challenged the Catholic Church and led to the creation of Protestant churches.
20	resurrection	The belief that Jesus rose from the dead three days after his crucifixion.
21	Talmud	A collection of Jewish teachings and discussions about how to live according to the Torah.
22	Ten Commandments	Ten important laws given by God to Moses on Mount Sinai.
23	Torah	The holiest book in Judaism, containing laws and teachings given by God to Moses.

1. Founders and Foundations

The Founders of Judaism: Abraham and Moses

- Abraham made a covenant with God, in which Abraham promised that he would be monotheistic and follow God, and God promised Abraham land, blessings & descendants.
- Abraham had two sons: Ishmael (by Hagar) and Isaac (by Sara).
- Moses was a descendant of Abraham through Isaac. Moses freed enslaved Jewish people in Egypt, received the Ten Commandments in a covenant with God and led them to their Promised Land.

Jesus in Christianity: The Prophesied Messiah and Founder

- Prophets told of a Messiah who would be sent by God and deliver a lasting peace.
- Over a thousand years after Moses freed the enslaved Jewish people, Jesus was born to a Jewish family. Some Jewish leaders felt that Jesus's interpretations of scripture challenged their own understanding and that he would lead people astray. The Roman authorities sentenced Jesus to death and crucified him.
- Christians believe that Jesus was the Son of God, God incarnate and the prophesied Messiah. They believe that he was resurrected after the crucifixion.
- Jewish people do not believe that Jesus was the prophesied Messiah.

2. Holy Texts

The Torah

- The Torah, central to Judaism, contains laws like the Ten Commandments given by God to the Israelites as part of their covenant.
- Orthodox Jews = typically view the Torah as God's literal word and follow its laws strictly.
- Progressive Jews typically see the Torah as divinely inspired but written by Moses, interpreting its teachings more symbolically and flexibly.

The Talmud

- The Talmud is a collection of discussions about how to apply the Torah's laws in daily life. It was passed down orally before being written down.
- Some Jews believe it was revealed by God to Moses; others see it as a human creation with religious value.

The Bible

- The Christian Bible is made up of the Old Testament and the New Testament.
- The Old Testament includes the Torah and other books from the Tanakh. Christians believe the Old Testament contains teachings and prophecies that point to Jesus; The New Testament includes stories about Jesus and letters to early Christians. Many Christians believe the Bible was written by people inspired by God.

3. Religious Leadership

Leadership in Jewish Traditions

- Rabbis: teachers who helped to interpret how to live by the Torah and the Oral Torah. They interpreted existing laws; they did not create new ones.
- Different rabbinic interpretations led to traditions like Orthodox and Reform Judaism.
- Many Jewish people see their rabbi as a trusted guide.

Leadership in Christian Traditions: Apostolic Succession

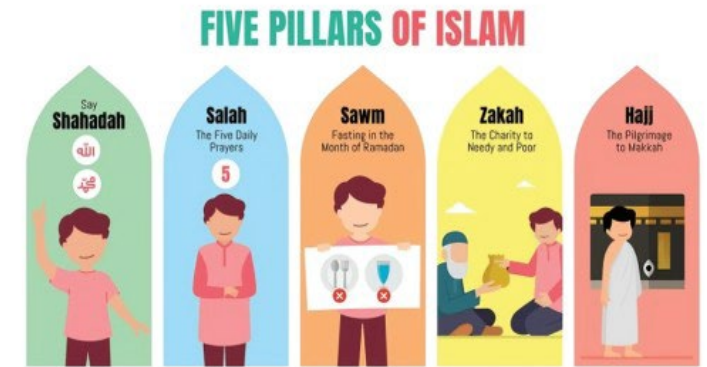
- Christian leadership began with Jesus's disciples, especially Peter. Catholics believe Peter was the first Pope and leader of the Church.
- The Catholic Church teaches that leadership has continued through apostolic succession. Popes and bishops today are seen as continuing the authority of Peter and the apostles. Catholics believe the Pope and bishops represent Jesus's authority on Earth.

Leadership in Christian Traditions: Reformation

- The Protestant Reformation began in the 16th century as a challenge to Catholic Church authority.
- Reformers like Martin Luther argued that the Bible should be the highest authority, not the Pope or bishops. They believed all Christians should read and interpret the Bible for themselves. This led to new denominations like Anglicans, Baptists and Pentecostals.
- In England, Henry VIII made himself head of the Church of England, replacing the Pope's authority.

8.02: Study of Islam

1	Abu Bakr	The first Caliph chosen by Sunni Muslims after Muhammad's death
2	Ali	Muhammad's cousin and son-in-law, considered by Shia Muslims as his rightful successor
3	Allah	The Arabic word for God in Islam
4	burqa	A full-body covering worn by some Muslim women for reasons of modesty
5	caliph	A leader in Sunni Islam who succeeded Muhammad in leading the Muslim community
6	charity	Giving to those in need, especially through zakat
7	Constitution of Medina	A document created by Muhammad to establish peace and cooperation in Medina
8	Eid-al-Fitr	A festival marking the end of Ramadan
9	Fatima	Muhammad's daughter, especially respected in Shia Islam
10	Hadith	Recorded sayings and actions of Muhammad
11	Hajj	A pilgrimage to Makkah that Muslims aim to complete once in their lifetime
12	hijab	A headscarf worn by some Muslim women as a sign of modesty
13	Hijrah	The migration of Muhammad and his followers from Makkah to Medina
14	imam	A leader in Shia Islam or someone who leads prayer in Sunni Islam
15	Islam	A monotheistic religion revealed to the Prophet Muhammad
16	Jahannam	Hell; a place of punishment after death for those who reject faith or do wrong
17	Jannah	Paradise; a place of reward after death for the righteous
18	Kaaba	The sacred cube-shaped structure in Makkah that Muslims face during prayer
19	Khadija	Muhammad's first wife and the first person to accept Islam
20	Makkah	The birthplace of Muhammad and the holiest city in Islam



Religious Authority

Qur'an	The holy book of Islam, believed to be the literal word of God
Surah	A chapter of the Qur'an
Muhammad	The final prophet in Islam, believed to have received the Qur'an
Sunnah	The example of Muhammad's life used as a guide by Muslims

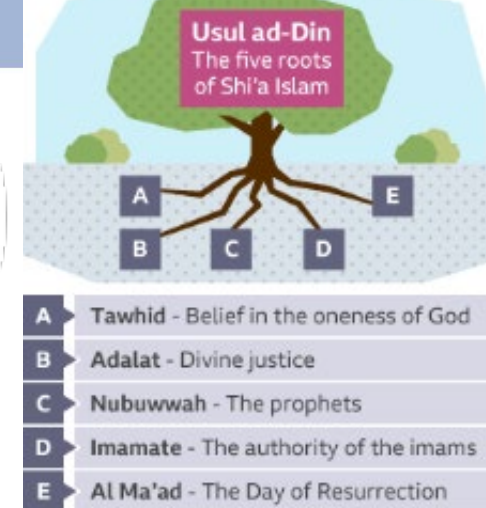
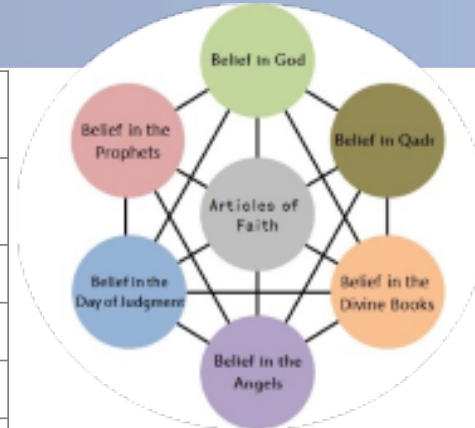
Tools for Studying Religion

Theology is the study of God and ideas about God. Theologians look at how ideas about God influence beliefs in religions and the actions people will do.

Social Scientists use evidence to see how people are influenced by society. Social Scientists look at patterns in what people believe about God and how this may change due to time and place.

Religion and Ethics

21	Medina	The city where Muhammad established the first Muslim community
22	modesty	A principle in Islam often expressed through clothing and behaviour
23	Muhammad	The final prophet in Islam, believed to have received the Qur'an
24	niqab	A face veil worn by some Muslim women as part of modest dress
25	prophet	A messenger chosen by God to deliver His message
26	Qur'an	The holy book of Islam, believed to be the literal word of God
27	Ramadan	The ninth month of the Islamic calendar, observed with fasting
28	salah	Ritual prayer performed five times a day
29	sawm	Fasting from dawn to dusk during Ramadan
30	Seal of the Prophets	A title for Muhammad, indicating he is the final prophet
31	shahada	The Islamic declaration of faith
32	Sharia	Islamic law derived from the Qur'an and Sunnah
33	Shia	A branch of Islam that believes Ali was Muhammad's rightful successor
34	shirk	The sin of associating partners with Allah
35	Sunnah	The example of Muhammad's life used as a guide by Muslims
36	Sunni	The largest branch of Islam, following the elected caliphs
37	Surah	A chapter of the Qur'an
38	tawhid	The belief in the oneness of Allah
39	ummah	The global Muslim community
40	wudu	Ritual washing before prayer
41	zakat	Compulsory act of charity, for those who can afford it



Caliphs & Imams:

In Islam, Caliphs and Imams are important leaders but differ between Sunni and Shia beliefs. Sunni Muslims follow the Caliphs, who were political and religious leaders after Prophet Muhammad, starting with Abu Bakr, and including Umar, Uthman, and Ali—known as the "Rightly Guided Caliphs." Shia Muslims believe leadership should stay within the Prophet's family, starting with Ali as the first Imam, a divinely chosen spiritual guide. Shia Islam teaches that there were 12 Imams, with the last one in hiding, who will return to bring justice.

Jihad: In Islam, Greater Jihad refers to the personal, inner struggle to live a good and faithful life—resisting temptation, doing good deeds, and staying true to Islamic teachings. It is considered the most important form of jihad. Lesser Jihad, on the other hand, refers to the external struggle, which can include defending Islam or the Muslim community. However, it has very strict conditions: it must be declared by a proper religious authority, must be in self-defence, must not harm innocent people, and must be a last resort. Because these conditions are so hard to meet, Lesser Jihad is rarely considered valid today.

Tawhid:

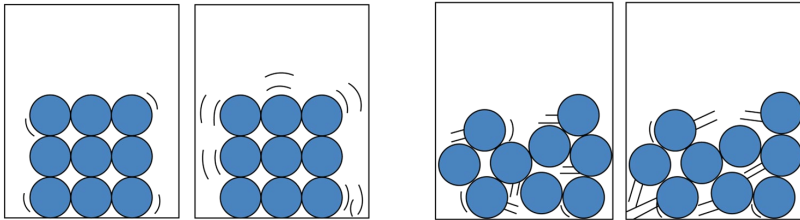
Tawhid is the belief in the oneness of God – this is a belief that is unified in Islam. It means that there is only one God (Allah) who is the sole creator, ruler, and sustainer of everything. Denying Tawhid or associating others with God (called shirk) is considered the greatest sin in Islam.

Religion and Ethics

8.01: Heating and Cooling



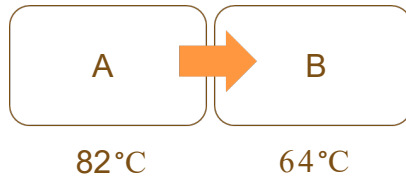
Temperature



- a physical quantity which is a measure of the **average energy** of particles due to their **motion**

Changing Temperature

- Heating and cooling affect an object's **thermal store** of energy.

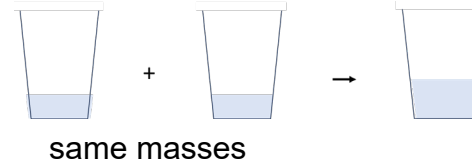


- Net flow of energy is **always** from hotter to colder objects' thermal store.

- A thermal store can be changed by **any energy pathway** depending on the mechanism causing it.



'Mixing' Objects



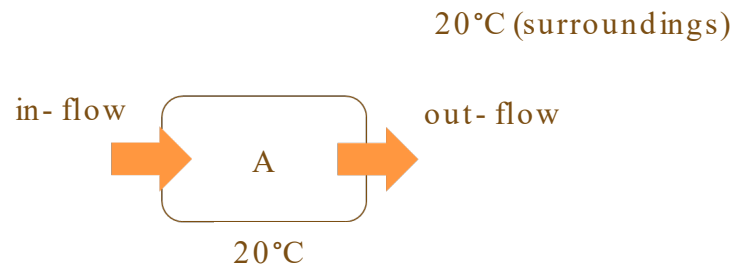
Resulting temperature: halfway between initial temperatures.



Resulting temperature: between initial temperatures and closer to that of larger mass.

Thermal Equilibrium

- when two objects reach the **same temperature**
- with no net flow of energy between thermal stores



- Often the result of energy **dissipating** to the cooler surroundings.

8.01: Heating and Cooling



Unchanging Temperature

But not thermal equilibrium (i.e. two objects **not** the same temperature).

higher than surroundings

rate of supply



rate dissipated to surroundings

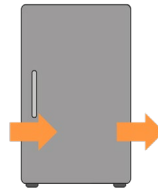
lower than surroundings

rate supplied by surroundings



rate of removal

air at 22°C

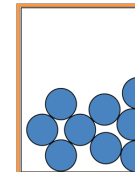
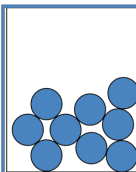
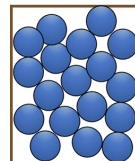
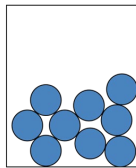


set at 5°C

Changing Temperature

For the **same energy** supplied:

- Greater mass/volume,
→ smaller temperature change.

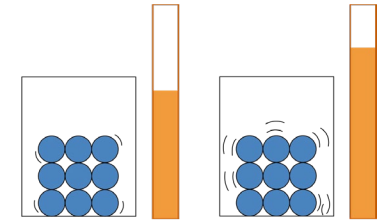


constant supply

Energy in Thermal Stores

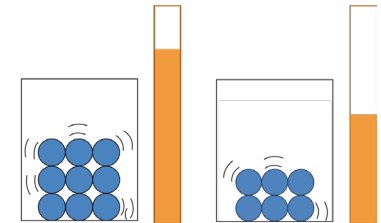
Hotter objects have more energy in their thermal store.

- Particles moving more.
- Each particle has more energy.
- Total energy of all particles: more.



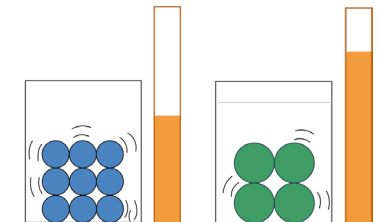
Larger masses have more energy in their thermal store.

- Greater mass: more particles.
- At same temperature, each particle has same energy.
- Total energy of all particles: more.



Some materials have more energy in their thermal store.

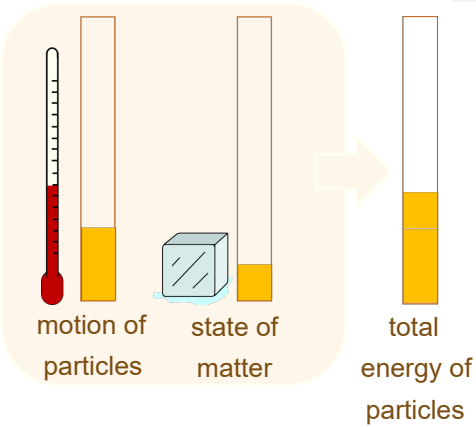
- Some materials have particles that require more energy to vibrate.
- At same temperature, each particle is vibrating the same, but they required more energy to do so.
- Total energy of all particles: more.



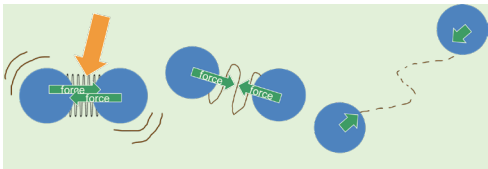
8.01: Heating and Cooling



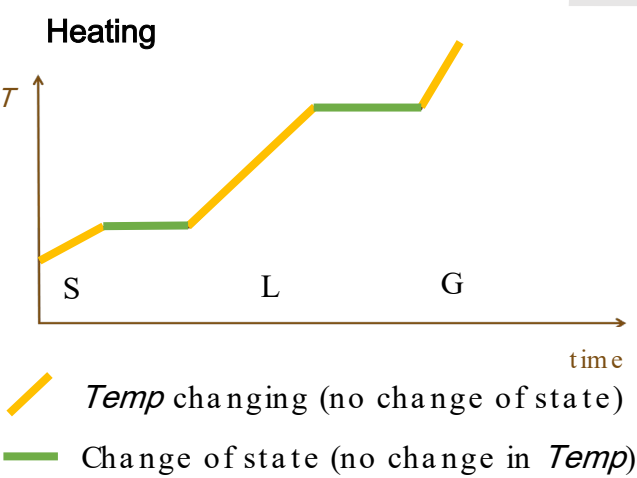
Internal Energy



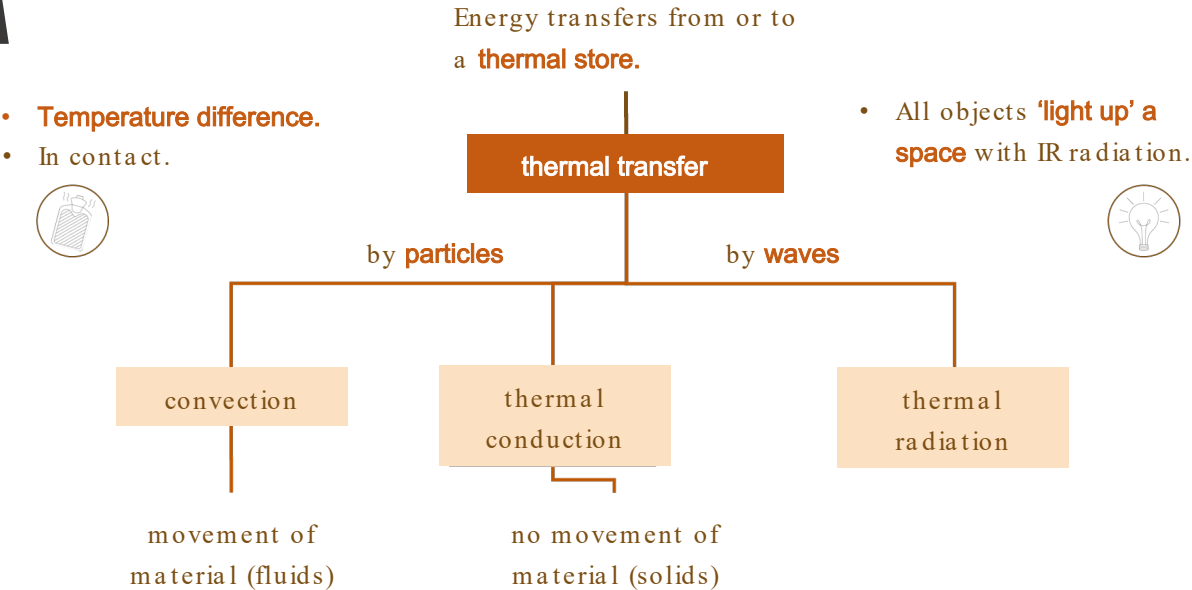
- total energy within an object due to the motion and position of its particles



- *Force* reaches limit for motion.
- More energy in, *Force increases*, $\uparrow$.
- Separation increases, $\uparrow$ (then stays same).
- *Energy* stored by material.



Thermal Transfer

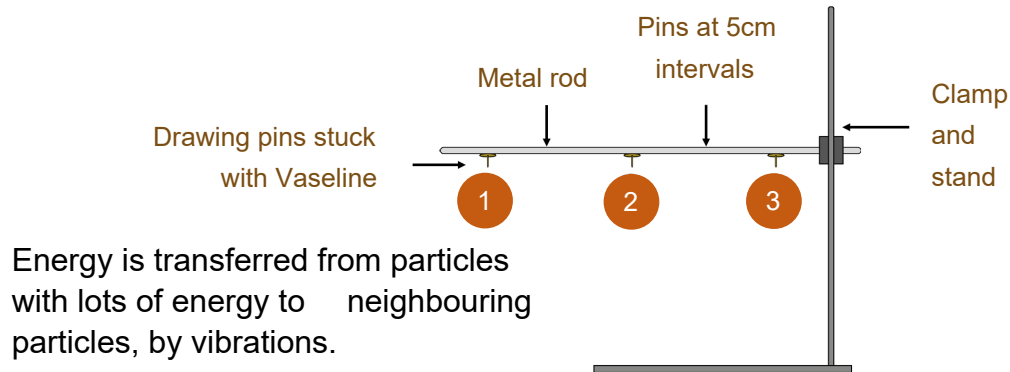


8.01: Heating and Cooling

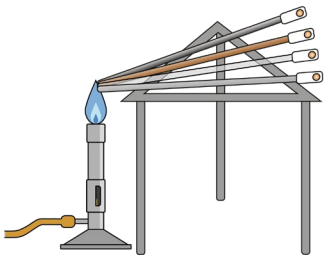


Thermal Conduction

- spontaneous process of energy transfer between a hotter and a cooler object in contact, without the movement of the material



Thermal conductivity

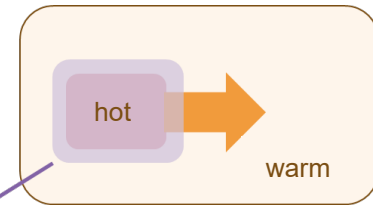


Good conductors have a higher thermal conductivity: energy transmitted easily through them.

Metals are the best thermal conductors.

Rate of thermal conduction

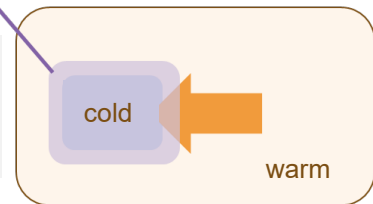
temperature difference	greater	} → higher rate
material	higher thermal conductivity	
thickness	less thick	
surface area	greater	



Insulators

- poor thermal conductors that minimise energy transfer to/from thermal stores

insulator

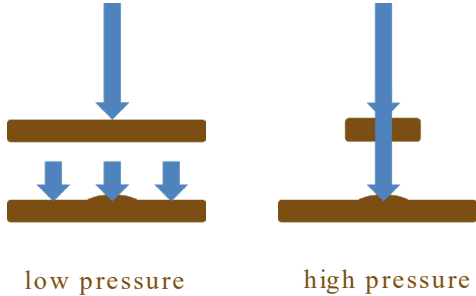


8.01: Heating and Cooling



Pressure

- quantity resulting from a force acting on a surface

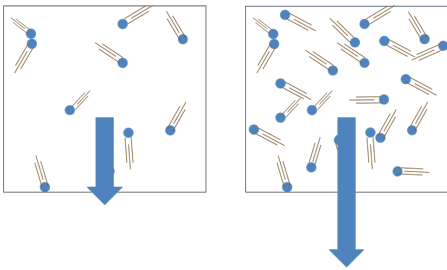


Pressure on objects

Pressure is **higher** when:

- a force acts over a **smaller surface area**
- a **large force** acts.

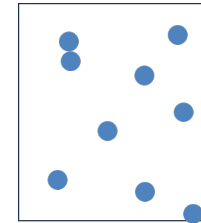
Pressure by a fluid



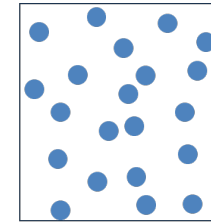
Forces between particles, and between particles and the inside walls of the container cause pressure on the gas.

If more particles are causing a higher pressure –
greater weight – higher pressure on surface.

Density

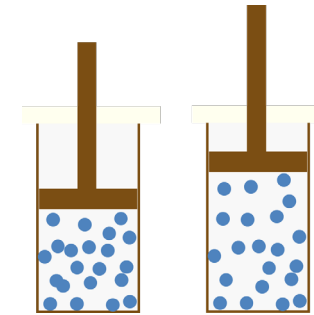


low density



high density

Greater mass in the same volume → higher density.



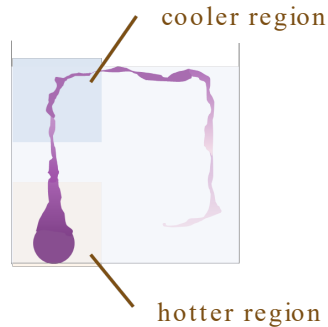
Greater **volume** of the same mass → lower density.

$$\text{density (g/cm}^3\text{)} = \frac{\text{mass (g)}}{\text{volume (cm}^3\text{)}}$$

8.01: Heating and Cooling



Convection



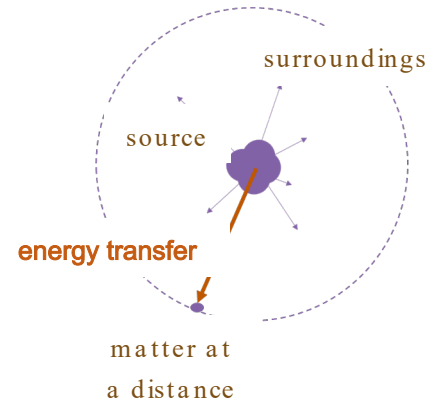
- movement of a hotter fluid to a colder region

- The less dense region rises.
- The rest of the fluid is more dense.
- The less dense matter 'floats' on more dense matter.

- A region of fluid that is colder sinks to replace the hotter fluid.

- A region of the fluid gets hotter.
- Particles move more.
- The separation between particles increases.
- Fluid expands.
- Its density decreases.

Temperature difference in a fluid causes **convection currents**.



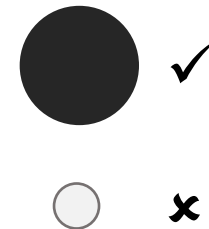
Thermal Radiation

- energy transfer to or from a thermal store by absorption or emission of light
- **no contact** necessary: can be transmitted through a vacuum

- **All** objects emit and absorb infra - red radiation.
- **Hotter** objects emit more energy by IR radiation (more intense).

Surfaces that absorb and emit energy from IR radiation best:

- dark
- matt/rough/dull
- large surface area.



8.01: Heating and Cooling



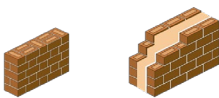
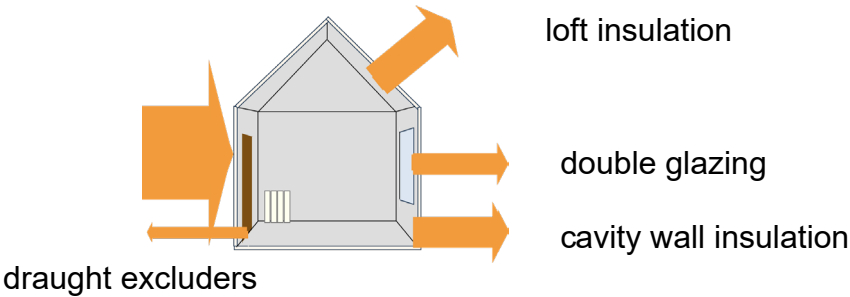
Real-world Contexts

Building Design

To maintain steady temperature independent of surroundings.

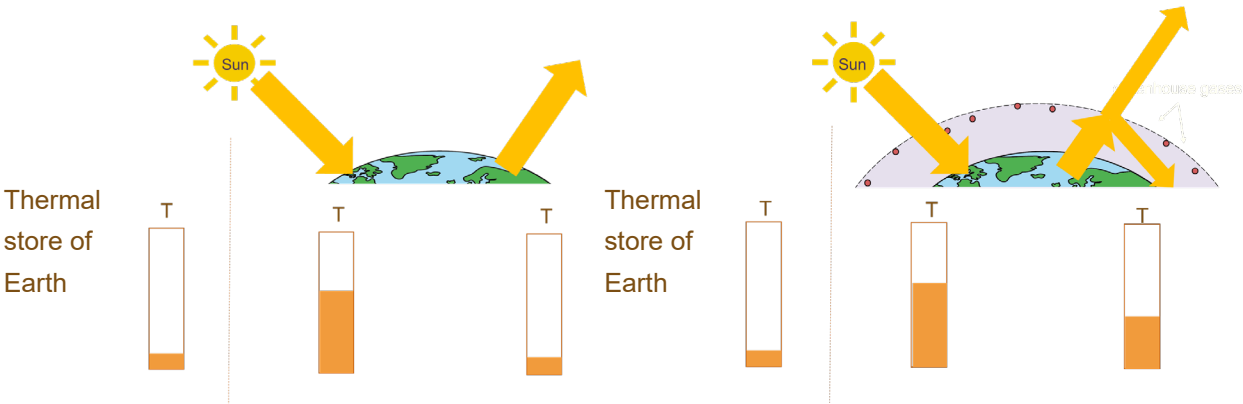
The greater the energy supplied, the greater the fuel use and costs.

To reduce fuel use:



Greenhouse Effect

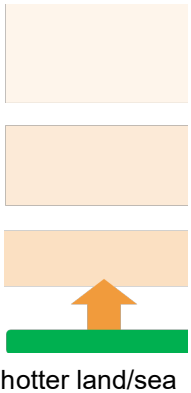
Causes a medium, steady average global temperature.



Weather Systems

Driven by temperature differences of different surfaces of the Earth.

- Low density air exerts less force on Earth's surface: low - pressure.
- Air rises in low - pressure systems.

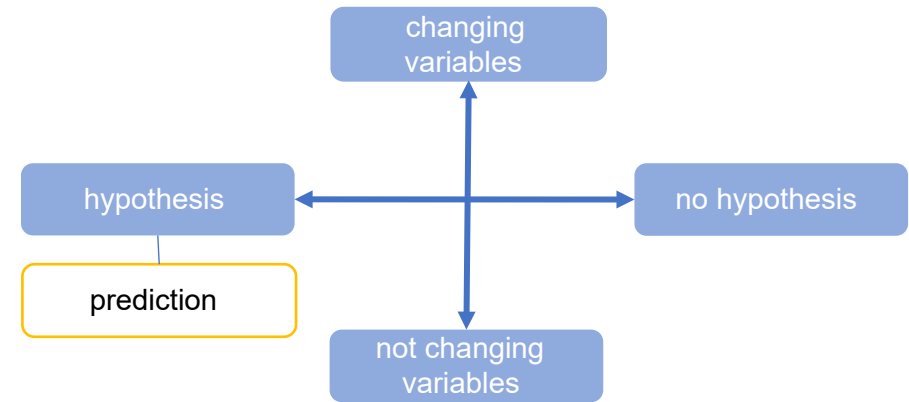


Energy in thermal store of air increases. Air rises.
Air expands.
Density decreases.

8.01: Heating and cooling



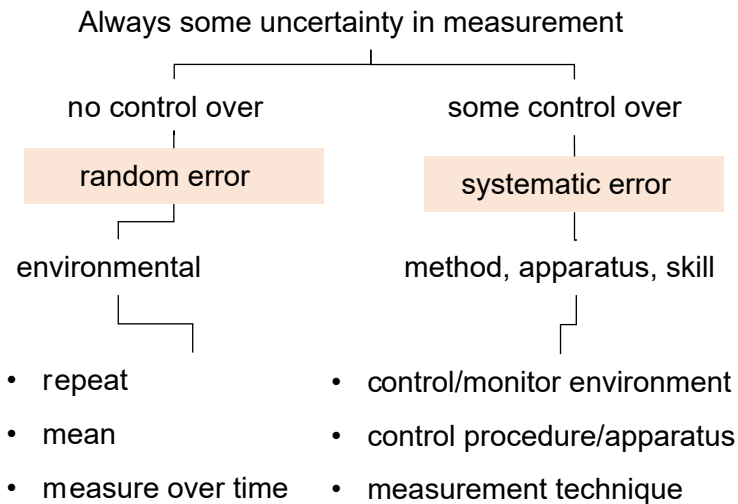
Scientific Methods



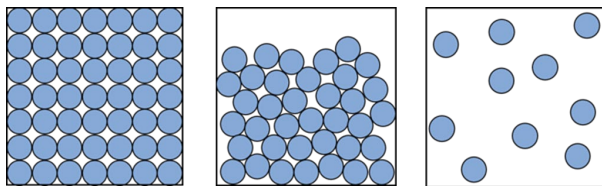
There is not a single way of doing research or a single scientific method.

Measurement Error

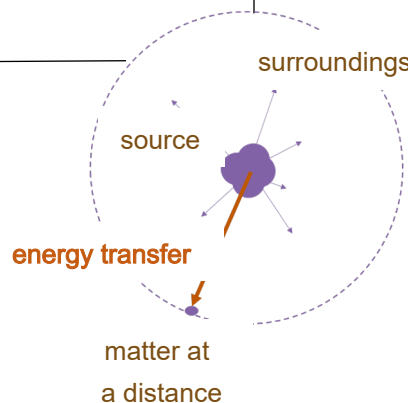
- the difference between the measured value and the true value of the quantity being measured



Using Models



Particle Model



Radiation Model



During events, energy transfers from energy stores by an energy pathway.

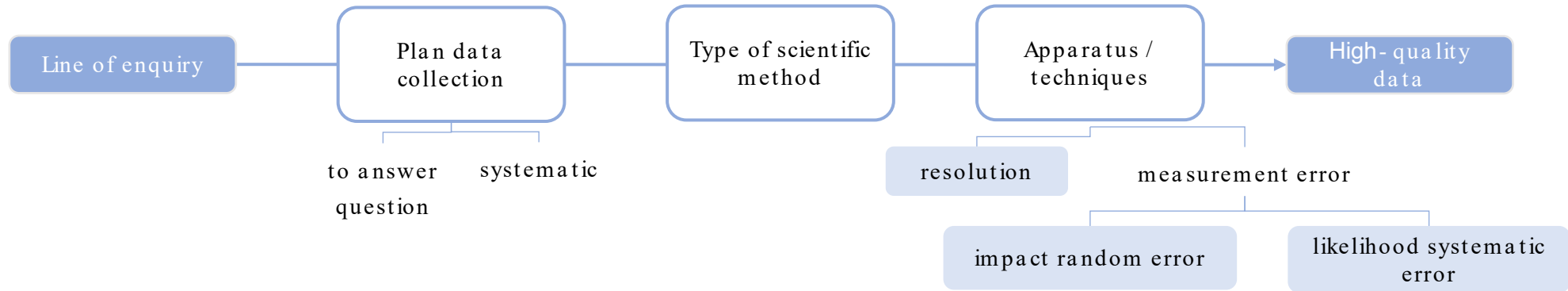


Energy Stores and Pathways

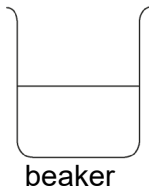
8.01: Heating and cooling



Developing a Method



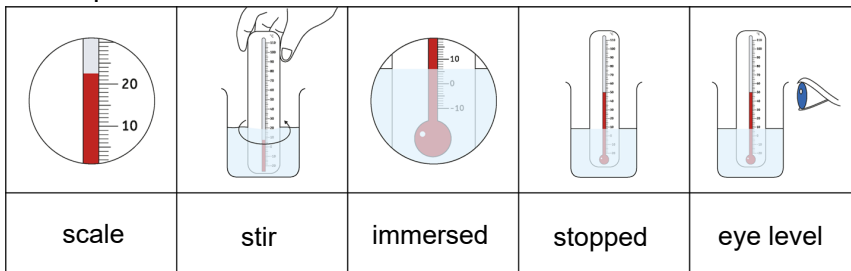
Equipment



- Select the appropriate size.
- Place on a flat stable surface.
- Graduated markings: approximate volume.
- Pour in/out liquid carefully.
- After heating, move with tongs or wait to cool.
- If stirring, use a stirrer.

Skilful Techniques

To use a liquid thermometer



Safe Practicals

Hazards

All apparatus and techniques

Risks

- harm
- damage

- Follow normal laboratory rules
- Plan and use a risk assessment

Reduced likelihood

- harm
- damage

Identify hazards

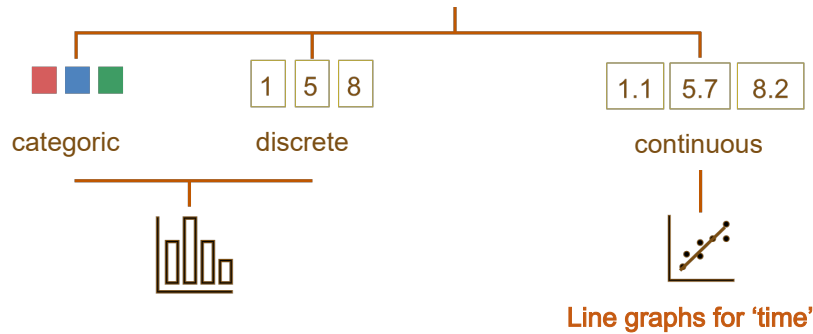
Judge risk

Plan control measures

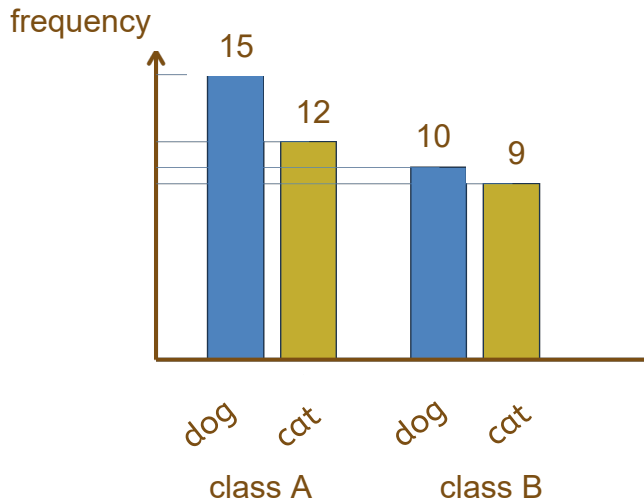
8.01: Heating and cooling



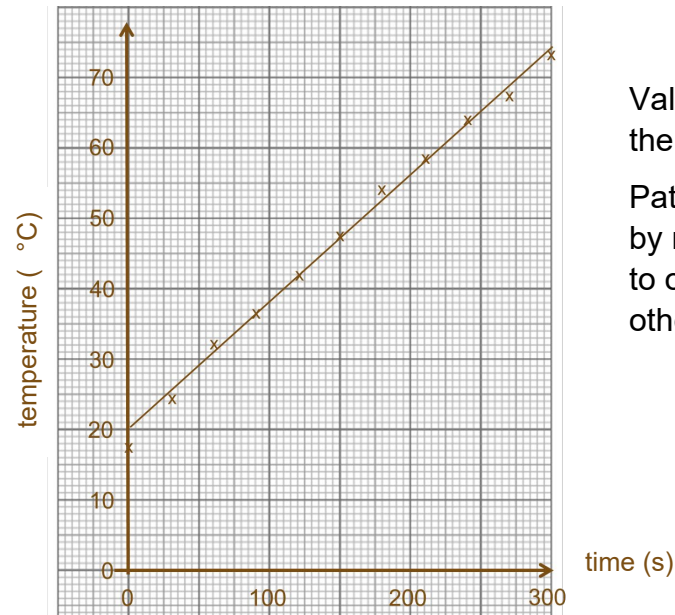
Interpreting Data



Identifying the most appropriate chart or graph depends on the type of data and the line of enquiry:

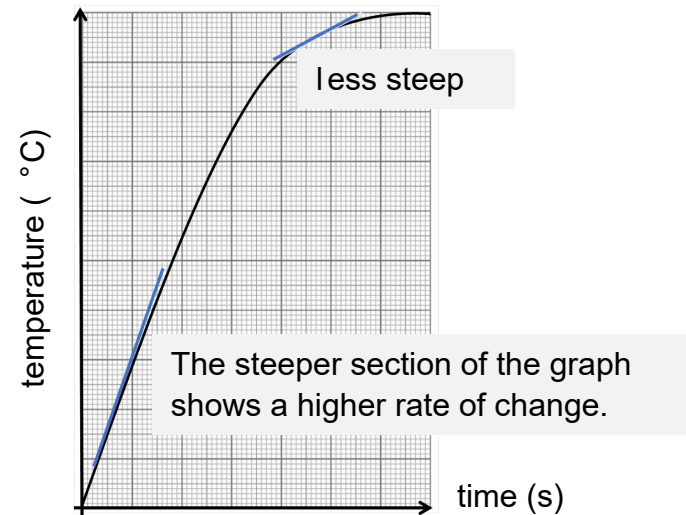


Compound bar charts are useful to compare a variable across different categories.



Values are read off from the best - fit line.

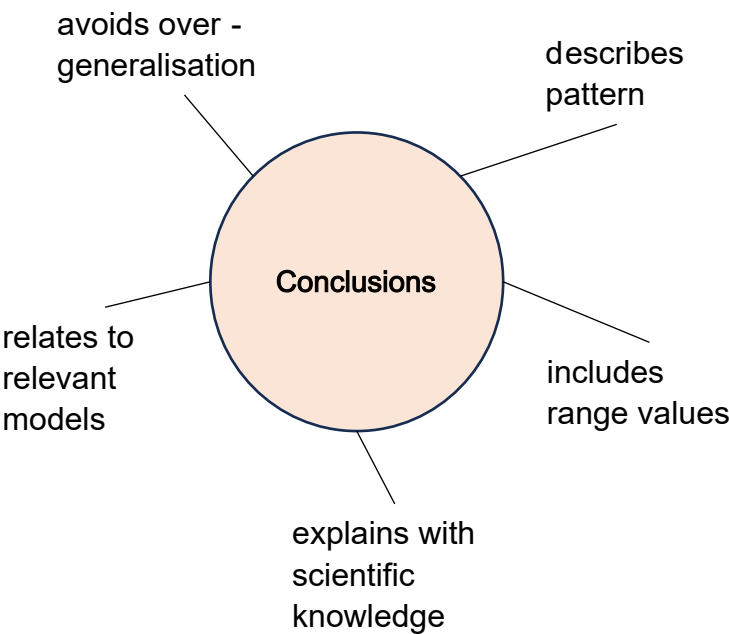
Patterns/trends are found by noticing what happens to one variable when the other is changed.



8.01: Heating and cooling



Making Conclusions



Evaluating Quality of Research

methods

- control of variables
- apparatus
- techniques
- skill

data to
answer EQ

measurement
error low

data

- range
- systematic intervals
- high resolution
- low in anomalies
- repeatable
- reproducible

differences can
be observed

matches multiple
datasets

conclusions

- values and patterns logically follow from the data
- conclusions are only based on the collected data
- researcher suggests further research needed



peer review

Scientific research is highly valued because of the efforts to produce high - quality data and have it tested by peers.

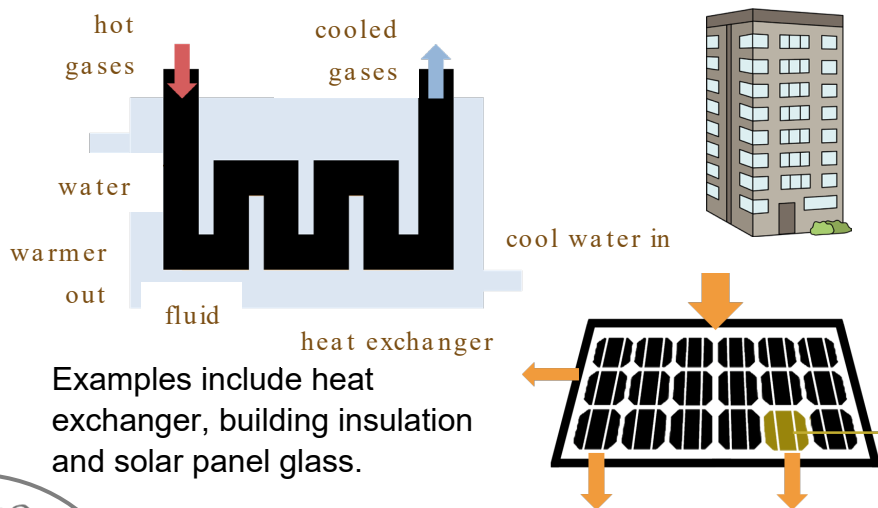
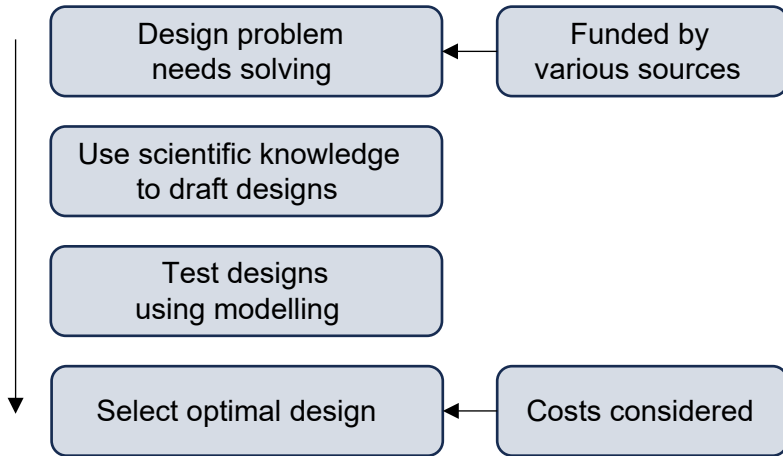


8.01: Heating and cooling

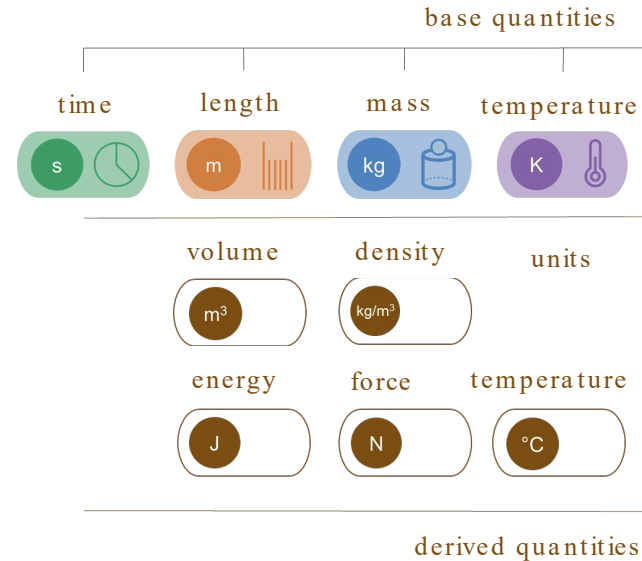


Applications to Industry

STEM workers



Measurement Values



Quantities and their units:

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

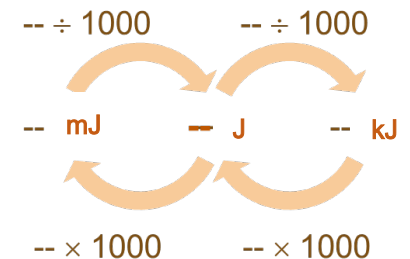
Derived quantities include energy, volume and density and the commonly used temperature unit, °C.

Unit Prefixes:

Range of unit prefixes which differ by the factor of 1000.

Prefixes change numbers to a more human scale.

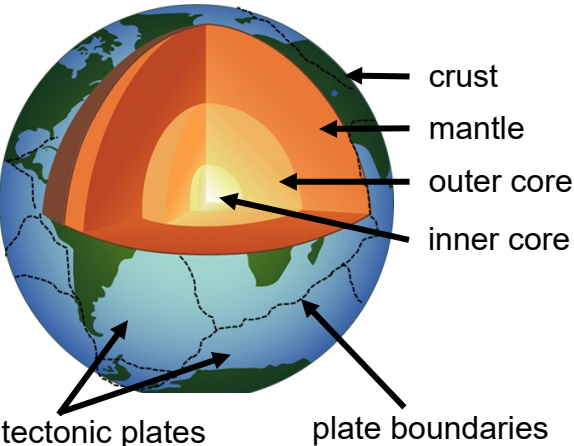
Easier to compare values that have the same unit prefix.



8.02: Earth and the Atmosphere

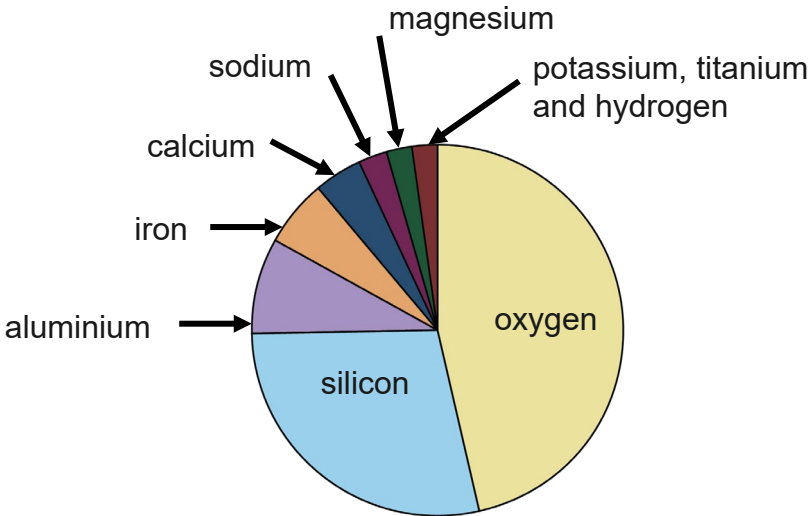


Composition and structure of the Earth



Layer	State	Composition	Thickness (km)	Temperature (°C)
crust	solid	rocks and minerals	5 to 70	0 to 30
mantle	solid	rocks and minerals	2900	1400 to 3000
outer core	liquid	molten iron and nickel	2200	4400
inner core	solid	solid iron and nickel	1200	5430

The two types of crust are continental crust, which is found beneath landmasses, and oceanic crust, which is found below the oceans. Continental crust is the thickest. Earth's crust is broken up into tectonic plates that meet at plate boundaries.



The most common elements that make up the minerals of Earth's crust.

Scientists can't explore deep inside Earth, so they use models to show what it's like. These models have limitations and can change when new evidence is found.

An apple



- +** has a thin outer layer
- +** has a thick middle layer
- +** has a core
- not spherical
- the outer layer is the same thickness all around
- the inner and outer cores are not clear

A layer cake



- +** has a thin outer layer
- +** has thicker middle layers
- +** has four layers
- not spherical
- doesn't show the difference in layer thickness
- the core is not hot

8.02: Earth and the Atmosphere



Scientific theory: continental drift

Peer review

After data collection, scientific thinkers propose a scientific theory; it is based on a body of facts and is repeatedly confirmed by observation (and experiment).

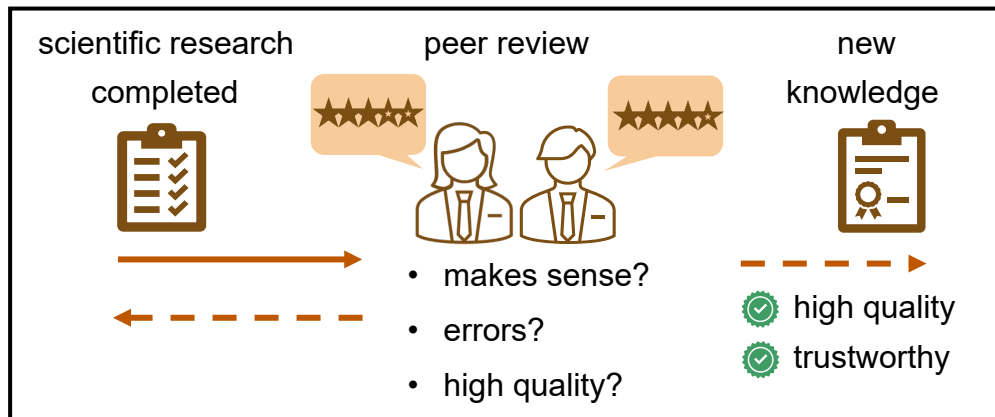
The theory of continental drift is the theory that the continents were once connected in a land mass (Pangaea) but have broken apart and drifted away over time.

Three pieces of evidence that support the theory are:

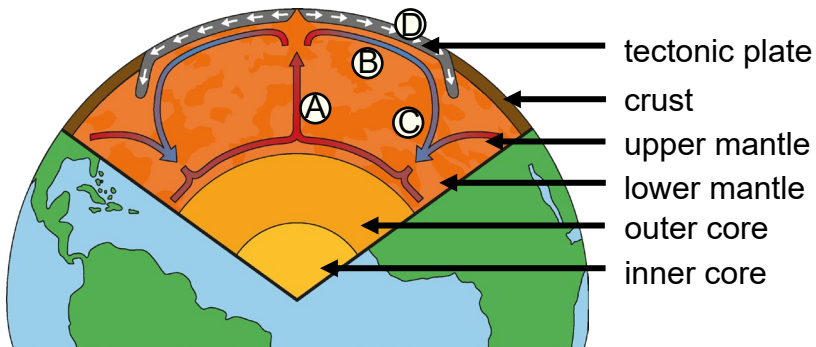
- The coastlines of many continents appear to fit together like a jigsaw puzzle.
- There were similar types of rocks across continents that are now far apart.
- There were identical plant and animal fossils found on different continents that are now far apart.

Scientific thinkers present evidence to their peers in order to support an opinion and explain their reasoning.

Peer review is when researchers submit work for peer feedback. Peer review is important because it helps to make sure that the research is trustworthy and of high quality.



Convection currents cause continent movement



- Hot, less dense rock rises towards the upper mantle.
- In the upper mantle, the hot rock spreads and moves sideways.
- As it cools, it becomes more dense and sinks back down, creating convection currents.
- These convection currents cause the tectonic plates above to shift. As a result, the continents slowly change position over millions of years.

8.02: Earth and the Atmosphere



Rocks and the rock cycle

Igneous rock

- Igneous rocks are formed when molten rock crystallises.
- Molten rock above the Earth's surface is called **lava** and forms **extrusive** igneous rock when it cools and crystallises.
- Molten rock below the Earth's surface is called **magma** and forms **intrusive** igneous rock when it cools and crystallises.
- If molten rock cools **slowly**, it will form rock with **large** crystals.
- If molten rock cools **quickly**, it will form rock with **small** crystals.

Metamorphic rock

- Metamorphic rocks form from existing rocks, deep within the Earth's crust due to high temperature and pressure, causing chemical changes in minerals.
- Over millions of years, sedimentary and igneous rocks transform into metamorphic rocks, often near tectonic plate boundaries.

Sedimentary rock

Sedimentary rocks are formed through:

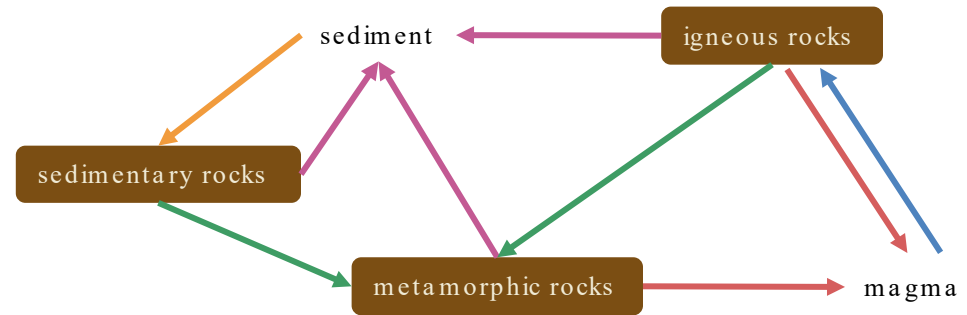
weathering → transportation → deposition → sedimentation → compaction → cementation

Layers, called **strata**, can be seen in sedimentary rock.

Weathering is the slow breakdown of rocks while they are in place. It can be **biological** (by living organisms), **chemical** (by chemical reactions) or **physical** (by forces e.g. freeze-thaw).

Erosion is the movement and carrying away of rock fragments.

The rock cycle involves the recycling of rocks, during which rocks can change into different types.



Key:

- | | |
|---|-----------------|
| weathering and erosion | melting |
| sedimentation, compaction and cementation | crystallisation |
| heat and pressure | |

Fossils

Fossils are the preserved remains or traces of a dead organism that was alive millions of years ago. Fossils can be **trace fossils** (preserved imprints or evidence), **body fossils** (actual remains) or **mineralised fossils** (when hard parts are replaced by minerals).

Fossils are found in sedimentary rocks. High temperatures and pressures destroy fossils, so they are not found in metamorphic or igneous rocks.

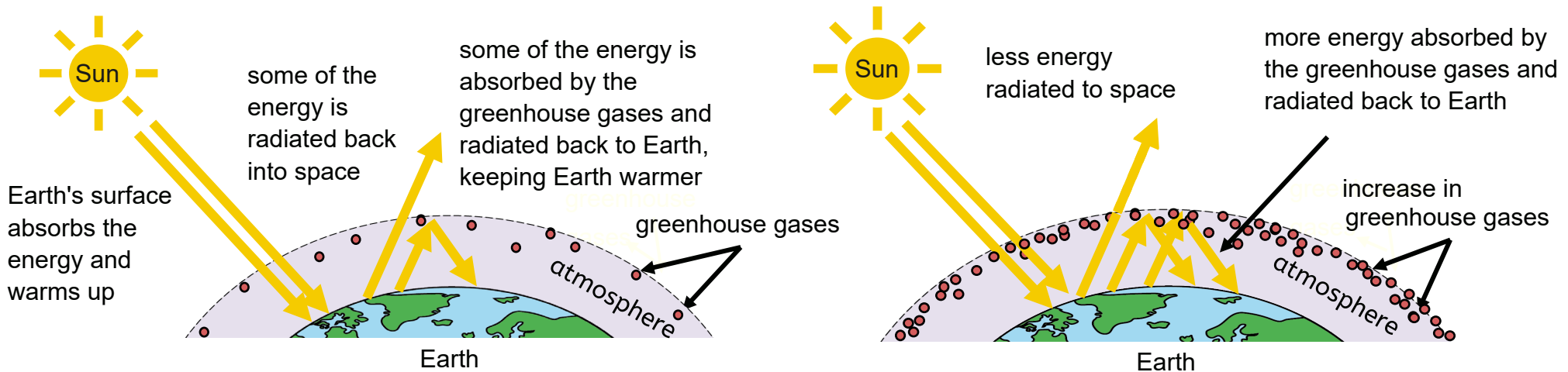


8.02: Earth and the Atmosphere

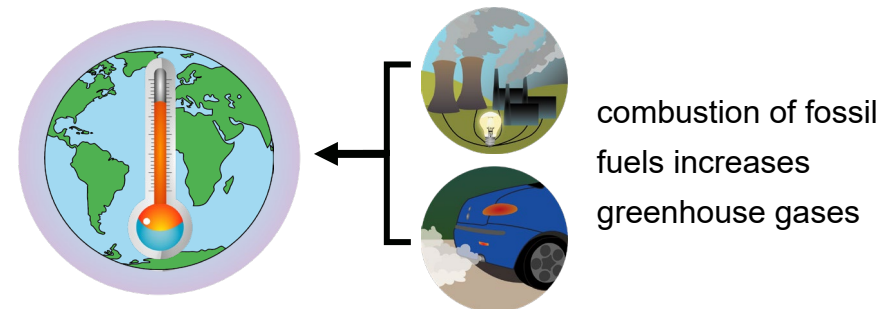


The greenhouse effect, global warming and climate change

Earth's atmosphere contains greenhouse gases (carbon dioxide methane water vapour) , which keep Earth warmer than it would be without them. The greenhouse effect is the natural warming of the planet to habitable temperatures, caused by greenhouse gas s. The enhanced greenhouse effect is the unnatural warming of the Earth due to increased greenhouse gases in the atmosphere.

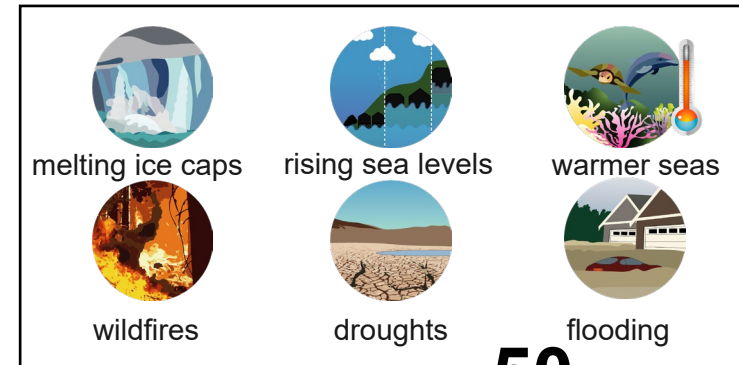


Global warming is the increase in Earth's average temperature, caused by the enhanced greenhouse effect.



Climate change is the change in the Earth's long - term weather patterns, including precipitation, wind and temperature. It leads to social, economic and environmental impacts.

Environmental impacts cause habitat loss, food shortages, wildlife threats, farming issues, water problems, and human displacement.



8.02: Earth and the Atmosphere

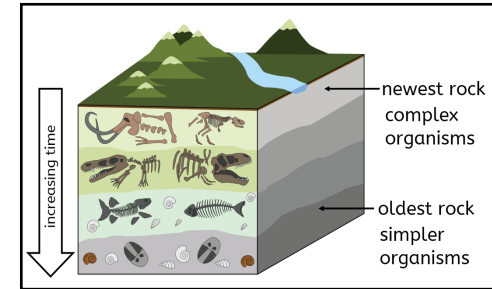
Fossils continued



Fossilisation process:

Organism dies → buried in sediment → soft parts rot, hard parts stay → pressure compacts layers → minerals replace hard parts → fossil forms → uplift exposes fossil

The fossil record is a collection of fossils documenting the history of life on Earth. It shows how organisms and environments have changed over time.

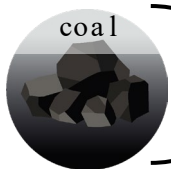


More complex fossil organisms are found at the top in newer rocks. Simpler fossils are deeper in older rocks.

Fossil fuels

Fossil fuels are natural resources formed over millions of years from the remains of dead organisms, such as plants and animals. Fossil fuels are **non-renewable** energy resources because they take a very long time to replenish.

Fossil fuel extraction provides energy, products, and jobs, but causes pollution, habitat loss, resource depletion, and global social inequality.



Swamp plants die → buried in mud and sediment → form peat → more burial → heat & pressure → peat turns to coal

Coal is extracted through surface and underground mining.

Uses: heating, generating electricity, steel production.



Plankton die → sink → buried in sediment → pressure and heat → oil and gas form → trapped under impermeable rock

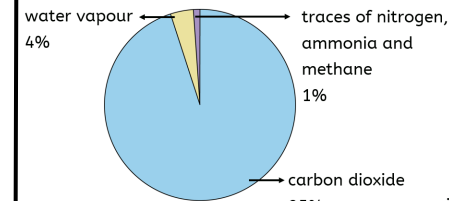
Crude oil and natural gas are extracted by drilling wells through impermeable rock.

Uses of crude oil: refined to make petrol, diesel, plastics. Uses of natural gas: cooking, generating electricity, industry.

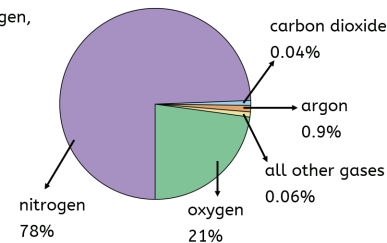


Earth's atmosphere

Earth's early atmosphere

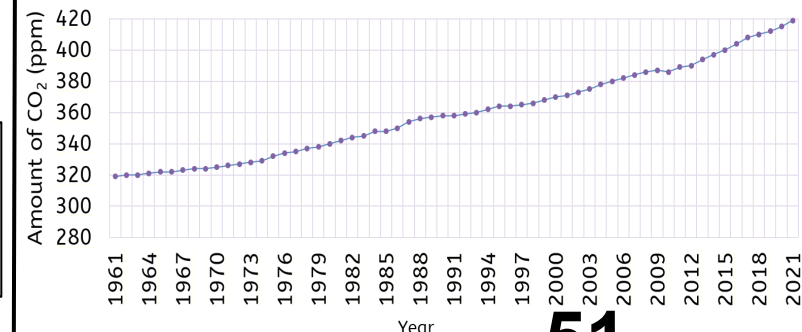


Earth's atmosphere today



Human activities, such as the combustion of fossil fuels, which release large amounts of CO_2 into the atmosphere, result in an increase in atmospheric CO_2 concentration.

Carbon dioxide in the atmosphere between 1960 and 2021

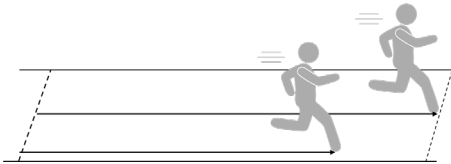


8.03: Forces and Motion



Speed

- the rate of change of distance



uniform speed =
unchanging speed

Higher speed:

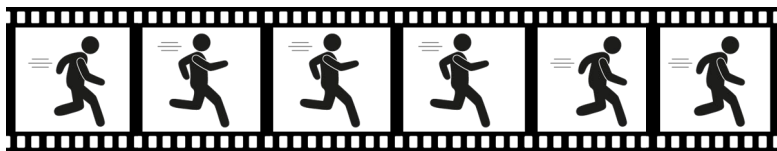
- greater distance in same time interval
- same distance, shorter time interval

$$\text{average speed} = \frac{\text{distance travelled}}{\text{time taken}}$$



Instantaneous Speed

Speed at a particular moment in time.

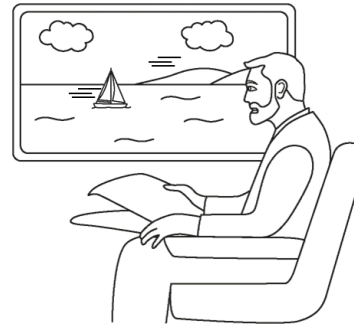


Average Speed

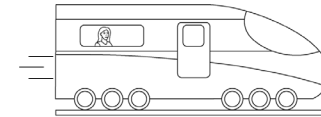
Speed for distance travelled, measured over a longer time interval.

Relative Motion

- movement of one moving object relative to another object
- depends on the frame of reference

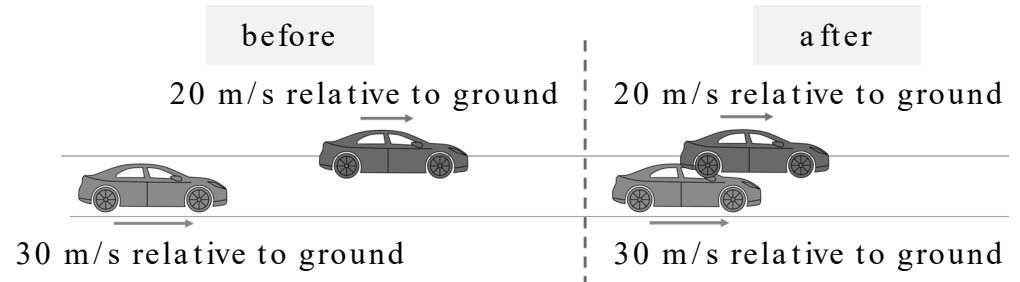


frame of reference: train



frame of reference: ground

Two moving objects relative to the ground



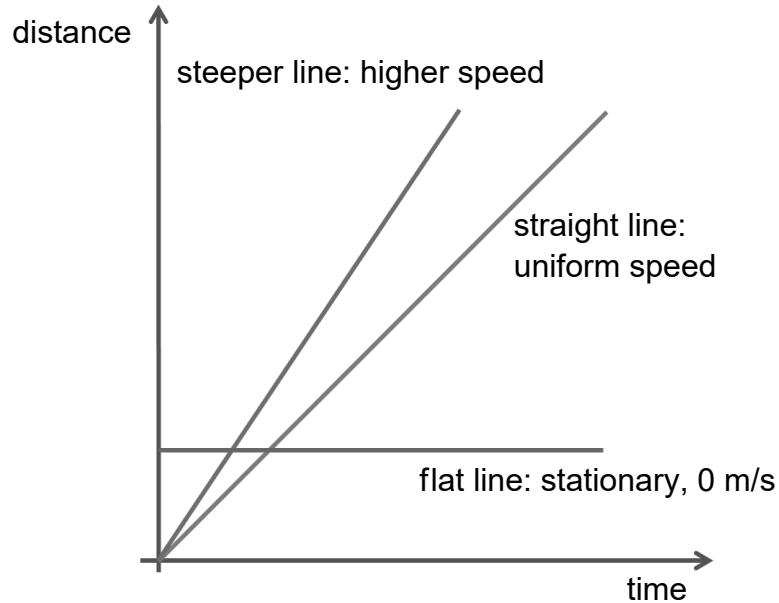
Every second: relative distance changes by 10 m.

Relative speed = 10 m/s

8.03: Forces and Motion



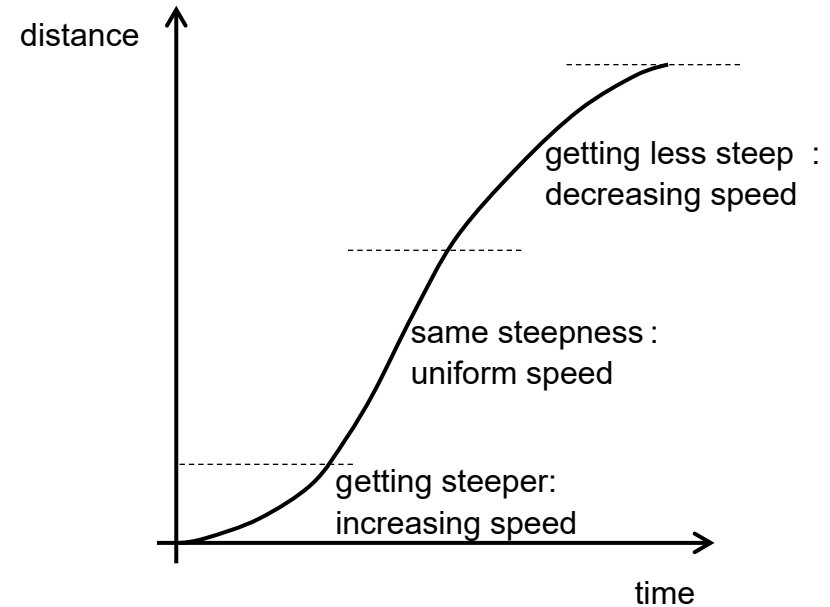
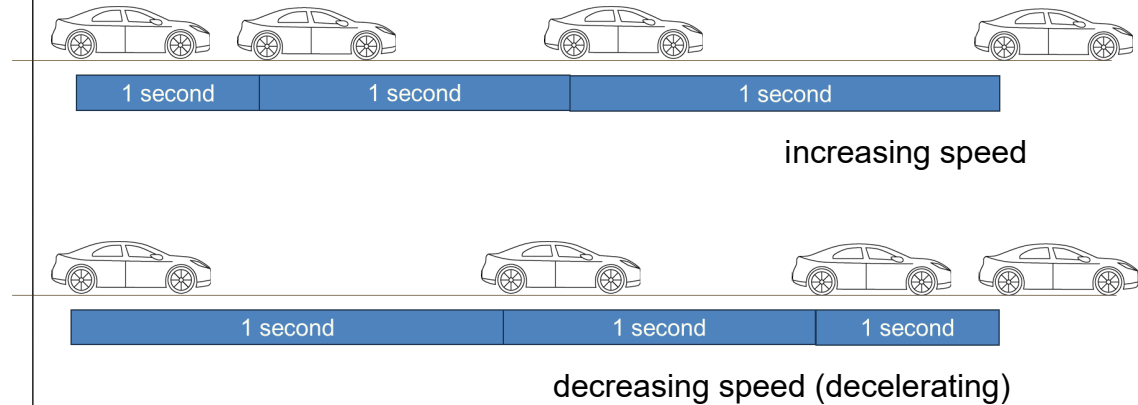
Distance-time Graphs



- Measurement results are plotted on a d - t graph.
- Lines-of-best-fit average out an object's position over time.
- Lines indicate general trends of motion.
- Values read off from the line to interpret specific parts of motion.

Acceleration

- the change of speed (or direction) over a time interval

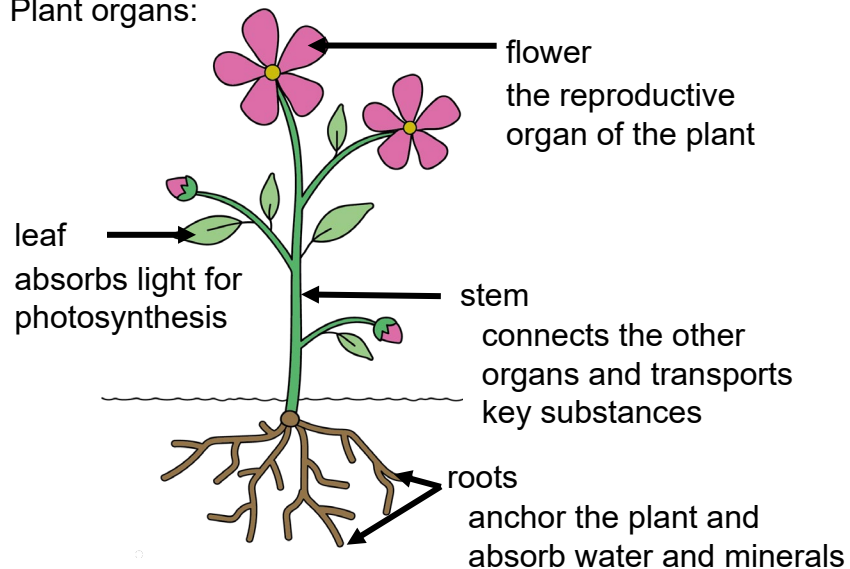


Plants and Their Processes



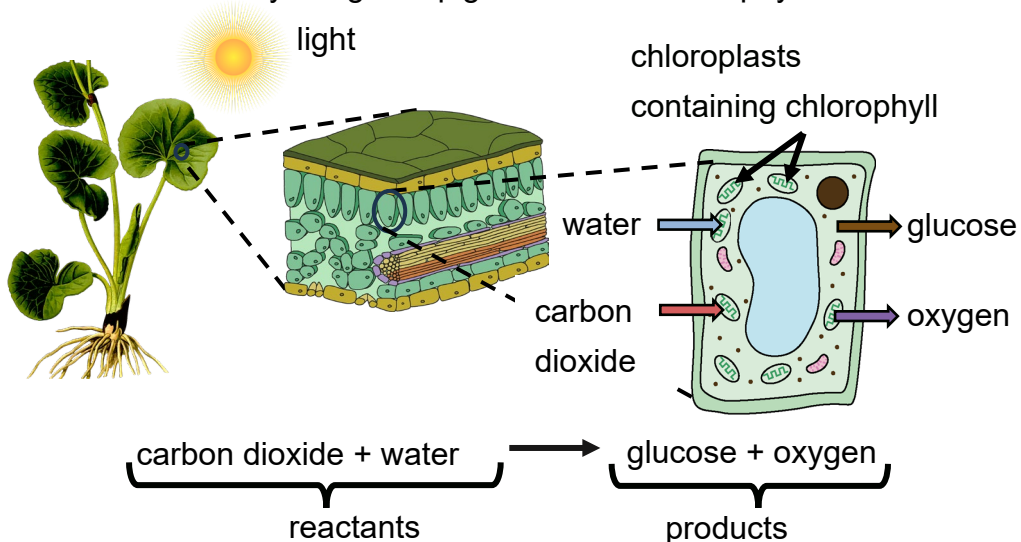
Plants as Organisms

Plant organs:

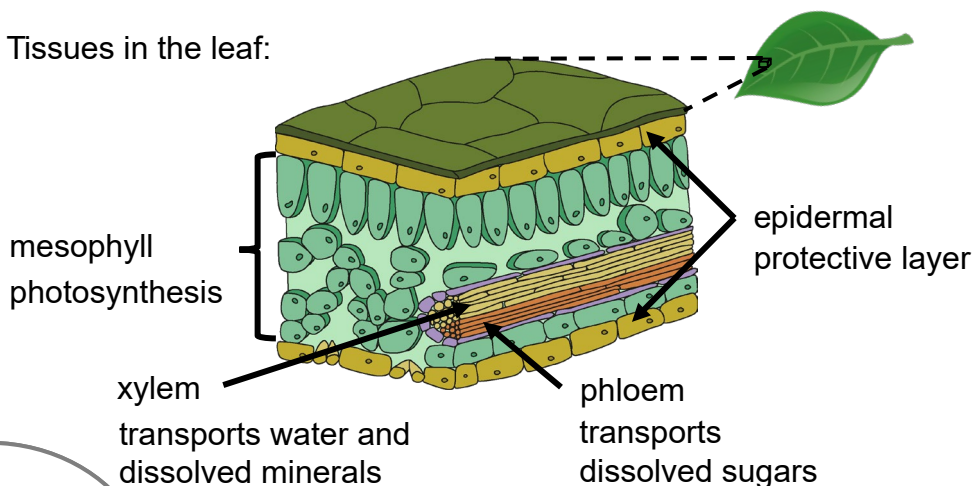


Photosynthesis

Photosynthesis is a series of chemical reactions in which plants use carbon dioxide and water to make glucose and oxygen, driven by energy from light. Photosynthesis occurs in the chloroplasts and is absorbed by the green pigment called chlorophyll.



Tissues in the leaf:

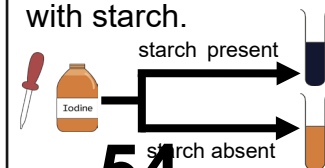


Uses of glucose:

1. used by the plant for respiration to release energy
2. turned into cellulose to build cell walls
3. turned into starch and stored for use later by the plant

Photosynthesis is an endothermic process because it requires energy to be transferred from its surroundings.

We can test a leaf for starch using iodine. Iodine will turn from orange - brown to blue - black when it is in contact with starch.

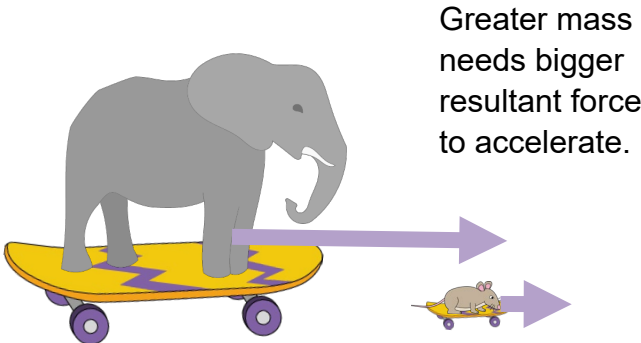
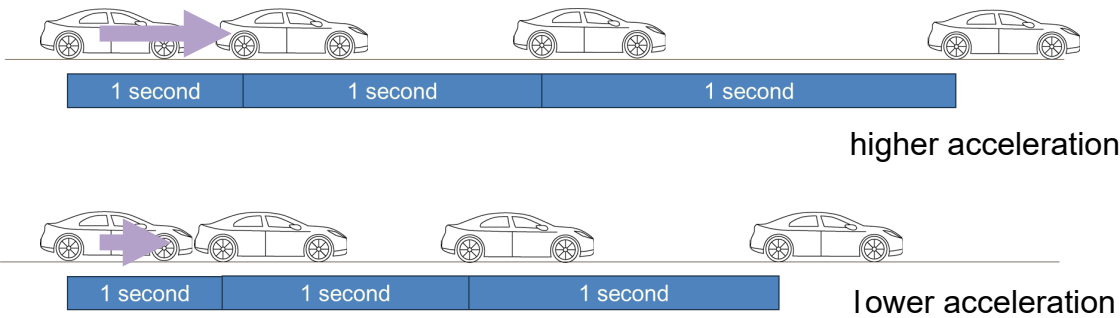


8.03: Forces and Motion

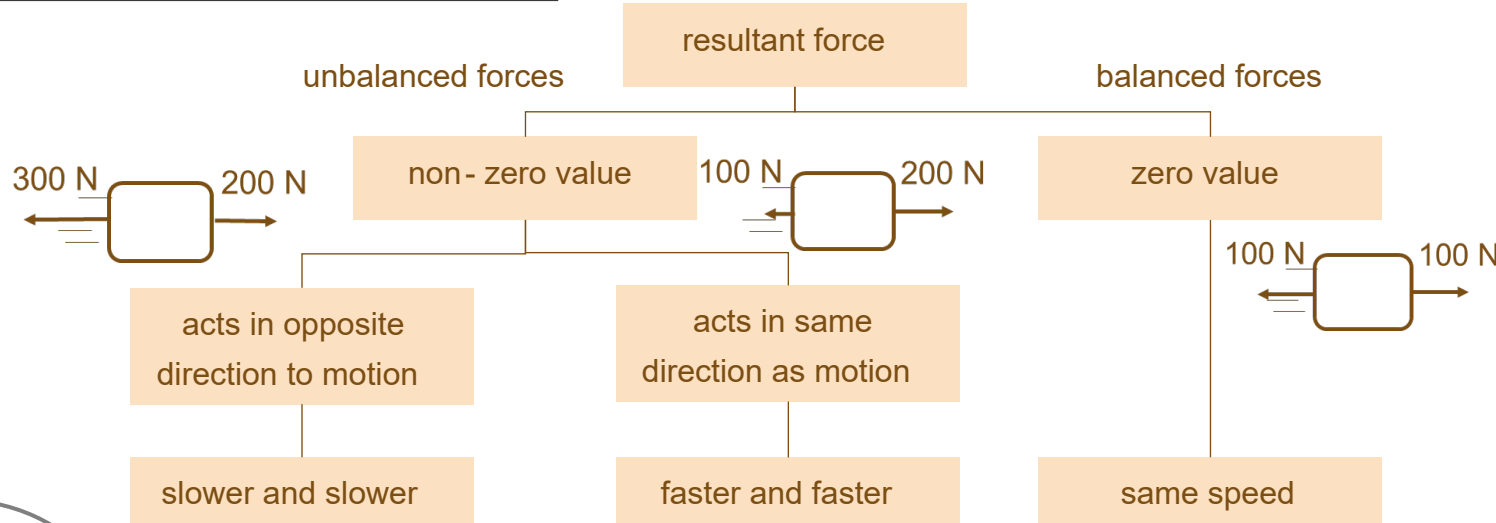


Affects on Acceleration

Greater resultant force causes higher acceleration.



Resultant Force and Acceleration



8.03: Forces and Motion



Motion in Fluids

Frictional forces act to **resist motion**

friction force



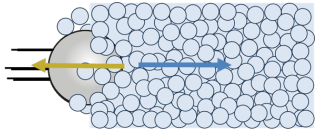
drag forces



air resistance



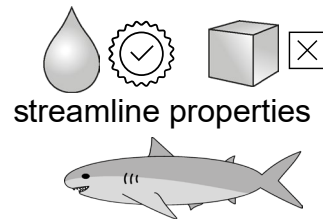
water resistance



- Relative motion between fluid and object.
- Object pushes forwards on particles of fluid.
- Particles push backwards on object = **drag force**.

Drag force depends on:

- Material of fluid
- Speed of relative motion
- Shape of object
- Size of front surface
- Smoothness of surface



streamline properties

Propelled: has **driving force**

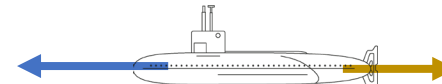
Moving: has **drag force**

moving slowly



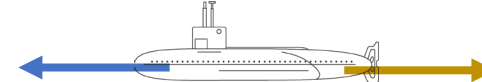
- Resultant force is 0 N: uniform speed, no change to forces

increases thrust



- Resultant force $\leftarrow$ increasing speed, **drag** will increase

moving fast



- Resultant force is 0 N: uniform speed, no change to forces

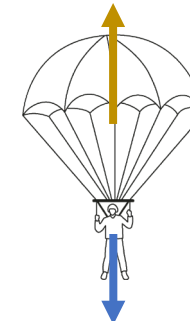
remove propulsion



- Resultant force $\rightarrow$ decreasing speed, **drag** will decrease



Accelerates until drag equals size of weight.



Parachute released, increases drag, resultant force acts upwards, decreases speed, drag decreases etc.

8.03: Forces and Motion



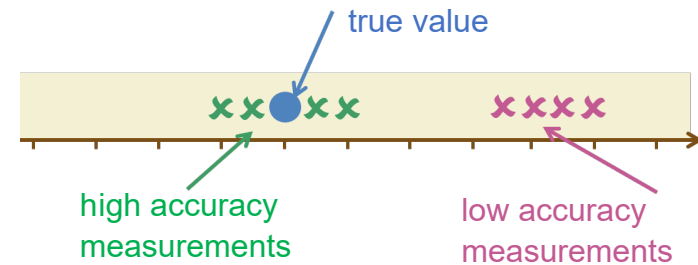
High- Quality Data

valid data

- with low measurement error
- that is accurate
- that is repeat able
- that is reproducible
- represents the real situation and is trustworthy

accurate data

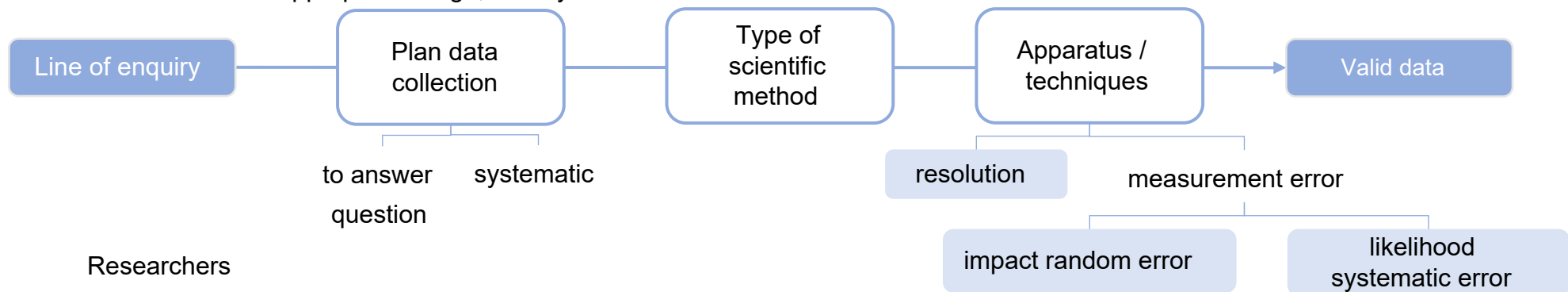
- closeness of a measurement to the true or agreed value.



Developing a Method

Researchers

- select apparatus and techniques known to give accurate data,
- measure over appropriate range, with systematic intervals.



Researchers

- often **trial** experiments to finalise the method.

Safe Practicals

Researchers

- may redesign experiments to reduce risk to acceptable levels.

Hazard	Risk	Control Measure
Falling	• Damage to bones on impact with floor or other fixed objects	• Do not stand on tables, stools etc. • Reduce maximum height to one students can reach.



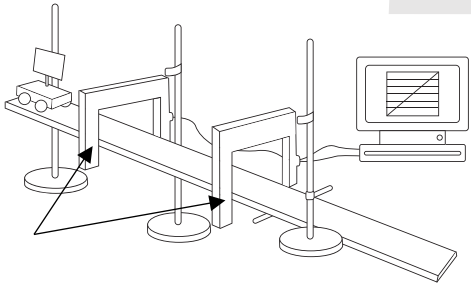
8.03: Forces and Motion

Selecting Apparatus and Techniques

Datalogging

- a process where sensors measure the physical properties of a system

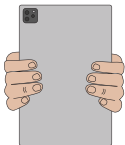
Researcher sets up the constraints on the computer to record data, e.g. time intervals and the logging period.



Each light gate is set up to measure time for card to pass; processor calculates speed at each gate.

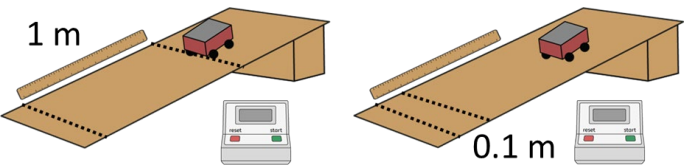
Digital Filming

- multiple images recorded (frames); each frame is over a strict time interval



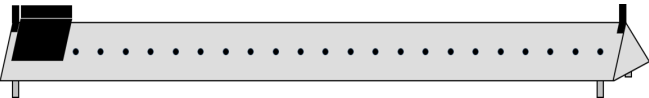
Recorded against a measurement background, any change can be observed.

Measuring Speeds (time and distance)



uniform speed – select greater distance changing speed – select small distances

Ramp is ‘banked up’ to reduce effect of friction.



Air track removes almost all friction.

Apparatus	Advantages
Datalogging	• over very short intervals • consistent and not subjective • high resolution • removes reaction time (timing)
Digital filming	• not subjective • removes reaction time (timing) • removes measurement error while object moving (distance)

8.03: Forces and Motion



Recording Data

Collected data is generally recorded in a table.

Column headings (describe quantities and units).

Raw data processed,
e.g. $\text{speed} = d \div t$

Data processed:
 $\text{mean} = \text{sum} \div \text{number}$

IV far left column

All raw data included

Repeated measurements
with anomalies identified

Rows' values change
systematically

CV included

Constant mass

Quantitative values recorded with appropriate significant
figures and consistent

Situation	Distance travelled (m)	Time taken (s)	Average Speed (m/s)	Average Speed (m/s)
Parachute	2.00	1.49	1.34	1.19
	2.00	1.78	1.12	
	2.00	1.78	1.12	
No parachute	2.00	0.17		2.43
	2.00	0.86	2.33	
	2.00	0.79	2.53	

DV furthest right -
hand column:
processed DV

Processed values rounded:
Formulae
s.f. same as measurement
Mean
s.f. same as worst
measurement

8.03: Forces and Motion



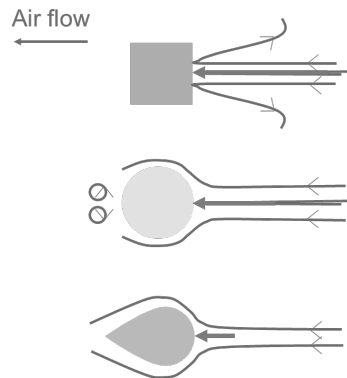
Applications of Technology on Science

Researchers select apparatus that:

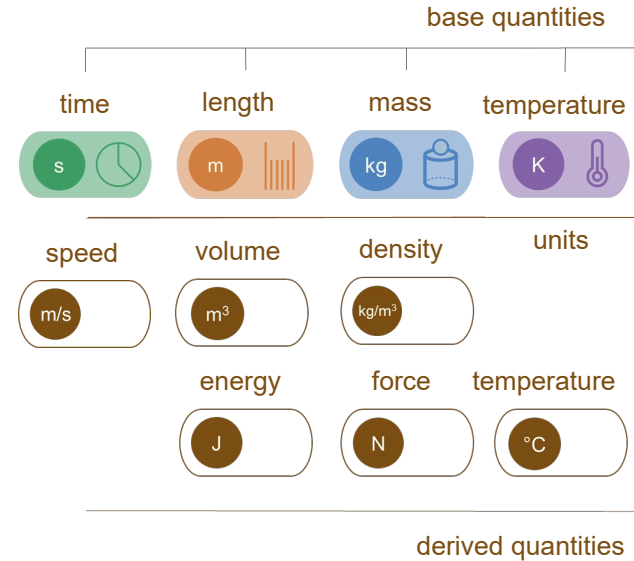
- Restricts control variables.
- Has higher resolution.
- Automates measurement (more often, longer duration).
- Removes random error related to human judgement (subjectivity).

Applications of Science on Industry

Knowledge of fluid flow around objects allows engineers to produce better designs, e.g. more efficient cars.



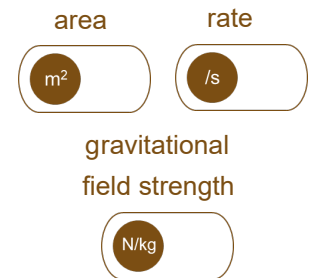
Measurement Values



Quantities and their units:

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

Derived quantities also include:



Plants and Their Processes

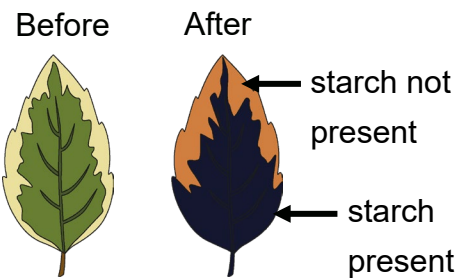


Photosynthesis Continued

A leaf is tested for starch using the following steps:

Step	Reason
Hold the leaf in the hot water	soften leaf
Cover the leaf with ethanol	remove chlorophyll
Place the boiling tube into the beaker of hot water	speed up removal
Rinse the leaf in the beaker of hot water	soften leaf again
Place the Petri dish containing the leaf on white tile	see colour change
Add a few drops of iodine solution to cover the leaf	test for starch

Results of the iodine test for starch on a variegated leaf:



Only green parts of the leaf photosynthesise and make starch, so iodine stays orange - brown on non - green parts.

When testing for starch, control measures should be taken using the hazardous substances:

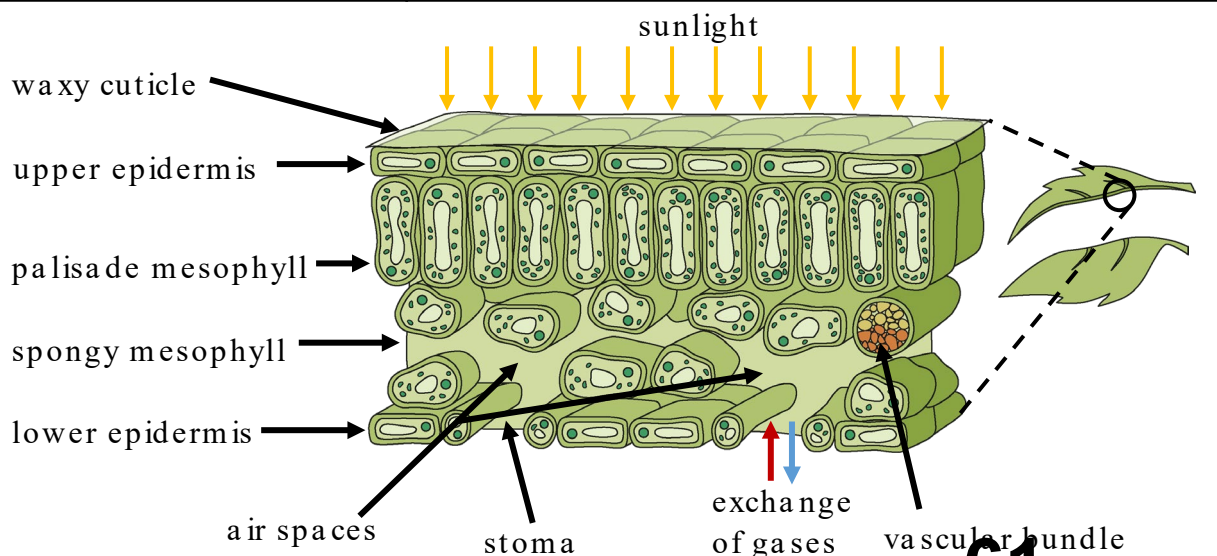
- iodine
- ethanol

Changing Understanding of Photosynthesis

People used to incorrectly believe that plants gain mass by taking in soil through roots. Van Helmont's experiment with the willow tree showed plants gain mass from water, not soil. Today, scientists know that plant mass comes from carbon dioxide, which is used in photosynthesis to make glucose for growth.

Leaf Structure and Adaptations

Leaf adaptation	Function of adaptation
Many chloroplasts	Contain chlorophyll to absorb light
Large surface area	Absorbs more light
Thin	Short diffusion distance for gases
Veins	Transport water, minerals, and sugars
Stomata (underside)	Allow gas exchange (CO ₂ in, O ₂ out)



Plants and Their Processes

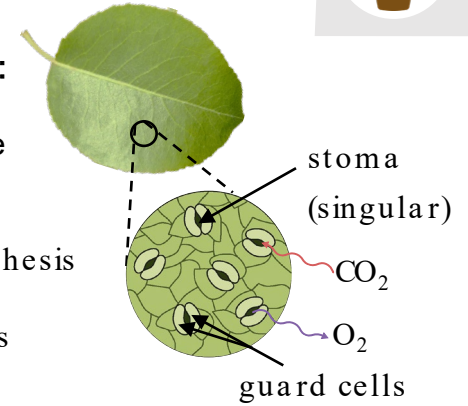


Leaf Structure and Adaptations Continued

Structure	Function	Adaptation
upper epidermis	allows light to pass through	thin and transparent
palisade mesophyll	photosynthesis	cells have lots of chloroplasts and are tightly packed
spongy mesophyll	supports diffusion of gases in and out of leaf	air spaces
lower epidermis	supports diffusion of gases in and out of leaf	stomata
vascular bundle	transports substances	xylem and phloem tissue
waxy cuticle	reduces water loss	waterproof

Guard cells and gas exchange:

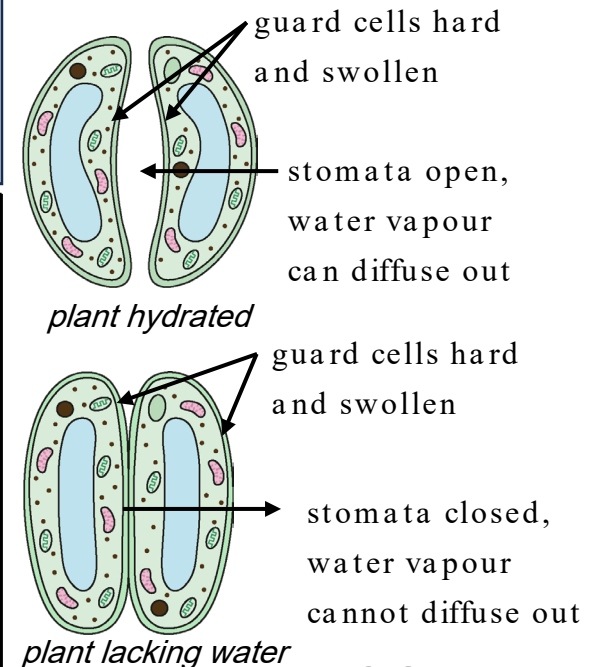
- Control opening/closing of stomata for gas exchange
- Sensitive to light
- Open stomata in day for CO_2 to enter for photosynthesis
- Close stomata at night when photosynthesis stops



A light microscope can be used to observe an imprint of the structure of the stomata. Stomata are on the underside of the leaf because it is cooler and more shaded.

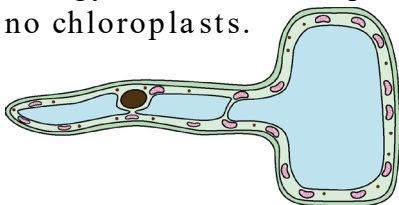
Guard cells and water loss:

- Guard cells open and close stomata to reduce water loss.



Root structure and adaptations

Root hair cells are adapted for the absorption of water and minerals, with a long extension to increase surface area. They contain many mitochondria to provide energy for active transport. They have no chloroplasts.



Water is essential for photosynthesis. It maintains the structure of the plant and enables chemical reactions by acting as a solvent in which reactants and products are dissolved.

Plants also need minerals:

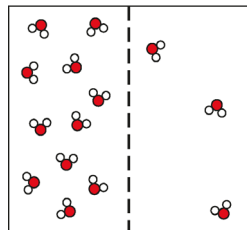
- Nitrates → healthy growth
- Phosphates → healthy roots
- Potassium → healthy leaves and flowers
- Magnesium → makes chlorophyll

Plants and Their Processes



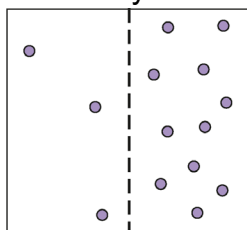
Root Structure and Adaptations Continued

Water is absorbed through osmosis, moving from an area of high water concentration in the soil to an area of lower concentration in root hair cells.



high → low
water concentration

Minerals are absorbed by active transport as they are in lower concentrations in soil than in root hair cells. Active transport requires energy from respiration, so root hair cells contain many mitochondria.

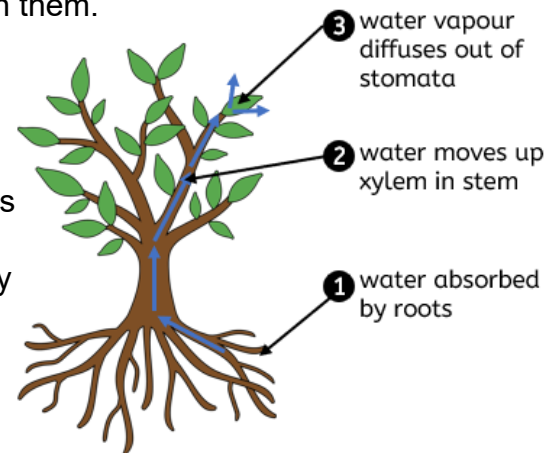


low → high
water concentration

Transpiration is the loss of water vapour from the leaves of plants, through the stomata. When the stomata are open, plants lose water vapour through them.

The rate of transpiration is increased by:

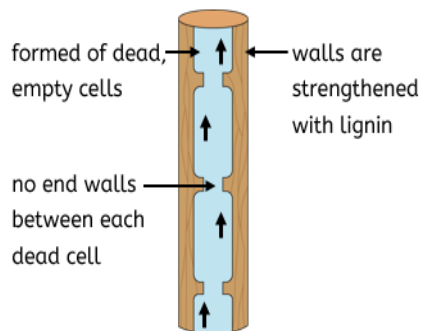
- increased temperatures
- increased light intensity
- increased wind
- decreased humidity



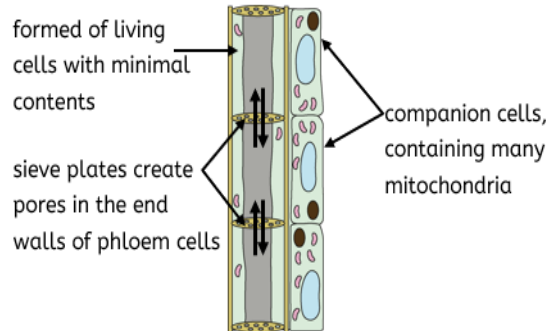
Transport in Plants

Xylem transports water and dissolved minerals up the stem, from roots to leaves. Phloem transports dissolved sugars. Sugars are transported up or down the stem, depending on where sugars are needed.

xylem adaptations



phloem adaptations



Rate of Photosynthesis

An increase in light intensity, temperature, chlorophyll, water and carbon dioxide increases the rate of photosynthesis.

Effect of light intensity on rate of photosynthesis

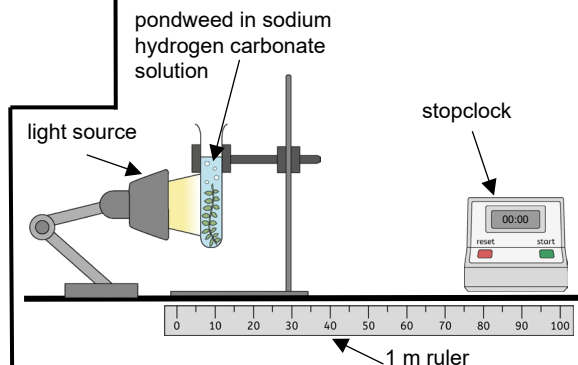
Variables

Independent : light intensity

- distance between light and pondweed

Dependent: rate of photosynthesis - number of bubbles per minute

Control: temperature, CO₂, water, chlorophyll, time, size/mass of pondweed



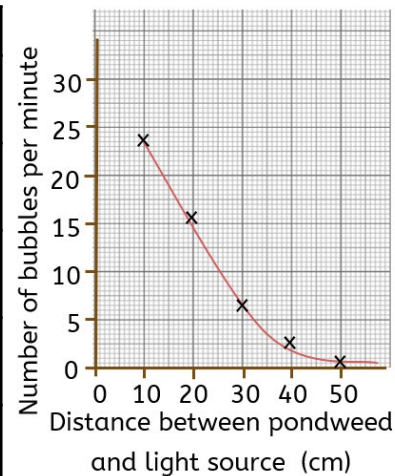
Plants and Their Processes



Rate of Photosynthesis Continued

Step	Explanation
1. Set up the LED light source and meter ruler	it doesn't heat up during use, so temperature won't be affected
2. Fill the boiling tube with the sodium hydrogen carbonate solution	to provide carbon dioxide
3. Put the piece of pondweed into the boiling tube with the cut end at the top and keep it underwater	to observe bubbles of oxygen
4. Place the boiling tube with pondweed 10cm from the light source	this is the first independent variable light intensity to test
5. Leave the pondweed for three minutes	allows the photosynthesis rate to stabilise

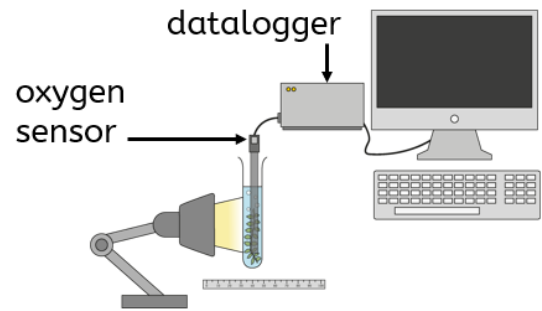
Typical results



As the distance between the pondweed and light increases, the number of bubbles per minute decreases. This is because less energy is transferred and absorbed by the chlorophyll for photosynthesis.

Datalogging and technology in science

Datalogging: Automatic data collection using sensors and computers (e.g. light, temperature, oxygen). Data is recorded at regular intervals (e.g., every second or minute). Technology improves experiments: Cameras, sensors, and computers make observations clearer and more accurate.

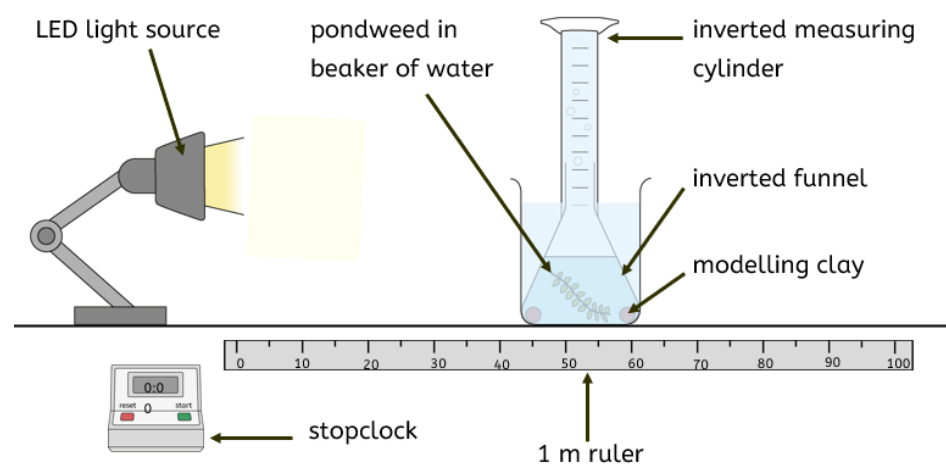


Limitations and improvements in measuring photosynthesis

Counting bubbles → Simple but inaccurate and biased (bubble size, bubble speed).

Better method → Measure volume of oxygen using inverted funnel and measuring cylinder (more accurate, objective).

Digital tools → Data loggers collect continuous data, reduce error and bias, improve validity and analysis.



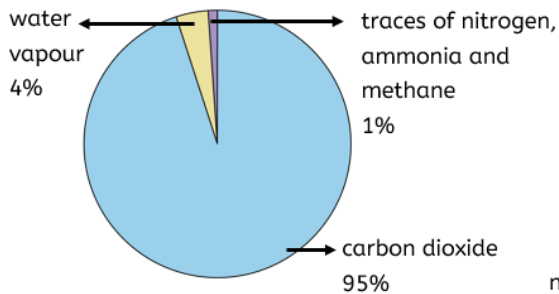
Plants and Their Processes



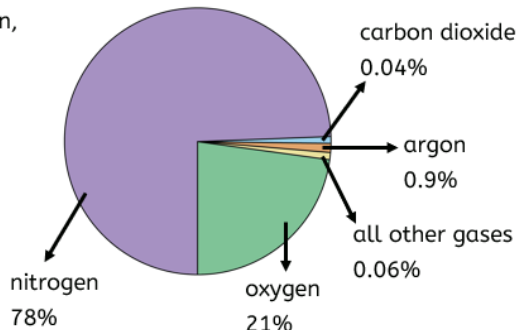
Plants and the Atmosphere

Early Earth's atmosphere was mostly carbon dioxide, with almost no oxygen. Over time, oxygen rose and CO₂ fell.

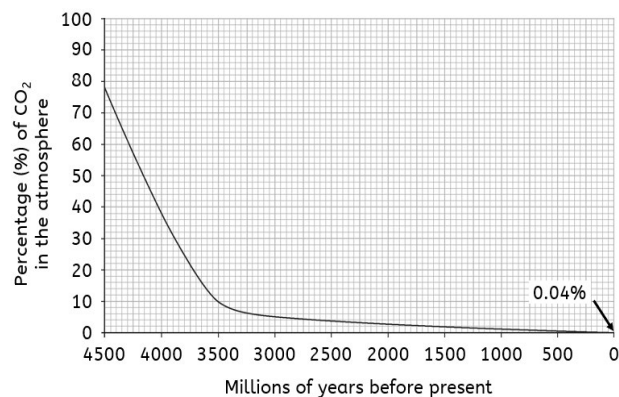
Earth's early atmosphere



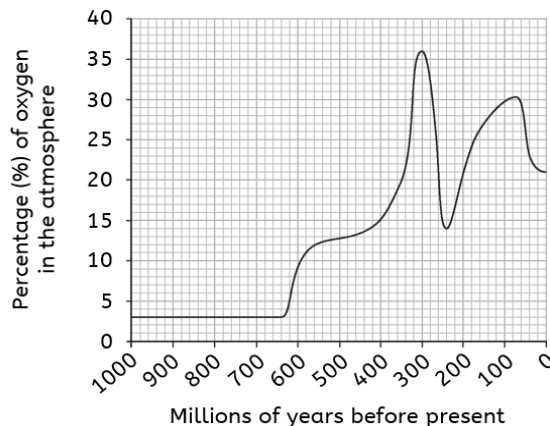
Earth's atmosphere today



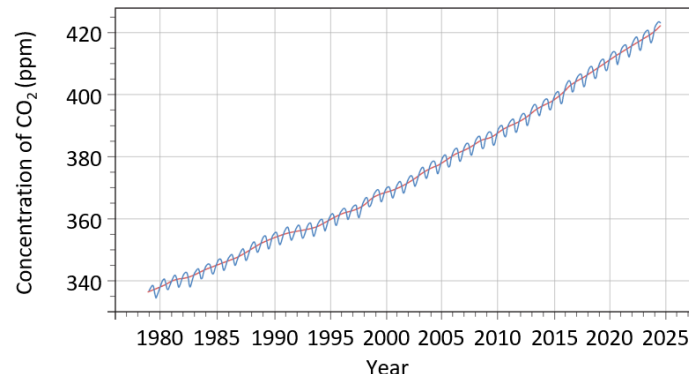
Carbon dioxide levels decreased because the oceans formed and carbon dioxide dissolved into them. Plants and algae then used it in photosynthesis.



Oxygen levels increased because algae and plants released oxygen during photosynthesis. Fluctuations occurred because early oxygen was absorbed by oceans and seabed rocks.



Global carbon dioxide measurements



Deforestation reduces the number of plants, increasing carbon dioxide levels.

Plants as Producers

- Plants are producers that make their own food through photosynthesis. Plants provide food for humans and other animals, forming the basis of food chains.
- Foods that contain starch can be identified using iodine.
- Raw data in tables may need to be processed by finding frequency.
- Insect pollination is essential for crop growth and food production.
- A significant portion of our food relies on pollinators.
- The decline in bee populations threatens food security.

Starch Test Result	Tally	Frequency
Starch present	### ### ###	18
No starch	### ### //	12

Y8 Spanish - De Vacaciones Autumn term

Tenses

PRESENT	-ar verbs	-er verbs	-ir verbs
I	-o	-o	-o
you	-as	-es	-es
he/she/it	-a	-e	-e
we	-amos	-emos	-imos
you (pl)	-áis	-éis	-ís
they	-an	-en	-en

FUTURE Saying what you are going to do			
Voy	a		INFINITIVE
vas			Ir
va			Tocar
vamos			jugar
vais			nadar
van			leer
			Ver

PAST preterit	AR	ER/ IR	IR-to go
I (yo)	é	í	Fui I went
You (tú)	aste	iste	Fuiste
He/she (él /ella)	ó	ió	Fue
We (nosotros)	amos	imos	Fuimos
You (pl) vosotros	asteis	isteis	Fuisteis
They (ellos/ellas)	aron	ieron	fueron

Opinions & Pronouns

Lo que más me gusta es... =the thing I most like is
 Creo que../pienso que= I think that

Me gusta(n)

Me encanta(n)

Me chifla(n)

Me flipa(n)

Me hace(n) feliz 😊



No me gusta(n)

Detesto / odio

Me molesta(n)

Me irrita(n)

Me hace(n) triste 😞

Connectives



También / además

Pero / sin embargo

que

Donde

Porque / dado que

Aunque

Así que / por eso

also/furthermore

but / however

which

where

because/ given that

although

there fore /so

Complexity

Frequency words

A veces

sometimes

A menudo

often

De vez en cuando-once in a wh

Siempre

always

Nunca

never

sequencers

luego

then



is

or

Adjectives

Guay /chulo

cool

emocionante

exciting

Bonito / hermoso

beautiful

pinturesco

picturesque

limpio

Clean

sucio

dirty

impresionante

impressive

rápido

smart

gracioso

Funny

Pesado /aburrido

boring

fascinante

Fascinating

maravilloso

Marvelous

Inglaterra **es más caro que** Espana = is more expensive than

Demasiado=too
 realmente= really

Tan= so (es tan barato =it is so cheap)

Y8 Spanish - De Vacaciones Autumn term

TOPIC VOCABULARY TRANSLATED

DONDE fuiste?

Fui a...



La costa
El campo
Un pueblo
Un camping
Una ciudad

Inglaterra
Escocia
Francia
Gales
Irlanda
España
Francia
Italia
Grecia
Turquía



Me alojé en....

Un hotel
Una tienda – a tent
Un apartamento
Una casa

Transporte

En coche by car
En tren by train
En avión by plane
En autocar by coach
En barco by boat



Lugares (places)

El museo the museum
El espectáculo the show
El palacio the palace
El parque temático the theme park
El paseo marítimo the promenade
El Castillo the castle
El partido de fútbol the football match
El estadio the stadium
El Puerto the port
El centro comercial the shopping centre
El mar the sea



La playa the beach
La costa the coast
La plaza de toros the bullring
La piscina the pool
Las tiendas the shops
La excursion the trip
La cathedral the cathedral



El tiempo / el clima



Hace (mucho) calor it is (very) hot
Hace (un poco) frío it is (a bit) cold
Hace (bastante) sol it is (quite) sunny
Hace (demasiado) viento it is (too) windy
Llueve (llover) it is raining (to rain)
Nieva (nevar) it is snowing (to snow)
Está nublado it is cloudy

PAST TENSE
WEATHER

Hace > HIZO

Llovió
Nevó
Estuvo

Los verbos

Ir de excursion- to go on a trip

Ir de paseo – to go for a stroll

Ir a discotecas- to go to clubs

Ir de compras – to go shopping

Descansar – to relax

Tomar el sol – to sunbathe

Nadar en el mar – to swim in the sea

Montar en bicicleta – to ride

Montar a caballo – to ride a horse

Sacar fotos – to take photos

Bañarse* – to bathe /swim

Alojarse* - to stay (in accommodation)

cenar en los restaurantes

Hacer surfing- to do surfing

Important Spanish Question Words

¿Cuándo? - When?

¿Para qué? - For what purpose?

¿Cómo? - How?

¿Adónde? - Where?

¿Cuánto? - How much / many?

¿Quién? - Who?

¿Qué? - What?

¿Por qué? - Why?

¿De dónde? - From where?

¿Cuál? - Which one?



PAST

Katy Perry = é or í

• Say where you went
Fui a... / al... / a la...

• donde

• Give 2 PAST tense actions
____ é / í y luego
____ é / í
(visité / jugué / hice / oí / bebí / ...)

• Say why you liked it

Me **gustó**

porque

creí que

fue....

Where

What x2

Why

PRESENT

• Say where you go

voy a... / al... / a la...

• donde

• Give 2 present tense actions
____ y luego

(visito / juego / hago / como / bebo / ...)

• Say why you like it

Me **gusta**

porque

creo que

es....

Where

What x2

Why

FUTURE

• Say where you are going to go
Voy a ir a... / al... / a la...

• donde

• Give 2 future tense actions
Voy a ____ y luego
Voy a ____
(voy a visitar / voy a jugar / voy a hacer / voy a comer / voy a beber / ...)

• Say why you are going to like it

Me **va a gustar**

porque

creo que

será....

Where

What x2

Why

OPINION

Me gusta(n)

No me gusta(n)

Me encanta(n)

Odio

☺

Me mola(n)

Me chifla(n)

Me interesa(n)

☹

Me molesta(n)

Me enfada(n)

Me irrita(n)

REASON

Porque **es** or

Porque **SON**

☺

Interesante (s)

Divertido/a (s)

Bonito/a(s)

Limpio/a(s)

Tranquilo/a(s)

☹

Aburrido/a (s)

Difícil(es)

Tonto/a (s)

Ruidoso/a(s)

Sucio/a(s)

Feo/a(s)

Antipático/a(s)

CONNECTIVE

también

Además

Pero

sin embargo

no obstante

aunque

ANOTHER'S OPINION

A *mi amigo*

LE gusta(n)

porque..



ORCA



Y8 Spanish - De Vacaciones Autumn term

El tiempo libre	Free time		
Jugar	To play		
Tocar	To play (an instrument)	hacer	To do / to make
cantar	To sing	comer	To eat
practicar	To practice	Leer	To read
comprar	To buy	Ver la tele	To watch TV
hablar	To talk	sair	To go out
Montar en bicicleta	To ride a bike	comparir	To share
Bailar	To dance	Hacer	To do
cocinar	To cook	dormir	To sleep
Navegar	To search	salir	To go out
probar	To try/taste	ir	To go
Tomar el sol	To subathe		

LA FIESTA	Party time
La comida	The food
Las bebidas	The drinks
La tarta	The cake
Los bocadillos	The sandwiches
Las patatas fritas	The crisps
Un traje	A suit
Un vestido	A dress
Una falda	A skirt
Una chaqueta	A jacket
Una camisa	A shirt
Unos vaqueros	Some jeans

GRAMMAR

Spanish
viaSky.com

Estar + Gerund
(Present continuous)

A1

Present Estar

Estoy
Estás
Está
Estamos
Estáis
Están

Gerund

Hablando
Comiendo
Viviendo

Uses of Estar + Gerund

- Action at the time of speech: *Estoy hablando con mis padres.*
- Action in an active period: *Ahora estoy trabajando de taxista.*
- Repetitive action: *Siempre estás haciéndolo mal.*
- No future meaning: *Mañana estoy viajando a Roma > Mañana voy a viajar a Roma.*