

Year 9 Autumn Term Knowledge Organisers

What is a Knowledge Organiser?

It is a concise summary of all the core facts, key vocabulary and essential concepts you need to know, understand and be able to use within each subject area, it will cover all the information you need to prepare for your BASE assessments and your subject spotlights.

How do Knowledge organisers link to Homework?

In our new homework policy, all homework will link to using your knowledge organisers to help you revise and develop your knowledge and skills in each subject area. Your teacher may set you specific tasks to complete or may for example do a retrieval test at the beginning of the lesson to ensure you are completing homework revision tasks.

How long should I revise for?

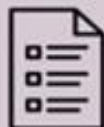
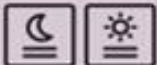
Everyone is different and you need to practice building the study habits that work for you, this includes working out how long to study for at a time and most importantly when to take breaks. Research says that the best habits are to study in short blocks of time with a break in between. The length of your break depends on how long you've been studying and how tired your brain feels. The goal is to rest just long enough to reset your focus without losing momentum.

- *Short breaks* (5–10 minutes): Best after 25–50 minutes of focused work. They keep your energy steady and stop your brain from switching off.
- *Longer breaks* (15–30 minutes): Useful after several study cycles or 1–2 hours of deep work. They help you recharge before starting again.
- *Micro-breaks* (1–2 minutes): A quick stretch, sip of water, or eye rest can refresh your concentration when working on something intense.

Research has shown that even these tiny “micro-breaks” can make a real difference. Taking just a minute or two to move or rest your eyes improves performance and helps prevent fatigue. The quality of your break matters more than the length. Two minutes spent walking, stretching, or breathing deeply can do far more for your concentration than ten minutes scrolling through your phone.

How can I use my Knowledge Organisers?

It takes time to learn what methods you prefer and work best for you. Use these knowledge organisers for each subject to recap on learning from lessons and test your understanding or develop your skills. There are some examples of tasks you could complete here, the important thing is that you are trying out different techniques to learn what works for you. Everyone is different and prefers a different way of working, if you have tried these techniques and they are not working for you, try something else. Always ask for support, your tutors can help as can you subject teachers.

	Look, Cover, Write, Check	Definitions of Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	Look at and study a specific area of your KO. 	Write down the key words and definitions. 	Use your KO to condense and write down key facts or information onto flash cards. 	Use your KO to create a mini quiz. Write down your questions using your KO. 	Create a mind map with all the information you can remember from your KO. 	Ask a friend or family member to have the KO or flash cards in their hands. 
Step 2	Cover or flip the KO over and write down everything you can remember. 	Try not to use your KO to help you. 	Add pictures to help support. Then self-quiz using the flash cards. You could write questions on one side, and answers on the other! 	Answer the questions and remember to use full sentences. 	Check your KO to see if there are any mistakes on your mind map. 	They can test you by asking you questions on different sections of your KO. 
Step 3	Check what you have written down. Correct any mistakes in green pen and add anything you have missed. Repeat. 	Use your green pen to check your work. 	Ask a friend or family member to quiz you on the knowledge. 	Ask a friend or family member to quiz you using the questions. 	Try to make connections, linking the information together. 	Write down your answers, 



DNA

BY DENNIS KELLY

A dark, gripping play about a group of teenagers who **panic** and **cover up** a fatal bullying incident. When the victim is found alive, their lies spiral into **murder** to protect their secret.

BIG IDEA
DNA explores how a single act of violence can have **lasting consequences** – for the victim, their family and everyone involved.

KEY WORDS

DNA	Deoxyribonucleic acid; the genetic material that contains the instructions that make each of us unique.
Pack Mentality	When individuals in a group behave differently, often sacrificing their own morals to fit in.
Guilt	A feeling of responsibility or remorse for wrongdoing.
Cover-Up	An attempt to hide the truth or the evidence of a crime.
Morality	The ideas about right and wrong that guide our behaviour.
Consequences	The results of our actions, intended or not.
Leadership	The ability to influence and control others. In DNA, leadership is about power, fear and manipulation.
Truth	The facts about what really happened.
Innocence	The state of being not guilty of a crime.

“We all do things. Things we don't want people to know.” – DNA

PLOT OVERVIEW – KEY EVENTS

- THE INCIDENT**
Outsider Adam is tormented by the group and pushed into a deep grid/mine shaft. They presume he is dead.
- THE COVER-UP**
Terrified, the group panics. Phil orchestrates a plan to frame an innocent man by planting fake DNA. The police arrest a local postman who fits the description.
- THE RETURN**
Adam is discovered alive but severely injured and brain-damaged, living in a hedge.
- THE ESCALATION**
Rather than confessing, Phil shows Cathy how to murder Adam with a plastic bag to prevent the truth from coming out.
- THE AFTERMATH**
The group fractures under the weight of guilt and fear. Their lives deteriorate as lies, blame and secrets destroy them from the inside.
- THE SHIFT IN POWER**
Leah leaves the group. Cathy takes over as the new leader – ruthless, sadistic and without remorse.

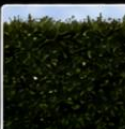
KEY CHARACTERS

PHIL	Quiet, intelligent and controlling. He manipulates the group and orchestrates the cover-up. Willing to do anything to protect the secret and keep control.
LEAH	Intelligent, observant and often questions the group, but is not morally better than the others. She admits to killing her hamster – showing a capacity for cruelty. Leaves the group because she can't cope with what they've become.
CATHY	Initially eager to please, but becomes ruthless and sadistic. She murders Adam and takes control of the group.
JOHN TATE	The original leader. Uses physical intimidation and aggression to control the group, but eventually loses power to Phil.
BRIAN	Loyal to the group and eager to fit in. Influenced by others and avoids responsibility.
ADAM	The outsider and victim. Tormented and pushed into the shaft. Survives but is betrayed again when they murder him to keep their secret.
MARK	Another member of the group. Follows others to fit in and shares in the guilt and consequences.
JAN	A quieter member of the group. Complicit in their actions and afraid to speak out.

KEY THEMES

- PACK MENTALITY & PEER PRESSURE**
The play shows how teenagers act differently in a group, sacrificing their individual morals to fit in and avoid becoming the next victim.
- MORALITY & RESPONSIBILITY**
No one is entirely innocent. The play explores how guilt, silence and inaction allow people to become complicit in terrible acts.
- LEADERSHIP & POWER**
Different forms of leadership shape the group: John Tate – through fear and aggression. Phil – through logic, manipulation and control. Cathy – through cruelty and violence.

RELATED IMAGES & SYMBOLS

 THE SHAFT / GRID Where Adam is pushed. A symbol of exclusion and violence.	 DNA Used as false evidence. Represents lies, manipulation and how truth can be twisted.	 THE HEDGE Where Adam is found alive. A place of survival and isolation.	 THE POLICE Represents authority and how easily innocent people can be blamed.	 BROKENNESS The group's relationships and morality are shattered.
---	--	---	--	---

SUPPORTING CHARACTERS

 RICHARD Adam's brother. Desperate for answers and justice.
 DANNY Adam's friend. Loyal and devastated.
 LOU Brian's older sister. Protective but suspicious.
 THE POSTMAN An innocent man framed and arrested by the police.

REMEMBER...

- ✓ A single moment.
- ✓ A choice.
- ✓ A secret.
- ✓ A lie.
- ✓ A life destroyed.

WHAT WOULD YOU DO?



★ ESSENTIAL MESSAGE: Our actions affect others. Choose kindness. Choose respect. Choose to make a difference.



MAYFIELD SCHOOL

SIMILARITY & CONGRUENCE

KNOWLEDGE ORGANISER – HOW TO COMPARE SHAPES AND TRIANGLES

Compare carefully,
use the right method,
show your working!



1 DECIDE: SIMILAR OR CONGRUENT?

CONGRUENT
Same shape and same size.

SIMILAR
Same shape, size may change.

★ If all corresponding sides are equal → **CONGRUENT**.
If corresponding sides are in the same ratio → **SIMILAR**.

2 CONGRUENT TRIANGLES – TESTS TO USE

Use one of these four tests to prove triangles are congruent.

SSS Side-Side-Side	All three sides are equal.	
SAS Side-Angle-Side	Two sides and the included angle are equal.	
ASA Angle-Side-Angle	Two angles and the included side are equal.	
AAS Angle-Angle-Side	Two angles and a non-included side are equal.	

EXAMPLE: $\triangle ABC$ has sides 5 cm, 10 cm, 13 cm. $\triangle DEF$ has sides 5 cm, 10 cm, 13 cm. All three sides are equal → Triangles are congruent by SSS.

3 FINDING SCALE FACTOR IN SIMILAR SHAPES

Use when you know one pair of corresponding sides.

STEP 1 Match corresponding sides.
Use matching angles or position to help.

STEP 2 Divide enlarged length by original length.

Scale factor = $\frac{\text{enlarged length}}{\text{original length}}$

EXAMPLE:
Side AB corresponds to $A'B'$.
6 cm corresponds to 9 cm.

Scale factor = $\frac{9}{6} = 1.5$

4 FINDING MISSING LENGTHS IN SIMILAR SHAPES

Use the scale factor to find unknown sides.

STEP 1 Find the scale factor.

STEP 2 Multiply the known side by the scale factor to find the missing side.

EXAMPLE:
Side AB (4 cm) corresponds to $A'B'$ (10 cm).
Another side: $AC = 3$ cm.
Scale factor = $\frac{10}{4} = 2.5$
Corresponding side $A'C' = 3 \times 2.5 = 7.5$ cm

5 ANGLES AND CORRESPONDING SIDES

SIMILAR SHAPES

- Corresponding angles are equal.
- Corresponding sides are in the same ratio (proportional).

CONGRUENT SHAPES

- Corresponding angles are equal.
- Corresponding sides are equal (same length).

$\angle A = \angle A'$ $\angle B = \angle B'$ $\angle C = \angle C'$ $AB \leftrightarrow A'B'$ $BC \leftrightarrow B'C'$ $AC \leftrightarrow A'C'$

6 COMMON MISTAKES

- Matching the wrong sides or angles.
Always use matching angles or position as a guide.
- Using different orientations and thinking shapes are different.
Congruent shapes can be flipped, turned or moved.
- Confusing similar with congruent.
Similar: same shape, size may change.
Congruent: same shape and same size.
- Forgetting that congruent shapes can be rotated, reflected, or translated.
They are still congruent.

7 EXAM TECHNIQUE / FINAL CHECK

Check the order
Make sure the shapes are in the same order before comparing.

Mark matching parts
Tick matching sides and arcs for matching angles.

Write the scale factor
State it clearly as a number (or fraction) and show working.

Use units
Include units (cm, m, ...) in your diagram and answer.

State the test
If triangles are congruent, state the correct test (SSS, SAS, ASA or AAS).

★ KEY FACTS & SHORTCUTS / REMEMBER

Congruent means scale factor = 1.

Similar means same shape, sides in the same ratio.

Polygons are closed 2D shapes with straight sides.



REMEMBER:

Look for matching angles, compare corresponding sides, and choose the right method.
Show your working clearly and check your answer makes sense.



MAYFIELD SCHOOL

PYTHAGORAS' THEOREM

KNOWLEDGE ORGANISER – HOW TO FIND MISSING SIDES IN RIGHT-ANGLED TRIANGLES

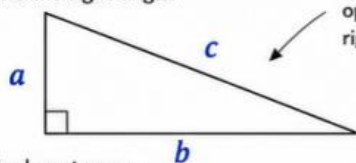
Spot the right angle.
Label the sides.
Show each step!



1 WHEN CAN YOU USE IT?

Only for right-angled triangles.

Identify the hypotenuse:
the longest side,
opposite the right angle.



Hypotenuse (c)
longest side,
opposite the
right angle.

c is the hypotenuse.

2 THE THEOREM

$$a^2 + b^2 = c^2$$

Where a and b are the shorter sides
(legs) and c is the hypotenuse.

3 FINDING THE HYPOTENUSE – STEP BY STEP

- STEP 1
- STEP 2
- STEP 3
- STEP 4

Write the formula: $a^2 + b^2 = c^2$

Substitute the values for a and b .

Calculate c^2 .

Take the square root to find c .

EXAMPLE: $a = 3, b = 4$

$$\begin{aligned} c^2 &= a^2 + b^2 \\ &= 3^2 + 4^2 \\ &= 9 + 16 \\ &= 25 \\ c &= \sqrt{25} = 5 \end{aligned}$$

So, $c = 5$

4 FINDING A SHORTER SIDE – STEP BY STEP

- STEP 1
- STEP 2
- STEP 3
- STEP 4

Write the rearranged formula:

$$a^2 = c^2 - b^2$$

(or $b^2 = c^2 - a^2$).

Substitute the values.

Calculate the square.

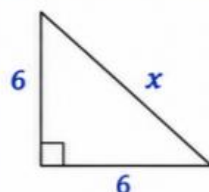
Take the square root.

EXAMPLE: $c = 13, b = 5$

$$\begin{aligned} a^2 &= c^2 - b^2 \\ &= 13^2 - 5^2 \\ &= 169 - 25 \\ &= 144 \\ a &= \sqrt{144} = 12 \end{aligned}$$

So, $a = 12$

5 EXACT AND ROUNDED ANSWERS



EXAMPLE:

$$\begin{aligned} x^2 &= 6^2 + 6^2 \\ &= 36 + 36 \\ &= 72 \end{aligned}$$

Exact answer:

$$x = \sqrt{72} = 6\sqrt{2}$$

Rounded answer:

$$x \approx 8.49$$



REMEMBER: If a question says exact,
keep your answer in root form.

6 PYTHAGOREAN TRIPLES / SHORTCUTS



These sets of numbers satisfy
 $a^2 + b^2 = c^2$.

3, 4, 5	$3^2 + 4^2 = 5^2$
5, 12, 13	$5^2 + 12^2 = 13^2$
8, 15, 17	$8^2 + 15^2 = 17^2$



Recognising these triples can save
time in some questions.

7 COMMON MISTAKES

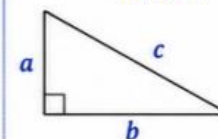
- ⚠ Using the theorem on a non-right-angled triangle.
- ⚠ Choosing the wrong hypotenuse.
- ⚠ Forgetting to square first.
- ⚠ Forgetting the square root at the end.
- ⚠ Rounding too early.

EXAM TECHNIQUE



- 1 Draw and label the triangle clearly. Mark the right angle.
- 2 Write the correct formula: $a^2 + b^2 = c^2$.
- 3 Substitute the values carefully.
- 4 Show each step in your working.
- 5 Calculate accurately.
- 6 Check: the hypotenuse must be the longest side.
If not, check your working.

CHECK IT!



Ensure $c > a$
and $c > b$.



REMEMBER:

A mathematical proof shows
something is always true.



Exact answers
are not rounded.



KEY FACTS

- Pythagoras' Theorem works for all right-angled triangles.
- $a^2 + b^2 = c^2$ where c is the hypotenuse.
- Units stay the same (e.g. cm, m, km).



MAYFIELD SCHOOL

PROBABILITY

KNOWLEDGE ORGANISER – HOW TO SOLVE PROBABILITY QUESTIONS

Spot the event.
Choose the right method.
Check your answer!



1 WHAT TYPE OF PROBABILITY QUESTION IS IT?



Theoretical probability:
use when outcomes are
equally likely.

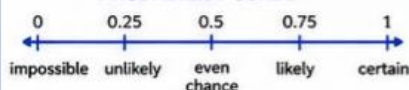


Experimental probability:
use results from data or
an experiment.



Combined events:
use a sample space,
two-way table or
Venn diagram.

PROBABILITY SCALE



★ If a question says fair or at random,
outcomes are equally likely.

2 THEORETICAL PROBABILITY – STEP BY STEP

STEP 1

Count all possible outcomes.

STEP 2

Count the favourable outcomes.

STEP 3

Probability = $\frac{\text{favourable outcomes}}{\text{total outcomes}}$



EXAMPLE: Fair die
 $P(\text{rolling a 5}) = \frac{1}{6}$



EXAMPLE: Fair coin
 $P(\text{tails}) = \frac{1}{2} = 0.5 = 50\%$

✓ **CHECK:** Answer must be between 0 and 1.

3 EXPERIMENTAL PROBABILITY – STEP BY STEP

STEP 1

Use the results collected.

STEP 2

Count how many times
the event happened.

STEP 3

Divide by the total
number of trials.

experimental probability =
fraction: $\frac{\text{frequency of event}}{\text{total trials}}$



EXAMPLE: Person A wins 13
out of 20 chess games.
 $P(A \text{ wins}) = \frac{13}{20} = 0.65 = 65\%$

i Experimental probability may be
different from theoretical probability.

4 LISTING OUTCOMES – SAMPLE SPACE METHOD

STEP 1

List outcomes systematically.

STEP 2

Use a table if two things
are happening.

STEP 3

Count the outcomes that
match the event.

	1	2	3	4	5	6
Heads	H1	H2	H3	H4	H5	H6
Tails	T1	T2	T3	T4	T5	T6



EXAMPLE: When a coin is flipped and
a die is rolled, there are 12 outcomes.
 $P(\text{Heads and even number}) = \frac{3}{12} = \frac{1}{4}$

💡 **TIP:** Systematic lists help you avoid missing outcomes.

5 USING TABLES AND VENN DIAGRAMS

A TWO-WAY TABLES

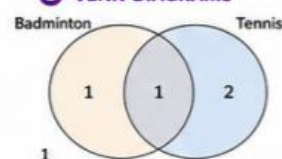
	Adults	Children	Total
Enjoy cartoons	35	170	205
Don't enjoy cartoons	85	10	95
Total	120	180	300

- "AND" usually means one cell.
- "OR" means combine more than one cell.

EXAMPLE: $P(\text{child and enjoys cartoons})$
 $= \frac{170}{300} = \frac{17}{30}$

i Mutually exclusive events cannot happen at the same time.

B VENN DIAGRAMS



- Put shared outcomes in the overlap.
- "At least one" means everything inside the circles.

EXAMPLE: $P(\text{plays tennis}) = \frac{3}{5}$
(2 + 1 out of 1 + 1 + 2 + 1 = 5)

COMMON MISTAKES

- ⚠ Using the number of categories instead of the total number of outcomes.
- ⚠ Mixing up "and" with "or".
- ⚠ Forgetting outcomes in a sample space.
- ⚠ Not using row and column totals in a two-way table.
- ⚠ Giving a probability greater than 1 or less than 0.
- ⚠ Assuming experimental and theoretical probability are always the same.

EXAM TECHNIQUE

BEFORE YOU ANSWER

- 1 Underline key words: fair, random, and, or, not.
- 2 Decide which method to use.
- 3 Draw a diagram or table if it helps.

FINAL CHECK

- 1 Show your fraction first.
- 2 Simplify if possible.
- 3 Convert to a decimal or percentage only if asked.
- 4 Check the answer is sensible.



REMEMBER

Probability tells you how likely something is.
Choose the right method, show your working,
and check that your answer is between 0 and 1.



KEY FACTS & SHORTCUTS

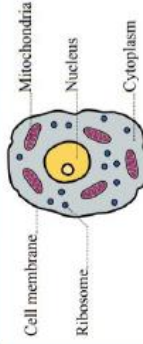
- Probabilities can be written as fractions, decimals or percentages.
- The total probability is 1.

- $P(\text{not } A) = 1 - P(A)$
- At random = every outcome has an equal chance.
- More trials usually make experimental results closer to theoretical probability.

Cells are the basic unit of all forms of life but different cells have different structures

Structure and Function of Animal Cells

Animal cells are eukaryotic cells

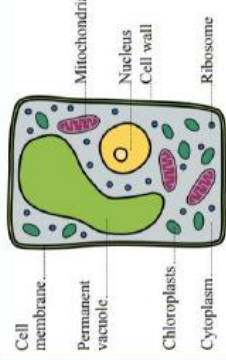


Contains the following cell structures:

Nucleus	Carries genetic material
Cytoplasm	A gel where chemical reactions take place
Membrane	Controls passage of substances into and out of the cell
Mitochondria	Structures where aerobic respiration takes place
Ribosomes	Builds proteins from amino acids

Structure and Function of Plant Cells

Plant cells are eukaryotic cells

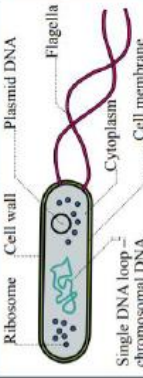


Contains the following unique cell structures:

Cell Wall	Gives the cell strength and structure
Chloroplast	Structures where photosynthesis takes place
Permanent Vacuole	Keeps cell rigid to support plants

Structure and Function of Bacteria Cells

Bacteria cells are prokaryotic cells



Contains the following unique cell structures:

Plasmid DNA	A ring of DNA suspended in the cytoplasm
DNA Loop	A loop of DNA suspended in the cytoplasm
Flagella	Allows the bacteria to move

Eukaryotic cells have a nucleus that contains the genetic material

Cell Specialisation

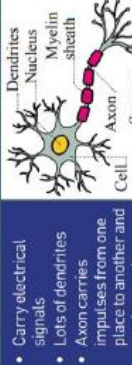
Cells may be specialised to carry out a particular function. This allows them to work individually, or as part of a tissue, organ, or organ system

Animal Cell Specialisation



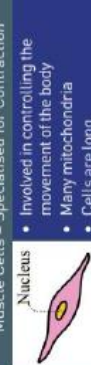
- Sperm Cells – Specialised for Reproduction**
 - Long tail helps sperm swim
 - Middle section contains many mitochondria
 - Acrosome contains digestive enzymes

Nerve Cells – Specialised for Rapid Communication



- Nerve Cells – Specialised for Rapid Communication**
 - Carry electrical signals
 - Lots of dendrites
 - Axon carries impulses from one place to another and can be very long

Muscle Cells – Specialised for Contraction



- Muscle Cells – Specialised for Contraction**
 - Involved in controlling the movement of the body
 - Many mitochondria
 - Cells are long

Plant Cell Specialisation



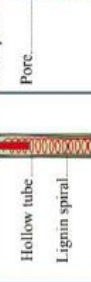
- Root Hair Cells**
 - Specialised for absorbing water and mineral ions
 - Large vacuole
 - Many mitochondria

Xylem Cells



- Xylem Cells**
 - Transports water and mineral ions
 - Lignin builds up in spirals around cell walls
 - Hollow tube cells joined end to end with no cell membranes

Phloem Cells



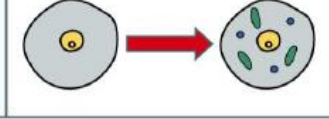
- Phloem Cells**
 - Transports food
 - Tubes formed by elongated cells joined end to end
 - Pores in sieve plates

Cell Differentiation

The process by which a cell changes to become specialised for its job

Process of Cell Differentiation

- As a cell differentiates it acquires different sub-cellular structures**
- It has become a specialised cell**



Cells differentiate to form different types of cells as an organism develops

Differentiation differs in plants and animals

Most types of animal cell differentiate at an early stage, then lose the ability once they are specialised

In mature animals cell division is mainly restricted to repair and replacement

Whereas many plant cells are able to retain the ability to differentiate throughout life

A light microscope is an optical instrument to observe very small objects

Step 1

Put a prepared slide on the microscope stage and select the lowest power objective lens ($\times 40$)

Step 2

Use the coarse focus knob to make the objective lens just touch the slide

Step 3

Look through the eyepiece and use the coarse focus knob to make the objective lens move away from the slide until an image is seen

Step 4

Use the fine focus knob to obtain a sharp image

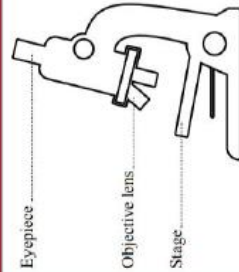
Step 5

Change the objective lens to the next power ($\times 400$) and adjust the fine focus to obtain a sharp image again

Step 6

Change the objective lens to the next power ($\times 400$) and adjust the fine focus to obtain a sharp image again

Equipment



Eye piece

Objective lens

Stage

Low Magnification - Unfocused



Low Magnification - Focused



Middle Magnification - Focused



High Magnification - Focused



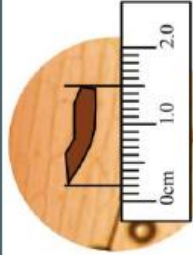
Science – Autumn Year 9

The magnification of an image tells how many times bigger it is than the object

$$\text{Magnification} = \frac{\text{size of image}}{\text{size of real object}}$$

EXAMPLES

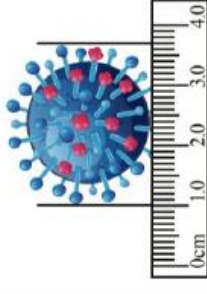
The picture shows part of an image of some plant cells being measured. The magnification of the image is $\times 100$



$$100 = \frac{(1.5 \div 0.2)}{\text{length of cell}}$$

$$\text{length of cell} = \frac{1.5}{100} = 0.015 \text{ cm}$$

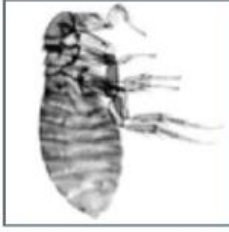
The picture shows the image of a virus being measured with a ruler. It is known that the virus has a diameter of approximately 5.0×10^{-6} m



$$\text{magnification} = \frac{(3.7 \div 1.0) \times 10^{-2}}{5.0 \times 10^{-6}}$$

$$= 5.4 \times 10^3$$

The resolution of an image is the minimum distance between two parts of the specimen that can be seen separately



High resolution image of a flea produced with an electron microscope



Low resolution image of a flea produced with a light microscope

An electron microscope forms images with electrons rather than light

An electron microscope has higher magnification AND higher resolution than a light microscope

Cells divide in a series of stages called the cell cycle

Chromosomes contain large numbers of genes and are found in pairs in the nucleus

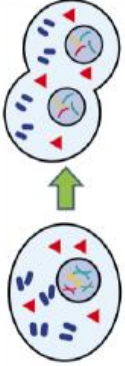
Genetic material is doubled and then divided into two identical cells



STAGE 1
Longest stage - normal cell activities take place
Each chromosome copied
Grows and increases sub-cellular structures



STAGE 2
Mitosis
One set of chromosomes pulled to each end
Nucleus divides



STAGE 3
Cell divides in two
Cytoplasm and cell membrane divide
Two cells genetically identical to parent cell form



A stem cell is an undifferentiated cell from which other cells can arise through differentiation

Embryonic stem cells can be made to differentiate into most types of human cells

Adult stem cells from bone marrow can form a smaller range of cells, including blood cells

Meristem tissue in plants can differentiate into any type of plant cell, throughout the life of the plant

Treatment with stem cells may be able to help conditions such as diabetes and paralysis

Therapeutic cloning involves producing an embryo with the same genes as the patient so that they are not rejected by the patient's body

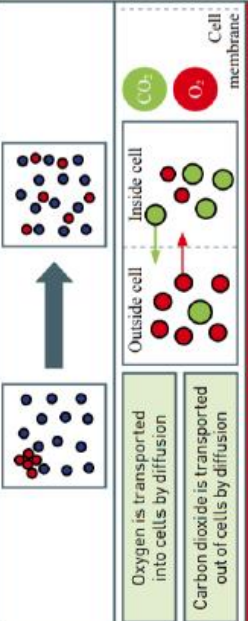
Using stem cells has potential risks such as viral infection

Some people have ethical or religious objections to the use of stem cells

Stem cells from plant meristems in plants can be used to produce clones to protect rare species from extinction and produce large numbers of plants with special features

Diffusion

The spreading out of the particles of any solution or gas from an area of higher concentration to an area of lower concentration

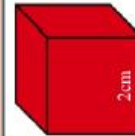


The rate of diffusion increases if ...

...the difference in concentrations is increased

...the temperature is increased

...the surface area of the membrane is increased



$$SA : V = 6 \times 2^2 : 2^3$$

$$= 24 : 8 = 3 : 1$$



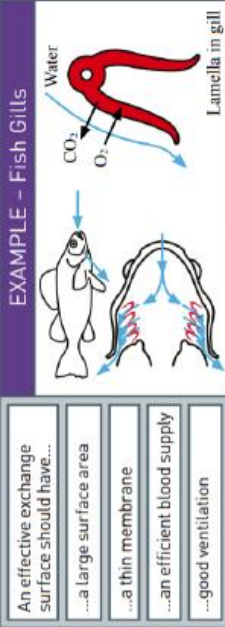
$$SA : V = 6 \times 1^2 : 1^3$$

$$= 6 : 1$$

Single celled organisms have relatively large surface area : volume ratios

This allows sufficient transport of molecules into and out of the cells

In multicellular organisms, surfaces and organ systems are specialised for exchanging materials



EXAMPLE - Fish Gills

An effective exchange surface should have...

...a large surface area

...a thin membrane

...an efficient blood supply

...good ventilation

Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane

● H₂O ● NaCl

Active transport moves dissolved substances against the concentration gradient

Requires energy from respiration

Sugar can pass from gut to blood by active transport

Chemistry 1

Science – Autumn Year 9

The Structure of an Atom

Particle	Relative charge	Relative mass
Proton	+1	1
Neutron	0	1
Electron	-1	Very small

Proton	Positively charged
Neutron	Neutral
Electron	Negatively charged

Describing an Atom

mass number **X**
atomic number

Mass number	The total number of protons and neutrons in the nucleus
Atomic number	The number of protons in the nucleus

X
The symbol for the element in the periodic table

EXAMPLE

⁷ Li	Li is the symbol for lithium
	Contains 3 protons
	Contains 7 - 3 = 4 neutrons

Atoms of the same element with different numbers of neutrons are called **Isotopes**

⁴ Li	⁵ Li	⁶ Li	⁷ Li
Isotopes of lithium			

Electronic Structure

Electrons are arranged in energy levels at fixed distances from the nucleus

Electrons occupy the lowest available energy levels (innermost available shells)

The lowest energy level can contain 2 electrons

The second and third energy levels can each contain 8 electrons

The electronic structure can be represented by numbers or by a diagram

EXAMPLE

¹⁹F

2, 7

Early Ideas

Matter consists of tiny spheres that cannot be divided called atoms

Discovery of the Electron

Negative Electron

Positive Charge

The plum pudding model - the atom is a ball of positive charge with negative electrons embedded in it

The Nuclear Atom

Proton	Positively Charged
Neutron	Neutral
Electron	Negatively Charged

Alpha Particle Scattering Experiment

Alpha Particle Source

Gold Foil

Vacuum Vessel

Detector

Observations

Most alpha particles pass straight through the gold foil

A small number of alpha particles are deflected through large angles

Protons and Neutrons

Further experiments led to the ideas that...

The positive charge of any nucleus can be divided up into identical particles - **protons**

Neutral particles exist within the nucleus - **neutrons**

The Bohr Model

Niels Bohr suggested electrons orbit the nucleus at specific distances

EXPLANATION

Positive Gold Nucleus

Negative Electrons

The gold atoms are mostly empty space

Most of the mass of the atom is concentrated in a positive nucleus

Compounds

Compounds are formed from elements by **chemical reactions**

A compound contains two or more elements chemically combined in fixed proportions

Chemical Equations

Chemical reactions can be represented by word equations or equations containing symbols and formulae

carbon + oxygen → carbon dioxide

$C + O_2 \rightarrow CO_2$

Formulae for Compounds

The formula of a compound gives the relative numbers of different atoms in it

Hydrogen Chloride	HCl
Water	H ₂ O
Ethene	C ₂ H ₄

Balancing Equations

Atoms are conserved in chemical reactions

methane + oxygen → carbon dioxide + water

$CH_4 + O_2 \rightarrow CO_2 + H_2O$ Not Balanced

$CH_4 + O_2 \rightarrow CO_2 + 2H_2O$ Not Balanced

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ Balanced

Formulae for Elements

The formula of an element gives the number of atoms in a unit

Ar	H	Br
Ar	H ₂	Br ₂

All substances are made of atoms

An **element** contains only one type of atom

An atom is the smallest part of an element that can exist

The periodic table shows about 100 different elements

The atom of each element is represented by a **chemical symbol**

He	Helium	Na	Sodium	O	Oxygen
----	--------	----	--------	---	--------

Science – Autumn Year 9

Mixtures can be separated by physical processes

A mixture consists of two or more elements or compounds not chemically combined together

The chemical properties of each substance are unchanged

No chemical processes are involved and no new substances are made

Filtration

Filter paper, Collected solid, Liquid

Distillation

Solvent + solute, Water out, Condenser, Heat, Solvent

Crystallisation

Small crystals, Evaporating basin, Water bath, Heat

Fractional Distillation

Fractionating column, Two liquids, Condenser, Heat, Liquid with lower boiling point

Technique	Components separated	Components collected
Filtration	Solid and Liquid	Both
Crystallisation	Solute and Solvent	Solute
Distillation	Solute and Solvent	Solvent
Fractional Distillation	Two liquids	Liquid with lower boiling point

Relative Atomic Mass [A_r]

An average value of atomic mass taking into account the abundance of isotopes of the element

EXAMPLE

⁶³Cu has an abundance of 69 %
⁶⁵Cu has an abundance of 31 %

Consider 100 copper atoms:
 $A_r \text{ of Cu} = \frac{(69 \times 63) + (31 \times 65)}{100} = 63.6$

Electronic Structure and Groups

Elements in the same group have the same number of electrons in the outer occupied shell

Group	1	2	7	0
Number of electrons in outer shell	1	2	7	Outer shell full

In the periodic table elements are arranged ...

... in order of atomic (proton) number

... so that elements with similar properties are in columns (groups)

Metals and Non-Metals

Elements that react to form positive ions are metals

Elements that do not form positive ions are non-metals

Groups

Group 0 (Noble Gases)

Very unreactive

Do not form molecules

Boiling points increase going down the group

Atoms have stable arrangements of electrons with full outer energy levels

Group 1 (Alkali Metals)

Very reactive

Atoms have one electron in outer shells

Reactivity increases going down the group

Outer electron becomes easier to remove going down the group

Group 7 (Halogens)

Very reactive

Atoms have seven electrons in outer shells

Boiling and melting points increase going down the group

Reactivity decreases going down the group

It becomes more difficult to capture an outer electron going down the group

Science – Autumn Year 9

Before nuclear atom model
known elements listed in
order of atomic weights

Elements			
wt		wt	
Hydrogen	1	Strontian	46
Azote	5	Barvies	68
Carbon	5.4	Iron	50
Oxygen	7	Zinc	56
Phosphorus	9	Copper	56
Sulphur	13	Lead	90
Magnesia	20	Silver	190
Lime	24	Gold	190
Soda	28	Platina	190
Potash	42	Mercury	167

Dalton measured these
atomic weights in
experiments around 1805

Early periodic tables were
incomplete and had some
elements in wrong groups

No	No	No	No
H 1	F 8	Cl 15	Co 22
Li 2	Na 9	K 16	Cu 23
G 3	Mg 10	Ca 17	Zn 24
Bo 4	Al 11	Cr 18	Y 25
C 5	Si 12	Ti 18	In 26
N 6	P 13	Mn 20	As 27
O 7	S 14	Fe 21	Se 28

Part of Newlands' table of
octaves produced in 1865

Hydrogen, cobalt, copper and zinc –
examples of misplaced elements

Mendeleev left gaps and changed
the order of some elements

H = 1			Cu = 63	Ag = 108
	Be = 9	Mg = 24	Zn = 65	Cd = 112
	B = 11	Al = 27	? = 68	Ur = 116
	C = 12	Si = 28	? = 70	Sn = 118
	N = 14	P = 31	As = 75	Sb = 122
	O = 16	S = 32	Se = 79	Te = 128
	F = 19	Cl = 35	Br = 80	I = 127
Li = 7	Na = 23	K = 39	Rb = 85	Cs = 133

Trends in Properties

Gallium and germanium were later discovered
to fill the gaps between zinc and arsenic

The discovery of the proton and atomic number justified
the swapping round of iodine (I) and tellurium (Te)

The noble gases were later
discovered and added as group 0

Science – Autumn Year 9

Physics 1

A **System** is an object or group of objects

Projecting a ball upwards



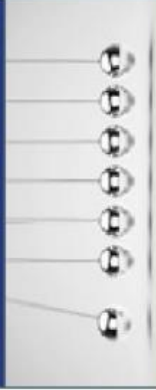
Kinetic Energy → Gravitational Potential Energy

Bringing water to the boil in an electric kettle



Electrical Energy → Thermal Energy

A moving object hitting an obstacle



Kinetic Energy → Thermal Energy

Boiling water on a gas stove



Chemical Energy → Internal Energy

Slowing down a vehicle



Kinetic Energy → Thermal Energy

Using a torch



Chemical Energy → Thermal Energy + Light Energy

Energy is **conserved** Energy can be transferred from one store to another, but cannot be created or destroyed

Energy is the ability to do work – energy is a quantity that must be transferred between objects in order to bring about change

Kinetic Energy

The energy stored in an object because of its motion



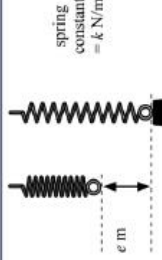
$$E_k = \frac{1}{2} m v^2$$

If $m = 800 \text{ kg}$ and $v = 20 \text{ m/s}$

$$E_k = \frac{1}{2} m v^2 = \frac{1}{2} \times 800 \times 20^2 = \frac{1}{2} \times 800 \times 400 = 160,000 \text{ J}$$

Elastic Potential Energy

The energy stored in a stretched spring



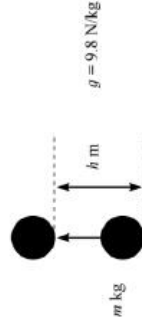
$$E_e = \frac{1}{2} k e^2$$

If $k = 20 \text{ N/m}$ and $e = 0.2 \text{ m}$

$$E_e = \frac{1}{2} k e^2 = \frac{1}{2} \times 20 \times 0.2^2 = \frac{1}{2} \times 20 \times 0.04 = 0.40 \text{ J}$$

Gravitational Potential Energy

The energy stored in an object because of its position in a gravitational field



$$E_p = m g h$$

$E_p = \text{Change in Gravitational Potential Energy}$

If $m = 2.5 \text{ kg}$ and $h = 1.5 \text{ m}$

$$E_p = m g h = 2.5 \times 9.8 \times 1.5 = 36.75 \text{ J}$$

Power is the rate at which energy is transferred or the rate at which work is done

$$\text{power} = \frac{\text{energy transferred}}{\text{time}} = \frac{\text{work done}}{\text{time}}$$

$$P = \frac{E}{t} = \frac{W}{t}$$

Power is measured in watts (W)

$$1 \text{ W} = 1 \text{ J/s}$$

General Examples



A 50 W light bulb transfers 50 J electrical energy as thermal energy and light energy every second



A 1.5 kW generator transfers 1,500 J chemical energy as electrical energy and thermal energy every second

Calculations



An electric heater transfers 72,000 J electrical energy as thermal energy in one minute



A climber of mass 40 kg climbs a 15 m vertical wall in two minutes

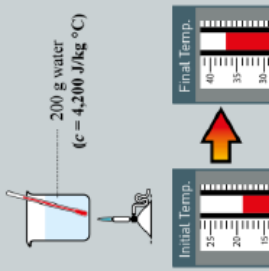
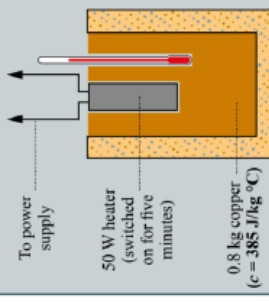
$$P = \frac{E}{t} = \frac{72,000}{60}$$

$$= 1,200 \text{ W}$$

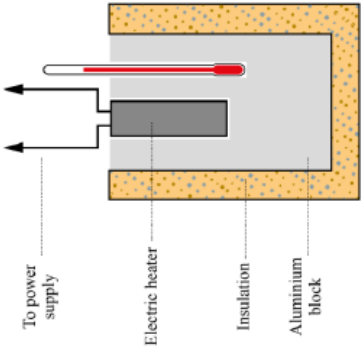
$$P = \frac{W}{t} = \frac{E_p \text{ gained}}{t} = \frac{m g h}{t}$$

$$= \frac{40 \times 9.8 \times 15}{120} = 49 \text{ W}$$

Science – Autumn Year 9

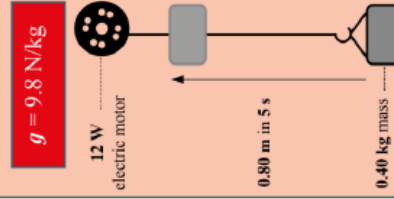
The thermal energy stored in an object is the total kinetic energy of the particles in the object		
Heating an object can increase its thermal energy and its temperature		
Specific Heat Capacity		Units
The amount of energy required to raise the temperature of one kilogram of a substance by one degree Celsius		J/kg °C
Equation	change in thermal energy = mass × specific heat capacity × temperature change	
$E = m c \Delta\theta$		
$E = 0.20 \times 4,200 \times (37 - 19)$ $= 0.20 \times 4,200 \times 18$ $= \mathbf{15,120 \text{ J}}$		
		
Calculating Energy		
$E = m c \Delta\theta$ $P t = m c \Delta\theta$ $50 \times (5 \times 60) = 0.8 \times 385 \times \Delta\theta$ $15,000 = 308 \times \Delta\theta$ $\Delta\theta = \frac{15,000}{308} = \mathbf{49 \text{ °C}}$		
Calculating Temperature Rise		
		

Specific Heat Capacity measures the amount of energy required to raise the temperature of one kilogram of a substance by one degree Celsius

Equation	change in thermal energy = mass × specific heat capacity × temperature change		$E = m \ c \ \Delta\theta$
EQUIPMENT	PROCEDURE		
	Step 1	Measure mass of block	Power of Heater (P) 50 W
	Step 2	Measure initial temperature of block	Time (t) 300 s
	Step 3	Switch on heater and start clock	Initial Temperature (θ_i) 20 °C
	Step 4	Switch off heater after 5 minutes	Final Temperature (θ_f) 38 °C
	Step 5	Measure final temperature of block when thermometer reading has stopped changing	Mass of Block (m) 0.80 kg
$E = m \ c \ \Delta\theta$ $P \ t = m \ c \ (\theta_f - \theta_i)$ $50 \times 300 = 0.80 \times c \times (38 - 20)$ $15,000 = 14.4 \times c$ $c = \frac{15,000}{14.4} = \mathbf{1042 \ J/kg \ ^\circ C}$			
PROCESSING THE RESULTS			

The **efficiency** of a device is the fraction or percentage of the energy supplied that is usefully transferred

Equation	efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$	
----------	--	--

Calculating Efficiency Examples		
	A light bulb produces 120 J light energy from 1,500 J electrical energy	$\frac{\text{useful output energy transfer}}{\text{total input energy transfer}} = \frac{120}{1,500} = \mathbf{0.08}$
	A speaker has an electrical power of 500 W and produces sound at a rate of 240 W	$\frac{\text{useful power output}}{\text{Total power input}} = \frac{240}{500} = \mathbf{0.48}$
		
$\text{efficiency} = \frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$ $= \frac{\text{gravitational potential energy gained}}{\text{electrical energy supplied}}$ $= \frac{m g h}{P t}$ $= \frac{0.40 \times 9.8 \times 0.80}{12 \times 5}$ $= \frac{3.136}{60} = \mathbf{0.052}$		

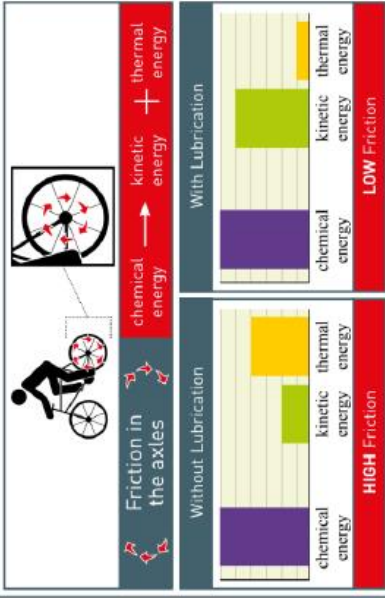
Science – Autumn Year 9

Reducing Unwanted Energy Transfers

Energy can be transferred from one store to another, but cannot be created or destroyed.
HOWEVER, energy can be **dissipated** so that it is stored in less useful ways

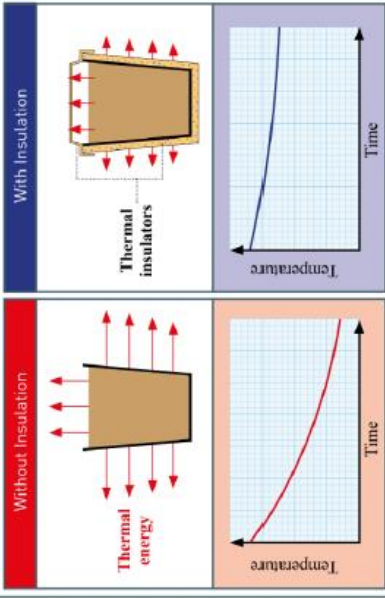
Reducing Friction

Lubrication reduces the transfer of thermal energy to the surroundings due to friction



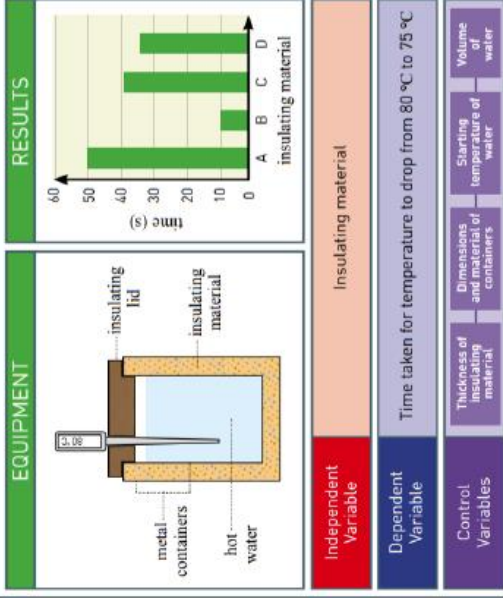
Reducing Conduction

Thermal insulators have low thermal conductivities and so transfer thermal energy slowly across them

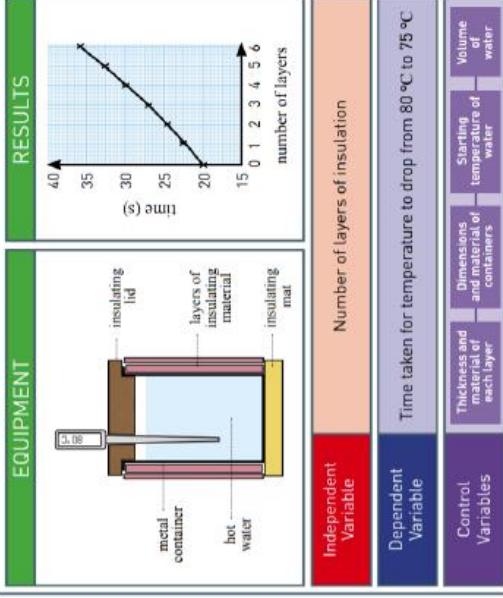


Thermal insulators have low thermal conductivities and so transfer thermal energy slowly across them

Comparing Insulators



Investigating Insulator Thickness



Energy resources can be evaluated in three ways

Fossil Fuels	Nuclear	Renewable / Non-Renewable	Reliability	Environmental Effects
Being used more quickly than produced Can be burned continuously Global Warming Air Pollution Extraction Effects	Uranium-235 will run out Can produce electricity continuously Radioactive Waste Extraction Effects			
Reservoirs re-fill Can produce electricity continuously Flooding	Plants can be re-grown Can produce electricity continuously Some Global Warming Some Air Pollution Natural Resources Used			
Wind will not run out Wind speeds vary – depends on location Visual pollution	Sun always produces light No electricity produced in low light conditions Visual pollution Land Used			

Art – Autumn Year 9



KS3 YEAR 9 ART PORTRAITURE

Inspired by Bisa Butler & African Textile Art voice. We will be creating an expressive self-portrait using oil pastels and African-inspired Lino pattern background, reflecting identity, culture, and ambition.



Artist Bisa Butler

Bisa Butler is an African American fibre artist who is credited with creating a new genre of quilting, using photographs, sketches, and vivid traditional textiles to create vibrant life-size portraits in fabric. She is known for celebrating Black life and identity, portraying both everyday people and notable historical figures. Although quilting has long been considered a craft, Butler's use of interdisciplinary methods to create elaborate quilts that look like paintings is bringing recognition both to her work and to the medium of quilting as a whole, as a fine art form.

Terminology

Mark-making: the act of creating lines, dots, patterns, textures, and shapes on a surface.

Refine: to work continue work on an artwork to elevate the piece until it feels more complete.

Transparent: materials that allows the surface or details beneath to show through.

Opaque: a solid colour that completely covers something and prevents any detail from showing through.

Sgraffito: a technique whereby an artist scratches through a surface layer of colour, to reveal another colour underneath.

Continuous line drawing: completing an entire drawing without lifting the drawing tool from the surface.



Elements of Art

Complementary colours: colours that sit opposite each other on the colour wheel, that draw the eye when used together.

Harmonious colours: colours that lie alongside one another on the colour wheel, that creates a visual calmness.

Warm colours: bright, earthier tones, such as red, orange, and yellow.

Cool colours: calmer, soothing tones such as blue, purple, and green.

Composition: the arrangement of elements to create a completed work that feels whole and appeals visually.



Tech – Autumn Year 9

Year 9 3D Design Knowledge Organiser

Project : Human Figure in Space Inspired by Antony Gormley

Project Overview

In this project, you will explore sculpture inspired by the artist **Antony Gormley**, particularly his famous work *The Angel of the North*. You will work through a GCSE-style creative process, developing ideas from research to a final 3D sculpture.

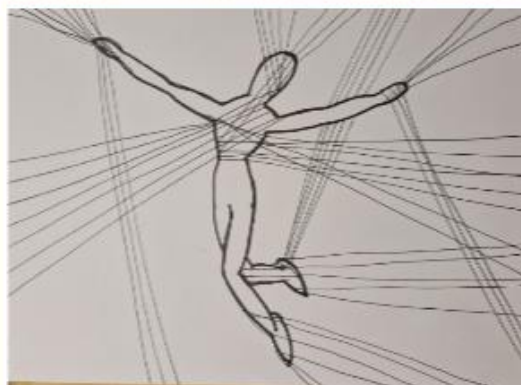
Artist Research – Antony Gormley

- Study the artist and his work
- Key focus: *The Angel of the North*
- Include:
 - Who is Antony Gormley?
 - What materials does he use?
 - What inspires his work?
- Analysis of one sculpture

Experiments

You will explore different ways of making sculpture:

- **Sketching** (observational and design drawings)
- **Wire structures** (armatures)
- **3D modelling materials** (clay, card, foil etc.)
- **Exploring the human form** (proportion and pose)



Materials & Techniques

- **Wire:** Used for structure and support
- **Clay:** A modelling material
- **Card:** Used for building shapes
- **Texture:** The surface quality (smooth, rough, etc.)
- **Joining techniques:** Methods for connecting materials

Analysis & Evaluation Terms

- **Annotate:** Add notes to explain your work
- **Evaluate:** Reflect on strengths and weaknesses
- **Develop:** Improve and refine ideas
- **Experiment:** Try out new techniques and materials

Final Response (Final Sculpture)

- Design and create your own **Gormley-inspired figure**
- Consider:
 - Shape and proportion
 - Balance and stability
 - Texture and surface
 - Scale

Key Skills

- Observational drawing
- Designing and planning
- 3D construction techniques
- Problem solving
- Evaluating and improving work

Key Terminology Art & Design Terms

- **Sculpture:** A 3D artwork
- **Form:** The shape and structure of an object
- **Structure:** How something is built or held together
- **Proportion:** The size relationship between parts of a figure
- **Scale:** The size of an artwork compared to real life
- **Composition:** Arrangement of elements in a piece

3D Design Terms

- **Armature:** A framework (often wire) used to support a sculpture
- **Modelling:** Shaping a material into a form
- **Construction:** Building or assembling materials
- **Manipulation:** Changing materials by bending, shaping, or forming
- **Relief:** A sculpture that projects from a flat background
- **Freestanding:** A sculpture that stands independently

Food Preparation Year 9 knowledge organizer

Why am I learning this?

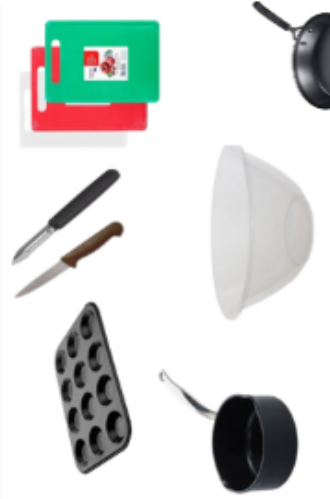
Students to learn to cook a range of dishes safely and hygienically and apply their knowledge of nutrition. In addition, they will consider consumer issues, food and its functions and new technologies. They will explore dietary needs through life stages and delve deeper into nutrient's macro and micronutrients.

Students will Research, explore and analyse the work of others to identify user needs. Create a Specification, to inform recipes that meet user's needs. Generate, Communicate and Develop ideas. They will also Select and use of tools, techniques, processes, and equipment, materials, components, and ingredients. Finally, students will test Evaluate and refine ideas.

Vegetable Knife, Muffin baking tray, vegetable peeler, green/red chopping board, frying pan, medium saucepans, mixing bowl, measuring jug etc

Recipes:

Risotto- Absorbing method.
Fusilli Lasagna- Dovetailing
Quiche-Coagulation

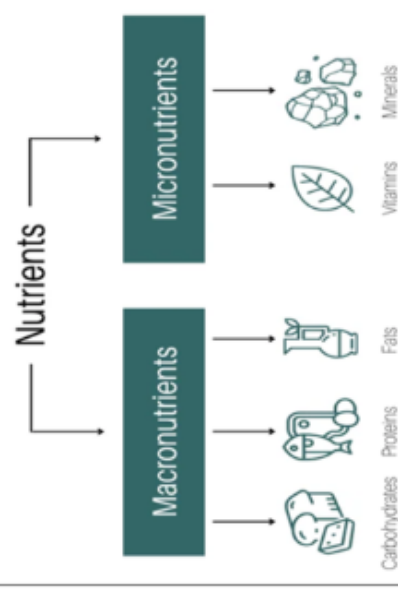


Links to other subjects

- Good knowledge of Eatwell plate and nutritional benefits.
- Independently Selecting and using tools, techniques, processes, and equipment; materials, components, and ingredients in selected recipes.

Learning Objectives

- To be able to recognise and name nutrients within a healthy diet.
- Students will be able to name nutrients within life stages.
- Prepare and cook using the absorption method and the coagulation method.
- Present food attractively and safely.



Key Words

- **Eat Well Guide**-Government recommended nutritional guidelines.
- **Specification**- Specific info on recipes
- **Dietary needs**- through life stages.
- **Reduction**- cooking process of monitoring an ingredient with liquid whilst cooking through another ingredient.
- **Shortening**- Using the rubbing in method fat to flour.
- **Aeration**- Whisking ingredients with liquid to produce air pockets to encourage process to rise when cooked.

Health & Safety in the Kitchen

- Use knives safely (claw grip & bridge hold)
- Avoid **cross-contamination** (separate raw and ready-to-eat foods)
- Wash hands regularly
- Tie hair back and wear appropriate clothing
- Use ovens and equipment carefully

Links to other subjects

- **English** – reading recipes, key vocabulary, instructions
- **Science** – chemical reactions, yeast fermentation, function of ingredients
- **Maths** – weighing, measuring, ratios, timing
- **Geography** – sourcing ingredients, food origins

Drama – Autumn Year 9

REAL LIFE.
REAL CHOICES.
REAL CONSEQUENCES.



YEAR 9 KNOWLEDGE ORGANISER DNA – A SCRIPT BY DENNIS KELLY

A powerful contemporary play that explores identity, choices, consequences and the impact of one moment in time.

ABOUT THE PLAY

DNA follows a group of teenagers whose lives collide after a night out. It is told in a non-linear structure, jumping between the past, present and future. The play explores how one decision can have a lasting impact.



1. VOCAL SKILLS

Clear and effective use of your voice helps the audience understand the story and your character.

- **PITCH** – vary your pitch to show emotion and emphasis.
- **TONE** – use tone to reflect your character's attitude or feelings.
- **PACE** – vary how fast or slow you speak.
- **VOLUME** – project your voice and change volume for effect.
- **PAUSE** – use pauses to create tension or allow the audience to absorb information.
- **CLARITY** – speak clearly so your words are understood.

Your voice is a powerful storytelling tool.



ONE MOMENT.
ONE CHOICE.
EVERYTHING
CHANGES:



2. PHYSICALITY

Your body communicates just as much as your words.



- **POSTURE** – shows confidence, fear, attitude, mood.
- **MOVEMENT** – how your character moves around the space and why.
- **GESTURE** – use purposeful movement to express thoughts and emotions.
- **FACIAL EXPRESSION** – show what your character is feeling inside.
- **ENERGY** – consider the energy and physical choices of your character.

Think: how would your character walk, sit, stand and react?

3. INTERPRETING A SCRIPT



A script is not just words on a page – it is a blueprint.

- Read your script carefully and understand the story.
- Look at character, setting, relationships and events.
- Identify key moments and turning points.
- Highlight powerful words and phrases.

Ask yourself: What is happening? Why is it happening?
How does my character feel and why?

4. INTERPRETING SUBTEXT



Subtext is the hidden meaning behind what is said.

- Characters often say one thing but mean another.
- Consider what your character is really thinking or feeling.
- Use vocal tone, pauses and body language to show subtext.
- Ask: What does my character want? What are they hiding?

Subtext adds depth and makes your performance believable.

5. REHEARSAL TECHNIQUES



Effective rehearsal helps you and your group improve.

- **TABLE WORK** – read and discuss the script, analyse characters.
- **MARKING THE SCRIPT** – note key moments, subtext, movements and ideas.
- **SCENE WORK** – rehearse scenes, focusing on choices and relationships.
- **FEEDBACK** – give and receive constructive feedback.
- **RUNNING THROUGH** – practise scenes in performance order.

Rehearse with purpose and be open to new ideas.

6. TIMING AND INTERACTION



Good timing and interaction create a natural and engaging performance.

- React honestly and in the moment.
- Listen to your scene partner.
- Use timing of speech, pauses and movement for effect.
- Overlap, interrupt or pause for dramatic impact.
- Make your interactions feel real and connected.

Stay present and respond truthfully.

7. UNDERSTANDING THEMES



Understanding the themes helps you make choices and connect with the audience.

- **IDENTITY** – who are we? How do we see ourselves and how do others see us?
- **CHOICES AND CONSEQUENCES** – how one decision can change everything.
- **FRIENDSHIP AND LOYALTY** – who do we trust and why?
- **PRESSURE AND INFLUENCE** – how friends, family and society affect decisions.
- **TRUTH AND PERSPECTIVE** – everyone sees events differently.

Themes run through the whole play – use them to guide your performance.

KEY THINGS TO REMEMBER



- ✓ Know your character inside and out.
- ✓ Use your voice and body to communicate meaning.
- ✓ Look beyond the words – explore the subtext.
- ✓ Rehearse with focus, listen and take risks.
- ✓ Connect with your scene partners and the audience.
- ✓ Stay truthful and committed at all times.

*In DNA,
one moment
can change
everything.*

TOP TIPS



- ★ Be prepared and learn your lines.
- ★ Make clear, strong choices.
- ★ Keep your character consistent.
- ★ Use the space confidently.
- ★ Support and trust your group.
- ★ Enjoy the process and have fun!

KEY QUOTE

*“It's not what
you do.
It's what
happens next.”
– DNA*

THINK IT. FEEL IT. SAY IT. DO IT. →

BE TRUTHFUL. BE BOLD. BE YOU.



DRAMA IS LIFE. LIVE IT.

Subject specific words

TIER 1	TIER 2	TIER 3
Ambition, Inclusion, Respect	Explain	Challenge
Q & A	Dribbling	Comprehensively
Jump	Striking	Justify
Run	Feedback	Optimise
Ball	Naming of muscles	Bio-mechanics
Catch	Co ordination	Formation
Throw	Breaststroke	Tactics
Swim	Front crawl	Extension
Do	Backstroke	Technique
Fitness	Evaluate	Components
Bounce	Analise	Composition
Move	Describe	
Water	Discussion	
kick	Example	
pass	Explain	
Training	Skills	

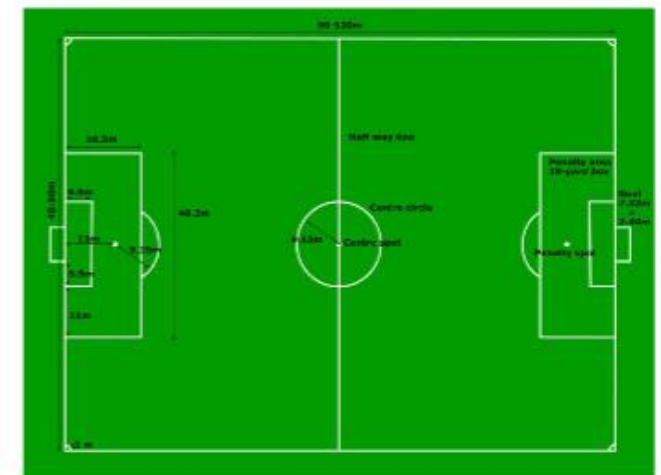
PE – Autumn Year 9

FOOTBALL



Decision Making,
Formations,
Set Pieces

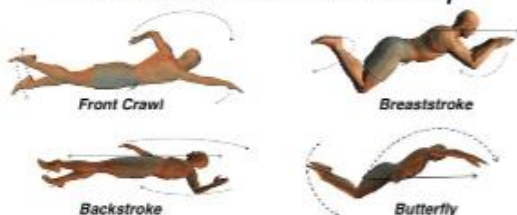
Passing, Dribbling skills
Shooting, Tackling
Receiving, Heading



PE – Autumn Year 9

SWIMMING

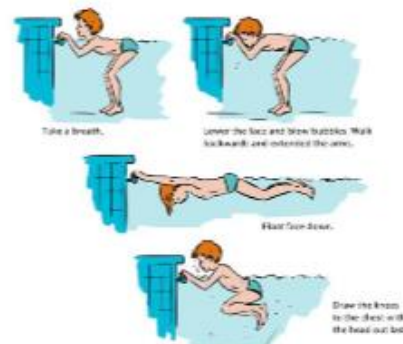
4 Main strokes
Front crawl, Breaststroke,
Backstroke and Butterfly.



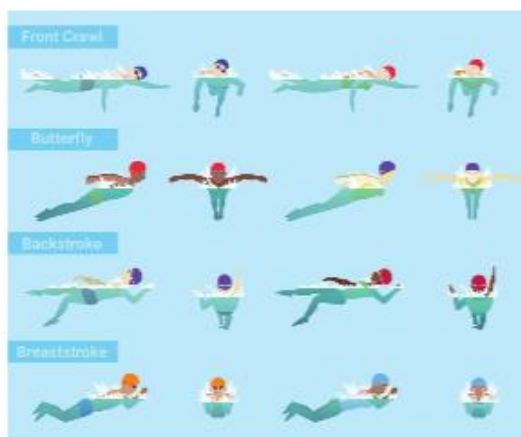
Basic Skills

- Breathing (Endurance)
- Breathing (Timing)
- Diving
- Flip-Turn
- Kicking

Water confidence

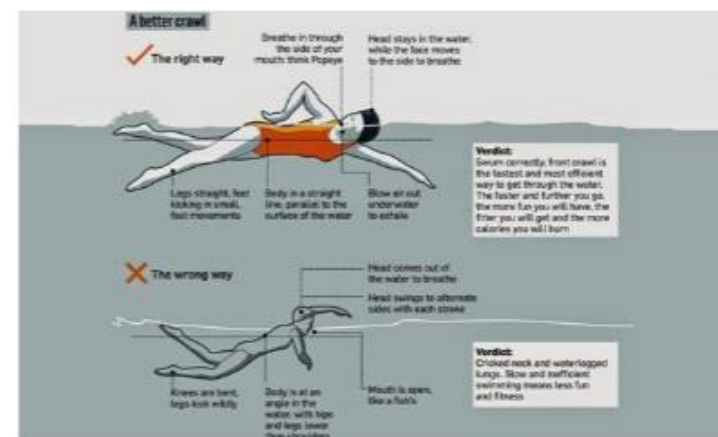


POOL RULES



SWIMMING SKILLS:

Essential swimming skills include being able to enter the water and resurface, controlling breathing, floating, turning, and moving to safety in the water, Treading water, sculling and exiting.



French – Autumn Year 9

Year 9 French Autumn Term

Jobs and future plans



Please also login to
LanguageNut.com to further
deepen your revision.

Mes ambitions • My ambitions

Qu'est-ce que tu voudrais faire plus tard?	What would you like to do later on?
Je voudrais être ...	I would like to be a(n) ...
acteur/actrice	actor
chanteur/chanteuse	singer
chauffeur de taxi/camion	taxi/lorry driver
contrôleur aérien	air-traffic controller
designer de chaussures	shoe designer
directeur/directrice de magasin	store manager
footballeur	footballer
guide touristique	tourist guide
ingénieur	engineer
journaliste	journalist
pâtissier/pâtissière	pastry chef
pilote	pilot
professeur	teacher
réceptionniste	receptionist
serveur/serveuse	waiter/waitress
secrétaire	secretary
vétérinaire	vet
webdesigner	web designer

Les opinions • Opinions

C'est mon rêve!	It's my dream!
Ce serait bien.	It would be good.
Pas vraiment.	Not really.
Ce serait ennuyeux.	It would be boring.
Pourquoi pas?	Why not?
Tu rigoles!	You're joking!
Ça ne m'intéresse pas du tout.	That doesn't interest me at all.

Quand j'étais • When I was younger ... plus jeune

j'étais	I was
j'avais	I used to have
j'aimais	I used to like
je faisais	I used to do
je jouais	I used to play
je regardais	I used to watch
je n'aimais pas	I didn't use to like

À l'avenir • In the future

Je quitterai le collège.	I will leave school.
Je ferai un apprentissage.	I will do an apprenticeship.
Je ferai le tour du monde.	I will go round the world.
Je voyagerai.	I will travel.
je travaillerai	I will work
Je tomberai amoureux/ amoureuse de quelqu'un.	I will fall in love with someone.
j'habiterai	I will live
J'aurai une Ferrari.	I will have a Ferrari.
je serai	I will be

Future tense: er verbs

The future stem is the infinitive e.g. travailler
je travaillerai
= I will work

avoir, être, aller and faire have irregular future stems, but take the same endings.

j'aurai	I will have
je serai	I will be
j'irai	I will go
je ferai	I will do/make

Les mots essentiels • High-frequency words

car	for
comme	as
lorsque	when
par contre	on the other hand
par exemple	for example
puisque	since/as
si	if
surtout	especially

French – Autumn Year 9

Qu'est-ce que tu veux faire dans le futur? *What do you want to do in the future?*

When Dans dix ans (In ten years) Dans le futur (In the future) Après le lycée (After high school) Plus tard, (Later.)	Going to do je vais (I'm going) je voudrais (I'd like) étudier (to study) travailler (to work) vivre (to live)		l'architecture (architecture) le droit (law) le codage (coding) l'informatique (IT)	les langues (languages) la médecine (medicine)	à l'université (at university)		
			à la campagne (in the countryside) dans une grande ville (in a big city)	au Japon (in Japan) à New York (in New York)			
	Going to be je veux être (I want to be) je voudrais être (I'd like to be) je vais faire une formation pour être (I'm going to train to be)		acteur ([an] actor) artisan ([a] tradesman) avocat ([a] lawyer (m))	cuisinier ([a] cook (m)) écrivain ([a] writer (m)) électricien ([an] electrician (m))	influenceur ([an] influencer (m)) informaticien ([a] computer scientist (m)) ingénieur ([an] engineer (m))	mécanicien ([a] mechanic (m)) professeur ([a] teacher (m)) YouTubeur ([a] YouTuber (m))	
			artiste ([an] artist) actrice ([an] actress) artisane ([a] tradeswoman) avocate ([a] lawyer (f)) cuisinière ([a] cook (f))	comptable ([an] accountant) écrivaine ([a] writer (f)) électricienne ([an] electrician (f)) influenceuse ([an] influencer (f)) informaticienne ([a] computer scientist (f))	médecin ([a] doctor) ingénieure ([an] engineer (f)) mécanicienne ([a] mechanic (f)) professeure ([a] teacher (f)) YouTubeuse ([a] YouTuber (f))	scientifique ([a] scientist)	
À mon avis, (In my opinion.) Pour moi, (For me.)	le plus important dans la vie est de /d'/ (the most important thing in life is to)		aider les gens (-to help people) apprendre beaucoup de choses (-to learn many things)	être célèbre (-to be famous) être heureux (-to be happy (m))	être heureuse (-to be happy (f)) gagner beaucoup d'argent (-to earn a lot of money)	What's important	
Who inspires me Une personne célèbre (A famous person)	qui m'inspire (who inspire me)	est (is)	Kylian Mbappé (Kylian Mbappé) Taylor Swift (Taylor Swift)	parce qu'il est (because he is) parce qu'elle est (because she is)	talentueux (talented (m)) talentueuse (talented (f))	travailleur (hard-working (m)) travailleuse (hard-working (f))	Reason

Spanish – Autumn Year 9

Year 9 Spanish

Autumn Term

Mis Vacaciones



Please also login to
LanguageNut.com to
further deepen your
revision.



¿Adónde fuiste de
vacaciones?

Fui de vacaciones a...

- Francia
- Turquía
- Gales
- Italia

¿Cómo viajaste?

Viajé...

- en avión
- en barco y en coche
- en tren
- en autocar

¿Con quién fuiste?

Fui...

- con mi insti
- con mi familia
- con mi mejor amigo/a
- solo/a

¿Qué hiciste?

- Hice turismo y saqué fotos
- Compré recuerdos
- Tomé el sol y descansé
- Comí muchos helados

Fue =
It was

Fui =
I went



	Past Weather
	Llovió
	Nevó
	Hubo tormenta
	Hubo viento
	Hizo calor
	Hizo frío
	Hizo buen tiempo
	Hizo mal tiempo

El pretérito	AR	ER/ IR
1. Yo (I)	É	Í
2. Tú (you)	ASTE	ISTE
3. Él/ella (he/she)	Ó	ÍÓ
4. Nosotros (we)	AMOS	IMOS
5. Vosotros (you plural)	ÁSTEIS	ÍSTEIS
6. Ellos/as (they)	ARON	IERON

Useful holiday verbs – Don't forget to conjugate!



<u>aprender</u> a hacer vela	to learn to sail	<u>comprar</u> recuerdos	to buy souvenirs	<u>jugar</u> al baloncesto	to play basketball
<u>tomar</u> el sol	to sunbathe	<u>salir</u> con amigos	to go out with friends	<u>sacar</u> fotos	to take photos
<u>ver</u> un partido	to watch a match	<u>nadar</u> en el mar	to swim in the sea	<u>hacer</u> turismo	to go sightseeing

Spanish – Autumn Year 9

¿Qué hiciste en las vacaciones pasadas? 					
Time Expression	Destination	With	Pronoun	Infinitive Verb Don't forget to conjugate!	Opinion
El año pasado <i>Last year</i>	fui de vacaciones a... Grecia	con... mi madre/padre	Yo <i>I</i> Tú <i>you</i>	tom <u>ar</u> el sol	Fue... fenomenal <i>amazing</i>
		mi hermano/a	Mi madre/padre/ hermano/amigo	visit <u>ar</u> monumentos	divertido <i>fun</i>
El verano pasado <i>Last summer</i>	Turquía España	mi familia	Mi familia y yo/ Mis hermanos y yo <i>My family and I/ My brothers and I</i>	mont <u>ar</u> a caballo	interesante <i>interesting</i>
		mis padres		sac <u>ar</u> fotos	emocionante <i>exciting</i>
Hace dos meses <i>2 months ago</i>	Francia Italia	mis abuelos	Vosotros <i>You lot</i>	compr <u>ar</u> recuerdos	aburrido <i>boring</i>
		mis amigos		nad <u>ar</u> en el mar	un desastre <i>a disaster</i>
Hace una semana <i>One week ago</i>	Gales		Mis padres/ mis amigos <i>My parents/friends</i>	descans <u>ar</u>	

¿Cómo fueron tus vacaciones pasadas?

El verano pasado fui de vacaciones a Grecia con mi familia. Viajamos en avión porque fue más rápido que ir en barco. Tomé el sol en la playa pero mi padre visitó monumentos. En mi opinión lo pasé bomba ya que fue emocionante y hizo calor. Sin embargo lo peor fue cuando perdí mi pasaporte.

Geography – Autumn Year 9

Key Words		What is Development?		Development indicators	
Development	How good the quality of life of a group of people is.	When we are talking about development, we are referring to the quality of life in a country or place .		There are several standard 'indicators of development'. This are the statistics that we use to compare countries around the world in real life. This helps us determine which countries are the most developed and which are the least developed	
Quality of Life	The extent to which a person receives the things that they need; food, shelter, education and healthcare.	Quality of life is what you have access to that helps make your life better. Some examples might be whether you have food and water, education, healthcare and housing.		Birth Rate	The number of babies born, per 1000 people, each year.
HIC/LIC	High Income Country/ Low Income Country	Places with <u>good</u> quality of life are <u>more</u> developed.		Death Rate	The number of deaths, per 1000 people, each year.
		Places with <u>poor</u> quality of life are <u>less</u> developed.		Life Expectancy	How long a person is expected to live.
Multiplier Effect	The 'snowballing' of economic activity. e.g. if new jobs are created, people who take them have money to spend in the shops, which means that more shop workers are needed. ¹	Development		Gross Domestic Product	The total money made by a country each year (\$). Also called GDP.
Development Gap	The difference between the more developed HIC countries and the less developed LIC countries.			Gross Domestic Product per Capita	The GDP of a country divided by the number of people in the population.
Development Indicator	Something which can be measured to indicate how developed a place is, e.g. Life Expectancy	Causes of the Development Gap		Adult Literacy Rate	The percentage of people, over 15 years, who can read and write.
The Development Gap When we talk about the development gap, we are talking about 'the difference in quality of life between different countries.' We are thinking about how in some countries, like the UK, we have a very good quality of life, however, not everyone around the world does. The countries in the northern hemisphere along with Australia and New Zealand) were considered the 'rich' countries and the countries in the south were considered the 'poor' countries.		War	Wars stop people being able to access food, healthcare and education. They also kill and injure many people.	Development Over Time	
		Disease	Diseases, such as Malaria in Africa, prevent people from working. As a result, they cannot earn money.	Over time the development of a country can change. As countries get richer and more developed, they can invest in houses, education, healthcare etc. which improves the life of people in their country. However, this isn't always they case. In some parts of the world development can get worse and people can experience a poorer quality of life.	
		Natural Disasters	Natural disasters, such as earthquakes, destroy buildings, roads and communications. This reduces peoples' quality of life.	Improving Development	
		Drought and famine	During drought (when there is little rain), food cannot be grown. As a result many people may starve.	Schools	If a country has schools it means that children can get an education. If children get an education, it means they can get a well paid job when they grow up.
		Bad governments	Not all governments have the wellbeing of their people at heart. Corrupt governments keep all of the money for themselves.	Hospitals	If a country has good hospitals and doctors it means that people that are ill can get treatment. This means that people are well enough to go to work and children are well enough to go to school.
		Factors that reduce the development gap.			
		Tourism	Tourists from rich countries bring money to poor countries. They also provide jobs in the tourist industry. When people can work, their lives are better. When people work they can pay tax to the government which in turn can be invested in order to improve development. Tourism also helps to create the multiplier effect .		

Geography – Autumn Year 9

Key Words		Different kinds of jobs		How Developed is the UK?	
Sustainability	Living in a way that preserves the planet and resources for future generations.	Primary	People with primary jobs create raw products. These are things that are grown, like wheat, or mined from the ground, like iron.		The UK is one of the most developed countries in the world. The current HDI score: 0.946. The current HDI ranking: 13th (Iceland is currently number 1) Of course, to get this level of development, Britain has gone through a lot of change. Much of this change has been linked to changes in industry. The north south divide is an imaginary line across the UK. Some people think that people living north of the line live less developed lives than those living south of the line. The idea is that the people who live in the south earn more money, have more opportunities, better jobs and have access to better services than the people who live in the north of England. In recent years the government have been trying to solve this problem by trying to encourage more investment into the north. One strategy being used to do this is HS2 – a high speed rail between Birmingham and London. HS2 is a very very expensive scheme! By the end of Phase 1, it is estimated to cost £67-£83 billion. It has also had significant impact on the environment and the land of people that the tracks are planned to go through.
Sustainable Development Goals	The goals set by the United Nations to try and make the world more sustainable.	Secondary	People with secondary jobs work in factories. They turn the primary products into secondary products, for example, metal into a car door.		
County	Smaller areas that the UK is broken up into. For example, we live in the West Midlands.	Tertiary	People with tertiary jobs provide a service for someone else. Examples include teachers, gas repair people, police and shop workers.		
Region	An area or small part of a county.	In less developed countries, such as Kenya, most people will have primary jobs. Only a few will have tertiary jobs.			
Raw Material	A natural resource such as coal, wheat, cotton etc.	In more developed countries most people will have tertiary jobs. Only a few will have primary jobs.			
HDI	The Human Development Index is a measure of the quality of life in a country	Sustainable Development Goals			
Sustainable Goals		In 2015 the United Nations created 17 global sustainable development goals. Each goal will help our world work towards sustainable development. These are goals that all countries have agreed to try to meet. They have agreed to try to achieve these goals by 2030!			
GOAL 1: No Poverty GOAL 2: Zero Hunger GOAL 3: Good Health and Well-being GOAL 4: Quality Education GOAL 5: Gender Equality GOAL 6: Clean Water and Sanitation GOAL 7: Affordable and Clean Energy GOAL 8: Decent Work and Economic Growth GOAL 9: Industry, Innovation and Infrastructure GOAL 10: Reduced Inequality GOAL 11: Sustainable Cities and Communities GOAL 12: Responsible Consumption and Production GOAL 13: Climate Action GOAL 14: Life Below Water GOAL 15: Life on Land GOAL 16: Peace and Justice Strong Institutions GOAL 17: Partnerships to achieve the Goal 		Location of Dubai			
		The United Arab Emirates or the Emirates, is a country in Western Asia (sometimes referred to as the Middle East). It is located at the eastern end of the Arabian Peninsula, and shares borders with Oman and Saudi Arabia.			
		Dubai is located on the Persian Gulf, to the northeast of the United Arab Emirates.			
					
		How Developed is Brazil?			
		Brazil was one of the first country to become a NEE alongside Russia, India, China and South Africa. These are known as the BRICS. These were the first countries that started becoming richer and quality of life started to improve. Nowadays, there are lots more countries in this category. The MINTs were the next group of countries to move into this category. (Malaysia, Indonesia, Nigeria and Turkey). Brazil had lots of natural advantages such as natural resources, a favourable climate and good access to other countries for trade, so why didn't it develop in line with other countries such as the UK? One big reason for this was the impact of colonisation. Brazil was a Portuguese colony so this had a big impact on its development.			
		Human Development Index			
		The Human Development Index is a measure of the quality of life in a country. It measures three basic aspects of human development: health, knowledge and standard of living. This is expressed as a value between 0 and 1. The higher a country's human development, the higher its HDI value. The UAE has an HDI of 0.890. The UK is 0.932. The USA is 0.926			
		The country with highest HDI is Norway with 0.957			
		Why Did Dubai Develop So Quickly?			
		The obvious answer is oil , but it's not the only reason. Its leaders wisely knew in the early 2000s that oil wouldn't last more than a few decades, so it invested in trying to build a more stable economy that would bring in money the old fashioned way, by building a city attractive enough to entice tourists .			
		Can Dubai Be Sustainable?			
		In 2006 the World Wildlife Fund (WWF) declared the United Arab Emirates the country with the largest ecological footprint , per capita, largely because of its carbon emissions . The solution? A new sustainable city. On Dubai's southern outskirts, a new housing development has opened—called Sustainable City—that recycles its water and waste and produces more energy than it consumes .			

History – Autumn Year 9

Year 9 history knowledge organiser: WW1

What caused the outbreak of the Great War?

Long term causes

Militarism - many countries built large armies and navies.

Alliances – the alliances formed fuelled tension and caused unease. In 1914 the six most powerful countries in Europe were divided into two alliances, which were supposed to prevent war - The Triple Alliance (Germany, Austria-Hungary, Italy) and The Triple Entente (Britain, Russia, France). This caused war because the Alliances dragged Russia, Germany, Austria-Hungary and Serbia into a war after the assassination of Franz Ferdinand. The Alliances increased tension between countries after the Moroccan and Bosnian Crisis. The Alliances meant Britain declared war on Germany after the Schlieffen Plan

Imperialism - European nations were creating empires.

Nationalism - all countries were looking out for their own interests.

The Arms Race

From the 1900s onwards, all European countries, apart from Britain, began to build up their armies.

Most introduced conscription to create huge numbers of men in their armies. The Arms Race led to a growth of suspicion, competition and increased the chances of war.

Short term cause

The Assassination and July Crisis, 1914

In June 1914, the heir to the Austro-Hungarian throne, Franz Ferdinand visited the Bosnian capital, Sarajevo. The Archduke expected trouble. A Serbian terrorist group called the Black Hand Gang, killed the Archduke and his wife. Austria blamed Serbia and sent an ultimatum (list of demands). Although Serbia agreed to all but one demand, Austria threatened war. Serbia asked Russia for help, who began to mobilise its army. Germany asked Russia to STOP. Austria declared war on Serbia on 28th July 1914. Russia continued to prepare its army to protect Serbia, so Germany declared war on Russia on 1st August 1914.

WW1 – Trench life

Trenches were long, narrow ditches dug into the ground. Soldiers lived and fought in them on the Western Front (mainly in France and Belgium). They were used for protection from enemy fire.

Life in the trenches was extremely difficult and unpleasant:

Mud: Trenches were often filled with thick mud, especially when it rained. Soldiers could get stuck or even drown in mud.

Water and flooding: Trenches frequently flooded due to rain and poor drainage. Soldiers often stood in water for long periods.

Cold weather: Winters were freezing, and many soldiers suffered from exposure.

Trench foot: Caused by standing in cold, wet conditions for too long. Feet became swollen, numb, and infected. Severe cases could lead to amputation.

Rats: Rats lived in the trenches and fed on leftover food and dead bodies. They spread disease and frightened soldiers.

Lice: Lice lived in soldiers' clothing and caused constant itching and infections.

Food and water: Food was basic and often poor quality. Common foods included bully beef (tinned meat) and hard biscuits. Clean water was not always available.

Typical daily routines included stand-to at dawn (being alert in case of an attack), repairing damage to the trenches, cleaning weapons and equipment, writing letters home, long periods of boredom between fighting. Soldiers faced constant danger from snipers, shelling (artillery fire), gas attacks, going 'over the top' (leaving the trench to attack). Many soldiers suffered from shell shock (now known as PTSD), caused by constant stress, fear, and trauma. Symptoms included shaking, nightmares, and difficulty speaking.

How to use this sheet for revision

Use strategies such as look, cover, write, check.

Turn the information into flashcards and test yourself on them.

Create an audio file of yourself talking about the information and listen back to it.

Ask someone to quiz you, using questions such as:

1. What was trench foot, and what caused it?
2. Give two problems soldiers faced in the trenches (e.g. conditions or pests).
3. Name two organisations the Nazis used to create terror.
4. What was the role of propaganda in Nazi Germany?
5. Give two examples of propaganda methods used by the Nazis.

History – Autumn Year 9

Year 9 history knowledge organiser: Hitler and Nazi Control



Treaty of Versailles

Land	Land taken away from Germany, such as Alsace-Lorraine and colonies in Africa.
Army	Army restricted to 100,000 men, 6 battleships and no submarines. No air force.
Money	Germany had to pay £6.6 billion in reparations.
Blame	Article 231 makes Germany take responsibility for starting the war.



Olympics



Mein Kampf



Parades and rallies



Reichstag Fire 27 Feb 1933

Reichstag (Parliament) building set on fire by a communist. 4000 communists are arrested.

How did Hitler become dictator?

Enabling Act 23 March 1933

Hitler can pass laws without the Reichstag for 4 years. He bans all other political parties. Democracy was over.

Night of the Long Knives 30 June 1934

The Nazi's murdered 400 SA members, along with a number of his opponents. This removed all internal opposition to Hitler.

Hindenburg die 2 August 1934

The President of Germany, Hindenburg, died. Hitler seizes power and becomes Fuhrer (leader).

Other factors

Hitler controls all law courts, all political parties banned and Hitler controls the church.

Nazi rule – terror and propaganda

The Nazis controlled Germany using **terror** by using groups like the Gestapo and the SS to arrest, punish, or imprison anyone who opposed them, making people too afraid to speak out. At the same time, they used **propaganda**, led by Joseph Goebbels, to control newspapers, radio, films, and posters so they could spread positive messages about Hitler and negative ideas about groups they blamed for Germany's problems. Together, terror and propaganda meant that many people either feared resisting the Nazis or were persuaded to support them.

Propaganda methods used by the Nazis:

- Rallies – banners, speeches, marches and parades
- Public holidays and festivals
- Radio broadcasts
- Books
- Films
- Newspapers
- 1936 Olympic games

Terror methods used by the Nazis:

- Law courts
- Concentration camps
- Gestapo
- The SS
- Informers

RE – Autumn Year 9

The 5 pillars of Islam.

The Shahadah

- Profession of Faith (shahada).
- The belief that **"There is no god but Allah, and Muhammad is his Messenger"**.
- **The Shahadah is the foundation for all other pillars**, by believing in the one true God (Tawhid) Muslims understand they must perform duties to please God and be **rewarded with Jannah (Paradise)**.

Salah(t)

- Prayer (salat- 5 daily prayers).
- **Prayer is a way of communicating with God, asking for forgiveness, blessings and guidance.**
- It is important to have a strong relationship with Allah, to be rewarded for all good deeds and judged mercifully in the afterlife.
- When praying, Muslims must set the right intention and pray on a prayer matt, facing the holy land of Mecca.

Zakat(h).

- Aims (zakat- Yearly donations/ like tax).
- **Muslims give 2.5% of savings back to the Islamic community (the poor/ needy, new Muslims, the Mosques/ schools/ hospitals) to increase equality.**

Sawm.

- Fasting during the month of Ramadan. **Muslims will also spend time reading the Qur'an, going to Mosque, learning more about their faith and focusing on their Greater Jihad to be the best Muslim possible.**
- If you cannot fast (due to being ill/ pregnant) you can find other ways to support your community e.g. cook, volunteer at the Mosque.

Haji.

- Pilgrimage (religious journey) to Mecca, Saudi Arabia. Muslims are encouraged to try and complete this journey at least once in their life.
- **Many actions performed, act as a reminder or symbol of the Prophet Muhammad and Prophet Ibrahim and their submission to Allah, Muslims perform the same actions to show God how committed they are to Him and their faith.**

The Gurdwara.

A Gurdwara is the Sikh place of worship where the Guru Granth Sahib (Sikh holy book) is treated with extreme respect.

At the Gurdwara Sikh's will gather to worship and hear stories from their holy book and cook/ receive free community meals from the Langar (free kitchen at the Gurdwara invented by one of the Sikh Guru's).

How do the 5 pillars of Islam influence Muslims?

The Shahadah

Encourages belief in one God (Allah).
Encourages good behaviour.
Strengthens identity as a Muslim.

Salah(t)

Structures daily life.
Encouraging discipline and time management.
Helps Muslims stay spiritually focused.

Zakat(h).

Promotes generosity.
Reduces inequality.
strengthens community responsibility.

Sawm.

Builds self-discipline.
Encourages empathy.

Haji.

Strengthens unity by bringing Muslims from around the world together.
Encourages spiritual reflection, forgiveness, and commitment to live a better life afterward.

Sikh- Guru's.

Guru: Means spiritual teacher. In Sikhism, there are many Guru's since the beginning of the religion who have developed the Sikh faith to what it is today.

The Guru's in Sikhism were: Guru Angad, Guru Amar Das, Guru Ram Das, Guru Arjan, Guru Hargobind, Guru Har Rai, Guru Har Krishan, Guru Tegh Bahadur, Guru Gobind Singh- **Last of the human gurus.** He introduced the **Khalsa**, or 'pure ones' and the **'five K's'** and just before he died in 1708, he proclaimed **Guru Granth Sahib-** the Sikh scripture/ holy book - as the future guru.

Year 9 knowledge organiser (1)

Jewish Kasher food laws.

Kosher food follows Jewish dietary laws called **kashrut**. These rules explain **which foods can be eaten, how they must be prepared, and which foods must not be mixed**. Kosher laws come from the Torah and have been followed for thousands of years.

Jewish law divides food into three main categories:

Meat (fleishig) – e.g., beef, chicken, lamb
Dairy (milchig) – e.g., milk, cheese, butter
Pareve – neutral foods like fruit, vegetables, eggs, and fish with fins and scales

Important rule: Meat and dairy must never be eaten together in the same meal (e.g. cheeseburger, lasagne with meat and cheese).

What Foods Are Not Kosher?

- Pig/pork, Rabbit, Camel or any animal without split hooves or that doesn't chew the cud.
- Shellfish (e.g. prawns/ crab), shark or catfish (no scales)
- Other rules- food cooked in pots that have been used for non-kosher food

Creation V The Big Bang.

Many non-religious scientists would argue that there is no proof of a divine creator. However, they cannot prove/ replicate how the world was created.

Some Christians believe that the Big Bang is real, but unlike scientists, they believe God demonstrated his power and made the Big Bang happen, which bought about the beginning of the universe. They believe everything is designed too perfectly, so God must have made it.

The nature of God in Christianity& Islam:

Christians/ Muslims/ Jews believe that God has **many different qualities**.

They believe God is perfect and that these qualities are proof of God's perfection.

Some of God's qualities are not possible for humans.

Other qualities are possible and provide examples that Christians should aspire to.

Omnipotent: All-powerful **"God created the heavens and the Earth"**

Omnibenevolent: All-loving- **"Love thy neighbour", "love your enemies"**

Omniscient: All-seeing- **"God is well aware of what you do"**

Omnipresent (always there) / Transcendent- Beyond human comprehension.

Eternal: Always and forever. No end. **"in the beginning was the word and the word was God"**

Jesus and Salvation.

Many Christians believe that Jesus had to die to save humanity from their sins and to fix their relationship with God.

God had reached out to Abraham, Moses and many others to give them commandments and other instructions (**"do not steal"**) but it did not work.

Jesus forgave the people who killed him- **"forgive them father"** (Christians should be forgiving).

Jesus recited the Lord's Prayer- **"forgive us our sins, as we forgive those who sin against us"** (Christians should forgive sins and can be forgiven).

When Jesus died- **"the veil of the temple was torn in two"** (which helped save humanities relationship with God).

Jesus' life as God's son or as God incarnate was prophesied demonstrating God's love and forgiveness towards his creation, but Jesus' death and ultimate sacrifice proved salvation had been achieved.

Forgiveness:

A decision to excuse a fault, an accident/ mistake. To accept someone's apology for a wrongdoing.

Christian's are taught they must always forgive.

Jesus said, **"forgive 70 times 7"**, the Lord's Prayer **"forgive us our sins"**.

Reconciliation:

The restoration of a friendship/ relationship.

Examples of reconciliation:

Catholic confession- confessing sins to a priest to fix their relationship with God.

Charity work (food banks/ street pastors).

Following Jesus' instructions (e.g. "love thy neighbor").

RE – Autumn Year 9

Christian creation story.

In the book of Genesis (meaning origin- The first book of the Bible) it describes how many Christians believe the universe was created.

- In the beginning God created the heavens and the Earth (explaining to Christians that heaven is a place that cannot be achieved on Earth).
- God then said "let there be light" on day one of creation God created day and night (teaching how God is powerful (omnipotent) and is the creator of all the universe).
- On the other days of creation it mentions God creating the sky, water, land, plants, all creatures including humans.
- Genesis teaches to "rule over the fish in the sea" (Dominion- the world is for humans to use or to "work it and take care of it" (Stewardship- To take care of all God's creation to be rewarded in the afterlife).
- Adam and Eve (teaching Christians that God is the father to all of creation and loves us all equally "made in God's image").
- God created humans in his likeness teaching Christians that they are important/ superior creatures.
- God instructed for Adam and Eve to "be fruitful and increase in number" explaining that it is human duty to fill the earth with life.
- Some Christians understand the creation story literally, as it is written in the Bible, they believe it to be the true word of God and therefore must be a fact.
- Some Christians understand the creation story liberally, meaning the world wasn't necessarily created in 7 days, but it does show God's omnipotence and clearly explains to Christians that they need to fulfil their duties, to be rewarded with Heaven.
- In the Bible it says, "in the beginning was the word and the word was God".

Year 9 knowledge organiser (1)

Original sin.

The original sin refers to the first sin that humanity committed against God.

The original sin story refers to Adam and Eve being tempted to eat the forbidden fruit, the one instruction that God gave them and they betrayed Him.

This made God very angry, and he punished Adam and Eve by banishing them from the Garden of Eden, to live on earth and experience pain, suffering and death.

Christians needed to be reconciled with God, in order to be allowed into Heaven.

Many Christians believe Jesus was responsible for bringing about this, which is why he is known as the saviour of sins (or he helped humans reach salvation).

The origins of human life.

Humans.
Christians believe humans were made on day 6 of creation. They believe humans are superior to all other creatures.

Humans are the only beings with a conscience and free will.

Humans were created to live in and care for the earth, for God. Christians believe that if they fulfil their duties, they will go to Heaven in the afterlife.

Quotes.

"Be fruitful and multiply", "love thy neighbour", "God saw his work, and it was good"

Protecting the environment.

Christians.

- The world is God's creation. Therefore, is sacred and must be protected.
- "The earth is the Lord's" teaching Christians that the earth is not humanities but it is to be looked after on God's behalf.
- "Rule over the fish" God created humans last as they are the most sacred, all of God's creation is for us to use however needed (Dominion).
- "To work it and take care of it" teaching Christians that the world must be looked after and respected (Stewardship).

Islam.

- **Khalifahs** (protectors) of the Earth as Allah's creation, if the earth is not looked after, a Muslim may suffer punishment in the afterlife on the day of Judgement.

Examples of Christians demonstrating stewardship.

Campaigns for reducing rubbish/ littering and waste.
Raising money for charity to protect the planet.
Using sustainable or renewable products and energy resources.
Charity work e.g. Christian Aid, Operation Noah.

Christians/ Muslims can take care of the environment by; litter picking, campaigning, working for charities and recycling.

Holy War.

A war declared in support of a religious cause.

Holy War/ Just War criteria:

- Last resort (the lesser of 2 evils).
- For a justified reason (not for power).
- No innocent civilians should be harmed and wildlife should be protected.

The difference between Holy War and Just War.

Just war is a war fought for approved political and moral purposes- Religious practitioners may accept war on these grounds. E.g fighting to protect the countries freedom.

Holy war, understood to be war fought because of difference in religion. E.g Muslims and Christians fighting to defend/ protect their religious practice.

Examples of holy wars: The Crusades and the Battle of Badr.

Quotes for/ against war:

"incline towards peace" (Islam). "Blessed are the peacemakers" (Christian). "Do not kill" (Christian) "Fight in the way of Allah" (Islam).

The ten commandments.

Moses was given the 10 commandments by God, as a list of instructions or laws/ rules for people to follow in order to live a sin free life. The idea was that if people followed the 10 commandments, upon death they would be allowed to return to the kingdom of Heaven with God.

The 10 commandments are:

"Do not Kill"

"Do not steal"

"Do not worship false idols"

"Honor your mother and father"

"Do not commit adultery"

"You shall keep the Sabbath day holy"

"You shall have no other God's before me"

"You shall not bear false witness"

"You shall not covet"

"You shall not say the Lord's name in vain".



Mayfield School
Computer Science Department

CYBERCRIME & SECURITY

KNOWLEDGE ORGANISER



Cybercrime is when criminals use technology to steal, damage, or gain unauthorised access to systems, data or money.
Understanding the threats helps us stay safe and protect others.



1. METHODS (THREATS)

Cybercriminals use different methods to trick people or attack systems.



SOCIAL ENGINEERING

Tricking people into giving away information or access.

Examples: phishing, blagging (pretexting), shouldering (looking over someone's shoulder).



MALWARE

Malicious software designed to harm, steal data or spy on users.

Examples: viruses, trojans, spyware.



PHISHING & SCAMS

Fake emails, messages or websites that try to steal your personal information or money.



WEAK PASSWORDS

Easy to guess or reused passwords make it easier for attackers to break into accounts.



OUTDATED SOFTWARE

Old software can have security holes that hackers can exploit.



SUSPICIOUS LINKS & DOWNLOADS

Clicking unknown links or downloading files can infect devices or steal data.



PENETRATION TESTING

Ethical hackers test systems to find weaknesses before real hackers do.

- Internal testing – tester has some access (like an insider).
- External testing – tester has no access (like an outsider).



2. WAYS TO PREVENT

Simple steps can make a big difference.



STRONG PASSWORDS

Use long, unique passwords with a mix of letters, numbers and symbols.

Never share your passwords.



BIOMETRICS

Use fingerprints, face recognition or other biometric logins where available.



KEEP SOFTWARE UPDATED

Updates fix security holes and protect your device from known threats.



USE CAPTCHA

CAPTCHA and other checks help stop bots and automated attacks.



EMAIL CONFIRMATIONS

Use email confirmations to verify your identity and reset requests.



THINK BEFORE YOU CLICK

Be cautious with links, attachments and requests for information. If unsure, don't click!



USE SECURITY TOOLS

Antivirus software and firewalls help detect and block threats.



TOP TIP

Be suspicious, not worried.

Good habits + smart tools = strong digital security.



3. IMPACT

Cybercrime can affect anyone.



FINANCIAL LOSS

Money can be stolen, bank accounts emptied, or businesses lose revenue.



IDENTITY THEFT

Personal information can be stolen and used to commit fraud.



EMOTIONAL IMPACT

Victims can feel stressed, worried or anxious. It can affect confidence and wellbeing.



BUSINESS DISRUPTION

Attacks can cause systems to shut down, data to be lost and services to stop.



REPUTATION DAMAGE

Businesses and individuals can lose trust and credibility.



LEGAL CONSEQUENCES

Cybercrime is illegal. Offenders can face fines or prison.

Real world examples:

- WannaCry Ransomware Attack (2017)
- Microsoft Email Hack (2020)
- Netflix Data Breach (2022)
- Fake Delivery & Banking Phishing Scams (ongoing)

What can we learn? Be aware. Be smart. Be safe.

CASE FILE



**PCR
REMINDER**

Prevent: Keep personal information private.

Caution: Be careful with what you click and share.

Report: Report anything suspicious.



NEED HELP?

Talk to a trusted adult or report online at:
www.thinkuknow.co.uk

“

Cybersecurity isn't just about technology,
it's about people, choices and awareness.

”

