

Year 9

Half Term 1

Knowledge Organisers



The Farnborough
Academy

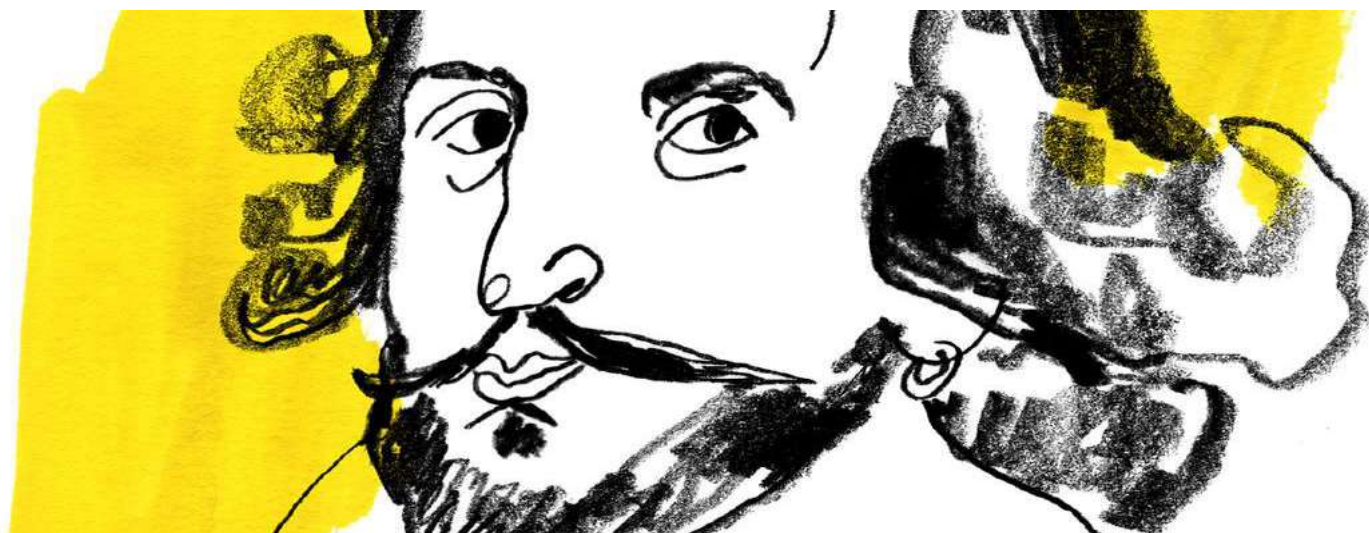


Elements of a Shakespearean Tragedy

Tragic Hero	Often a man of high rank or status such as a king or prince. Creates difficult situation which he has to try and resolve.
Solo Speeches	In tragedies characters often make speeches when by themselves called soliloquies.
Doom and Destiny	In his tragic plays, Shakespeare uses doom and destiny to add excitement and anticipation.
Blood and guts	Shakespeare's tragedies often include acts of violence and violent crime such as murder.
State of Mind	Characters in Shakespeare's tragic plays often struggle to control their thoughts and emotions. Many characters in these plays suffer from feelings of guilt.
Supernatural	Several of the tragedies contain supernatural characters such as ghosts and witches.
Tragic Endings	At the end of a tragedy, the hero and usually several of the characters are dead and the survivors are left to start again without them.

Social and Historical Context

Elizabethan 1558 to 1603	Refers to the period when Queen Elizabeth I was on the throne (1558 to 1603). Queen Elizabeth was the daughter of Henry VIII. The Elizabethan era in the 16th century was one of adventure, intrigue, personalities, plots and power struggles. The 16th century witnessed more religious change than ever before. Elizabeth had ultimate power in the land, and she could appoint people to the most important jobs. She did this using a system of patronage she used this system to maintain the loyalty and support of her subjects.
Jacobean 1603 to 1625	Refers to the period when King James I was on the throne (1603 to 1625). When Elizabeth I died King James travelled from Scotland to England to take the throne. Once he was king, his ambition was to unite Scotland and England. King James was a lavish and suspicious king. During his reign, Guy Fawkes and a group of terrorists tried to blow up the king and the Houses of Parliament. King James was superstitious about witches and even wrote a book on the subject. Shakespeare wrote <i>Macbeth</i> specially to appeal to James – it has witches and is set in Scotland, where he was already king.





Plot Summary

Othello, a general, in the army, is led to suspect that his wife, Desdemona, is having an affair with his best friend, Cassio. He becomes more and more convinced, and more furious, until he kills her. The suspicion is created by Iago, who is angry that Othello has not promoted him to a higher position in the army. He deliberately misleads Othello and uses a series of tricks to make Desdemona look guilty.

Key Quotations

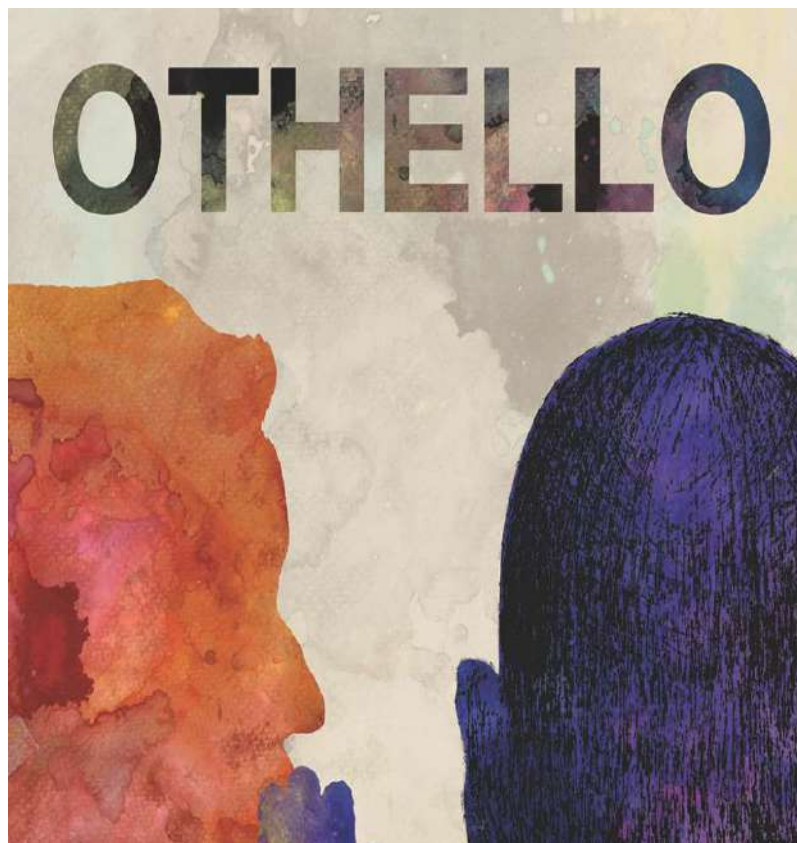
"But I will wear my heart upon my sleeve
For daws to peck at: I am not what I am."
(Iago, Act 1 Scene 1)

"Our bodies are our gardens, to the which our
wills are gardeners." (Iago, Act 1 scene 3)

"Reputation, reputation, reputation! O, I have
lost my reputation! I have lost the immortal part
of myself, and what remains is bestial."
(Cassio, Act 2 Scene 3)

"O, now, for ever. Farewell the tranquil mind;
farewell content." (Othello, Act 3 Scene 3)

"I kissed thee ere I killed thee: no way but this,
Killing myself, to die upon a kiss."
(Othello, Act 5 scene 2)



Subject Terminology

Tragedy - a play in which the hero cannot cope with his/her situation. Usually ends with death.

Dramatic Irony - where the audience know something that some of the characters in a play do not.

Fatal Flaw - character trait that contributes to the downfall of character (e.g. jealousy).

Characters

Othello	Othello is a general in the army. He begins the play as a respected figure in Venice, but as the play goes on Iago makes him believe Desdemona is in love with someone else and he becomes more and more unpredictable. He eventually becomes so convinced by Iago's lies that he kills his wife.
Desdemona	Desdemona is a young noble woman who has secretly married Othello. She is friendly with Cassio and promises to help him get his job back when he loses it for fighting. Desdemona becomes increasingly confused by Othello's odd behaviour but remains loyal to him until he kills her.
Iago	Iago is a soldier in the Venetian army who is well respected and trusted by all for his honesty. However, Iago hates Othello and uses Othello's trust against him to convince him that his wife is having an affair with Cassio. Iago manipulates everyone around him to help him convince Othello to kill his wife.
Cassio	Cassio is a young soldier who serves in the army with Othello and Iago. Othello has promoted him and this makes Iago jealous because he believes he is more qualified for the promotion. Cassio is loyal to Othello and is a great admirer of Desdemona. He is very friendly towards her and Iago uses this to convince Othello they are having an affair.



Topic/Skill	Definition/Tips	Example
1. Integer	A whole number that can be positive, negative or zero.	
2. Decimal	A number with a decimal point in it. Can be positive or negative.	
3. Negative Number	A number that is less than zero . Can be decimals.	
4. Addition	To find the total , or sum , of two or more numbers. 'add', 'plus', 'sum'	
5. Subtraction	To find the difference between two numbers. To find out how many are left when some are taken away. 'minus', 'take away', 'subtract'	
6. Multiplication	Can be thought of as repeated addition . 'multiply', 'times', 'product'	
7. Division	Splitting into equal parts or groups. The process of calculating the number of times one number is contained within another one . 'divide', 'share'	
8. Remainder	The amount ' left over ' after dividing one integer by another.	The remainder of is , because 6 divides into 20 exactly 3 times, with 2 left over.
9. BIDMAS	An acronym for the order you should do calculations in. BIDMAS stands for ' Brackets, Indices, Division, Multiplication, Addition and Subtraction '. Indices are also known as 'powers' or 'orders'. With strings of division and multiplication, or strings of addition and subtraction, and no brackets, work from left to right.	, where the 2 is the index/power.
10. Recurring Decimal	A decimal number that has digits that repeat forever . The part that repeats is usually shown by placing a dot above the digit that repeats, or dots over the first and last digit of the repeating pattern.	



Topic/Skill	Definition/Tips	Example
1. Place Value	The value of where a digit is within a number.	In 726, the value of the 2 is 20, as it is in the 'tens' column.
2. Place Value Columns	The names of the columns that determine the value of each digit. The 'ones' column is also known as the 'units' column.	PLACE VALUE CHART
3. Rounding	To make a number simpler but keep its value close to what it was. If the digit to the right of the rounding digit is less than 5, round down. If the digit to the right of the rounding digit is 5 or more, round up.	74 rounded to the nearest ten is 70, because 74 is closer to 70 than 80. 152,879 rounded to the nearest thousand is 153,000.
4. Decimal Place	The position of a digit to the right of a decimal point .	In the number 0.372, the 7 is in the second decimal place. 0.372 rounded to two decimal places is 0.37, because the 2 tells us to round down. Careful with money - don't write £27.4, instead write £27.40
5. Significant Figure	The significant figures of a number are the digits which carry meaning (ie. are significant) to the size of the number. The first significant figure of a number cannot be zero. In a number with a decimal, trailing zeros are not significant.	In the number 0.00821, the first significant figure is the 8. In the number 2.740, the 0 is not a significant figure. 0.00821 rounded to 2 significant figures is 0.0082. 19357 rounded to 3 significant figures is 19400. We need to include the two zeros at the end to keep the digits in the same place value columns.
6. Truncation	A method of approximating a decimal number by dropping all decimal places past a certain point without rounding .	3.14159265... can be truncated to 3.1415 (note that if it had been rounded, it would become 3.1416)
7. Error Interval	A range of values that a number could have taken before being rounded or truncated. An error interval is written using inequalities, with a lower bound and an upper bound.	0.6 has been rounded to 1 decimal place. The error interval is:



	Note that the lower bound inequality can be 'equal to', but the upper bound cannot be 'equal to'.	The lower bound is 0.55 The upper bound is 0.65
8. Estimate	To find something close to the correct answer .	An estimate for the height of a man is 1.8 metres.
9. Approximation	When using approximations to estimate the solution to a calculation, round each number in the calculation to 1 significant figure . means 'approximately equal to'	'Note that dividing by 0.5 is the same as multiplying by 2'
10. Rational Number	A number of the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$. A number that cannot be written in this form is called an 'irrational' number	$\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{6}$ are examples of rational numbers. $\sqrt{2}$, $\sqrt{3}$, π are examples of an irrational numbers.
11. Surd	The irrational number that is a root of a positive integer , whose value cannot be determined exactly. Surd has infinite non-recurring decimals .	$\sqrt{2}$ is a surd because it is a root which cannot be determined exactly. $\sqrt{2}$ which never repeats.
12. Rules of Surds		
13. Rationalise a Denominator	The process of rewriting a fraction so that the denominator contains only rational numbers .	



Topic/Skill	Definition/Tips	Example
1. Fraction	A mathematical expression representing the division of one integer by another. Fractions are written as two numbers separated by a horizontal line .	is a 'proper' fraction. is an 'improper' or 'top-heavy' fraction.
2. Numerator	The top number of a fraction.	In the fraction , 3 is the numerator.
3. Denominator	The bottom number of a fraction.	In the fraction , 5 is the denominator.
4. Unit Fraction	A fraction where the numerator is one and the denominator is a positive integer.	are examples of unit fractions.
5. Reciprocal	The reciprocal of a number is 1 divided by the number . The reciprocal of is When we multiply a number by its reciprocal we get 1. This is called the 'multiplicative inverse'.	The reciprocal of is The reciprocal of is , because
6. Mixed Number	A number formed of both an integer part and a fraction part .	is an example of a mixed number.
7. Simplifying Fractions	Divide the numerator and denominator by the highest common factor.	
8. Equivalent Fractions	Fractions which represent the same value .	
9. Comparing Fractions	To compare fractions, they each need to be rewritten so that they have a common denominator . Ascending means smallest to biggest . Descending means biggest to smallest .	Put in to ascending order : . Equivalent: Correct order:
10. Fraction of an Amount	Divide by the bottom , times by the top	Find of £60
11. Adding or Subtracting Fractions	Find the LCM of the denominators to find a common denominator. Use equivalent fractions to change each fraction to the common denominator . Then just add or subtract the numerators and keep the denominator the same .	Multiples of 3: 3, 6, 9, 12, 15 .. Multiples of 5: 5, 10, 15 .. LCM of 3 and 5 = 15



12. Multiplying Fractions	Multiply the numerators together and multiply the denominators together.	
13. Dividing Fractions	‘Keep it, Flip it, Change it – KFC’ Keep the first fraction the same Flip the second fraction upside down Change the divide to a multiply Multiply by the reciprocal of the second fraction.	



Topic/Skill	Definition/Tips	Example
1. Percentage	Number of parts per 100.	means
2. Finding 10%	To find 10% , divide by 10	10% of £36 = $36 \div 10 = £3.60$
3. Finding 1%	To find 1% , divide by 100	1% of £8 = $8 \div 100 = £0.08$
4. Percentage Change		A games console is bought for £200 and sold for £250. % change =
5. Fractions to Decimals	Divide the numerator by the denominator using the bus stop method.	
6. Decimals to Fractions	Write as a fraction over 10, 100 or 1000 and simplify.	
7. Percentages to Decimals	Divide by 100	
8. Decimals to Percentages	Multiply by 100	
9. Fractions to Percentages	Percentage is just a fraction out of 100. Make the denominator 100 using equivalent fractions. When the denominator doesn't go in to 100, use a calculator and multiply the fraction by 100.	
10. Percentages to Fractions	Percentage is just a fraction out of 100. Write the percentage over 100 and simplify.	

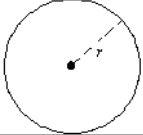
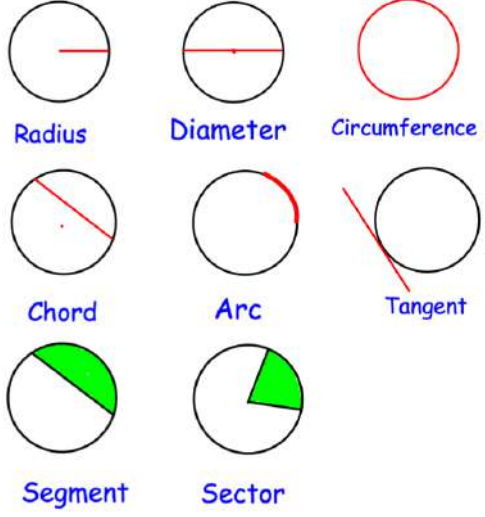
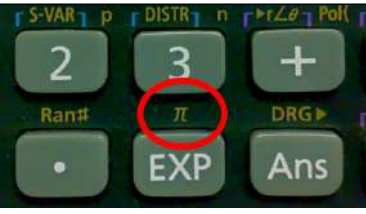
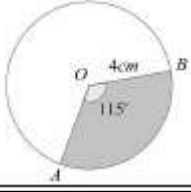
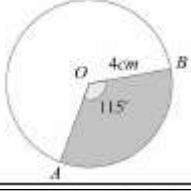
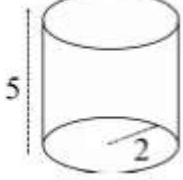


Topic/Skill	Definition/Tips	Example
1. Expression	A mathematical statement written using symbols, numbers or letters ,	$3x + 2$ or $5y^2$
2. Equation	A statement showing that two expressions are equal	$2y - 17 = 15$
3. Identity	An equation that is true for all values of the variables An identity uses the symbol:	$2x \equiv x+x$
4. Formula	Shows the relationship between two or more variables	Area of a rectangle = length x width or $A = L \times W$
5. Simplifying Expressions	Collect 'like terms'. Be careful with negatives. and are not like terms.	
6. times	The answer is not .	Squaring is multiplying by itself, not by 2.
7.	The answer is not	If $p=2$, then $=2 \times 2 \times 2=8$, not $2 \times 3=6$
8.	The answer is $3p$ not	If $p=2$, then $2+2+2=6$, not
9. Expand	To expand a bracket, multiply each term in the bracket by the expression outside the bracket.	
10. Factorise	The reverse of expanding . Factorising is writing an expression as a product of terms by ' taking out ' a common factor .	, where 3 is the common factor.

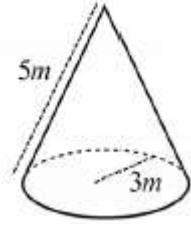


Topic/Skill	Definition/Tips	Example
1. Square	• Four equal sides • Four right angles • Opposite sides parallel • Diagonals bisect each other at right angles • Four lines of symmetry • Rotational symmetry of order four	
2. Rectangle	• Two pairs of equal sides • Four right angles • Opposite sides parallel • Diagonals bisect each other, not at right angles • Two lines of symmetry • Rotational symmetry of order two	
3. Rhombus	• Four equal sides • Diagonally opposite angles are equal • Opposite sides parallel • Diagonals bisect each other at right angles • Two lines of symmetry • Rotational symmetry of order two	
4. Parallelogram	• Two pairs of equal sides • Diagonally opposite angles are equal • Opposite sides parallel • Diagonals bisect each other, not at right angles • No lines of symmetry • Rotational symmetry of order two	
5. Kite	• Two pairs of adjacent sides of equal length • One pair of diagonally opposite angles are equal (where different length sides meet) • Diagonals intersect at right angles, but do not bisect • One line of symmetry • No rotational symmetry	
6. Trapezium	• One pair of parallel sides • No lines of symmetry • No rotational symmetry Special Case: Isosceles Trapeziums have one line of symmetry.	

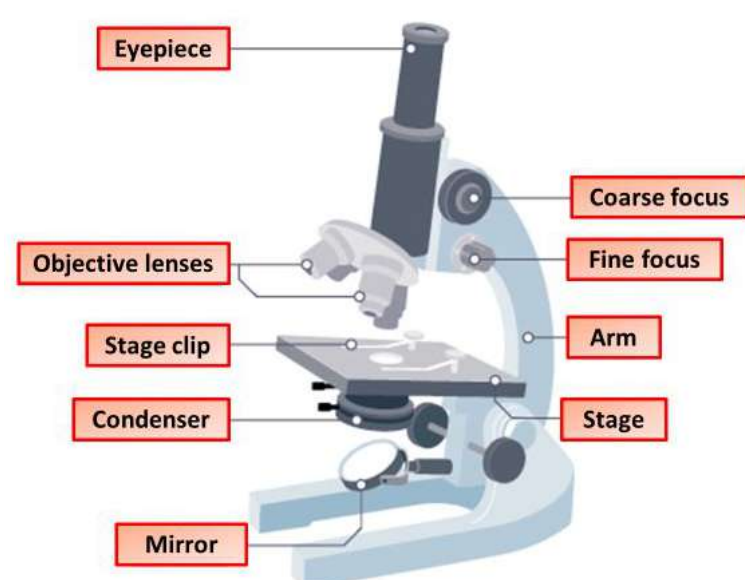


Topic/Skill	Definition/Tips	Example
1. Circle	A circle is the locus of all points equidistant from a central point.	
2. Parts of a Circle	Radius – the distance from the centre of a circle to the edge Diameter – the total distance across the width of a circle through the centre . Circumference – the total distance around the outside of a circle Chord – a straight line whose end points lie on a circle Tangent – a straight line which touches a circle at exactly one point Arc – a part of the circumference of a circle Sector – the region of a circle enclosed by two radii and their intercepted arc Segment – the region bounded by a chord and the arc created by the chord	Parts of a Circle 
3. Area of a Circle	which means 'pi x radius squared'.	If the radius was 5cm, then:
4. Circumference of a Circle	which means 'pi x diameter'	If the radius was 5cm, then:
5. ('pi')	Pi is the circumference of a circle divided by the diameter.	
6. Arc Length of a Sector	The arc length is part of the circumference. Take the angle given as a fraction over 360° and multiply by the circumference .	Arc Length = 
7. Area of a Sector	The area of a sector is part of the total area. Take the angle given as a fraction over 360° and multiply by the area .	Area = 
8. Surface Area of a Cylinder	Curved Surface Area = or Total SA = or	
9. Surface Area of a Cone	Curved Surface Area = where	
	Total SA =	



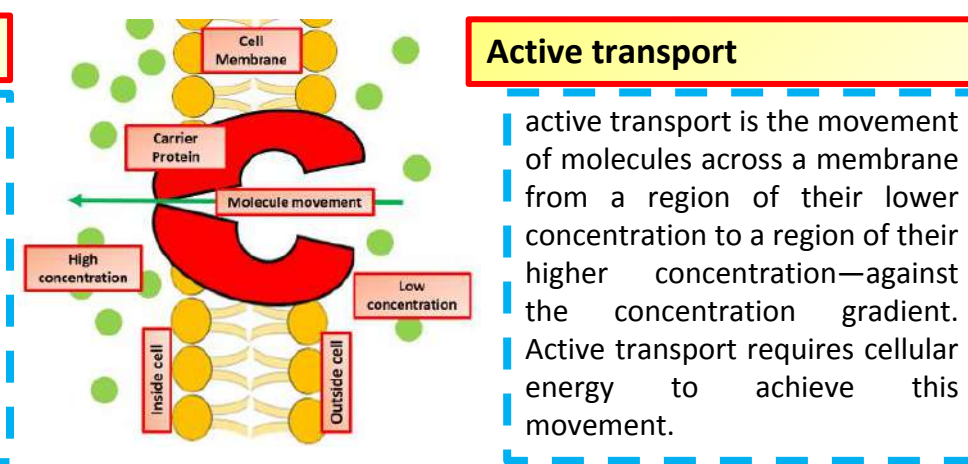
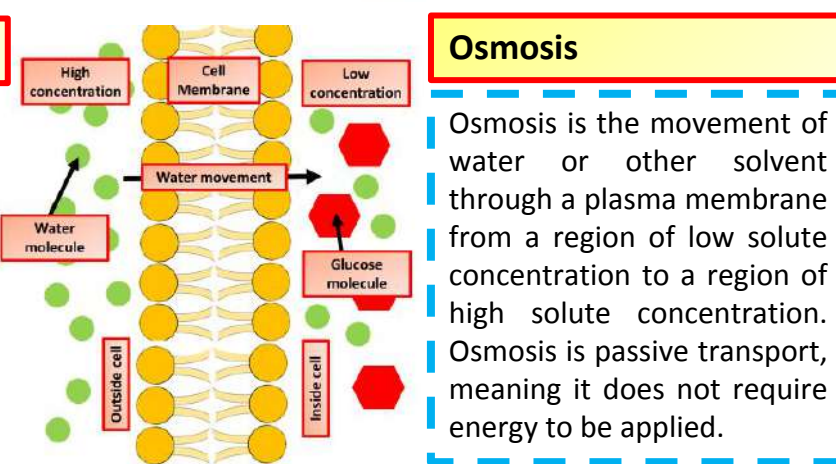
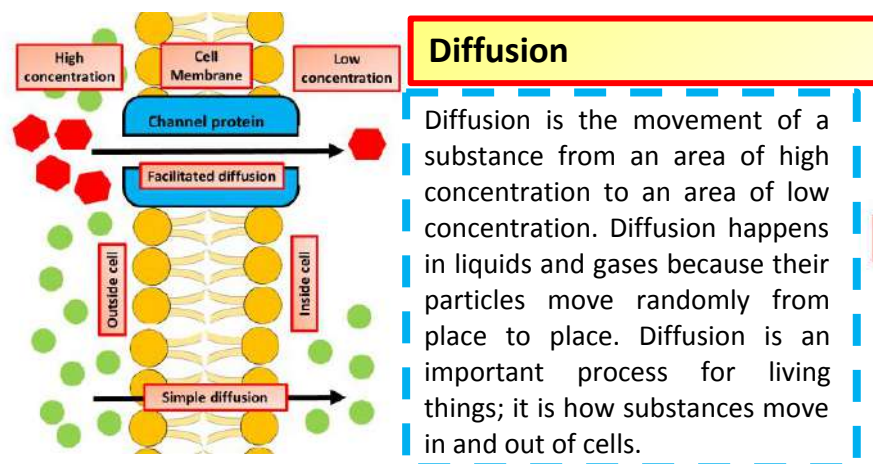
	You may need to use Pythagoras' Theorem to find the slant height	
10. Surface Area of a Sphere	Look out for hemispheres – halve the SA of a sphere and add on a circle	Find the surface area of a sphere with radius 3cm.

Cells & Organelles.	
Organelle	Function
Cytoplasm	Where chemical reactions take place
Nucleus	Contains genetic material (genes & chromosomes) & controls cell activity.
Cell membrane	Controls what enters & leaves the cell
Mitochondria	Organelles that contain the enzymes for respiration, and where most energy is released in respiration.
Ribosomes	Tiny structures where protein synthesis occurs.
Chloroplast	Site of photosynthesis in plants
Cell wall	Strengthen plant cells
Vacuole	Store of water & nutrients in plant cells

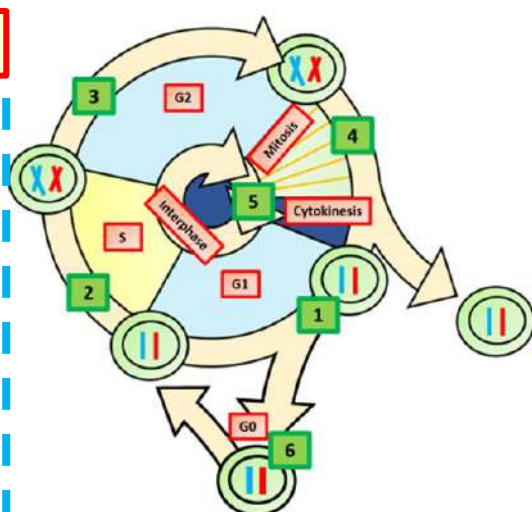


- ### Using microscopes
1. Cut open an onion
 2. Use forceps to peel a thin layer of epidermis from the inside
 3. Lay the layer of epidermis on a microscope slide
 4. Add a drop of iodine solution to the layer
 5. Carefully place a cover slip over the layer
 6. Examine the slide under a microscope
 7. Draw what you can see

$$\text{Magnification} = \frac{\text{Image size}}{\text{Actual size}}$$



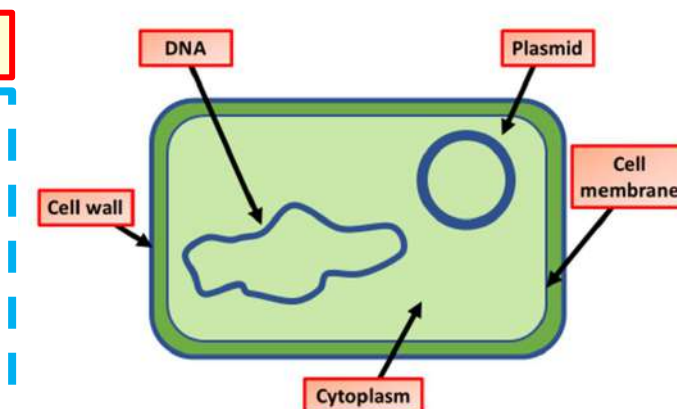
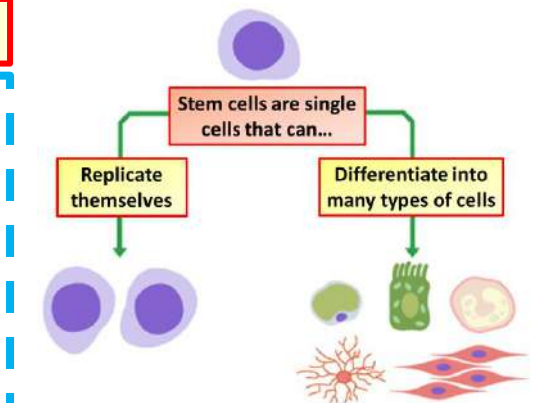
- ### Mitosis
- Stage 1:** The cell spends most of its life in the interphase. During this phase the cell grows to its maximum size and performs its normal functions.
- Stage 2:** The DNA condenses into chromosomes (human cells have 46 chromosomes – 23 from your father and 23 from your mother). Each chromosome eventually can be seen to consist of two strands or chromatids joined at a central centromere in an X shape.
- Stage 3:** The nuclear membrane disappears. Spindle threads form between the poles.
- Stage 4:** Chromosomes lie on the equator of the cell. Each chromosome is attached to the spindle microfibers by its centre. The chromosomes appear in a straight line across the middle of the cell.
- Stage 5:** The centre of the chromosome splits. Each chromosome divides into two sister chromatids. Each chromatid is moved to opposite poles of the cell by the shortening of the spindle fibres. Chromatids (now called daughter chromosomes) gather at opposite poles of the cell.
- Stage 6:** A nuclear membrane forms around each of the daughter chromosomes that have gathered at the poles. The daughter chromosomes uncoil.



Cell cycle

In cells with a nucleus, as in eukaryotes, the cell cycle is also divided into two main stages: interphase and the mitotic (M) phase (including mitosis and cytokinesis). During interphase, the cell grows, accumulating nutrients needed for mitosis, and undergoes DNA replication preparing it for cell division.

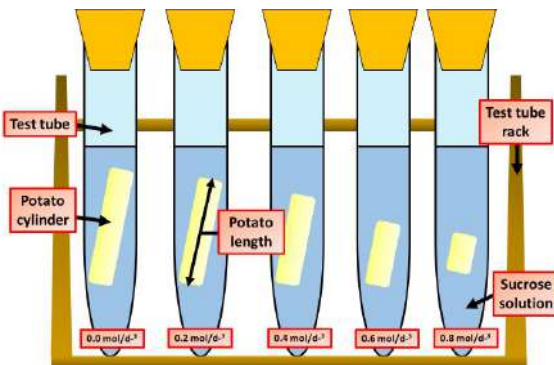
- ### Stem cells
- Stem cells from a recently dead embryo can be grown in special solutions.
- Stem cells from an embryo can grow into any type of tissue.
 - Stem cells may grow out of control, to form cancers.
 - Large numbers of stem cells can be grown in the laboratory.
 - Stem cells may be used in medical research or to treat some human diseases.
 - Patients treated with stem cells need to take drugs for the rest of their life to prevent rejection.
 - Collecting and growing stem cells is expensive



Prokaryotic & Eukaryotic Cells

Eukaryotic cells contain membrane-bound organelles, including a nucleus. Eukaryotes can be single-celled or multi-celled, such as you, me, plants, fungi, and insects. Bacteria are an example of prokaryotes. Prokaryotic cells do not contain a nucleus or any other membrane-bound organelle.

Osmosis required practical



- Prepare a range of sucrose (sugar) solutions. The concentration of a solution is measured in moles per cubic decimetre written as mol dm⁻³. For example, in this experiment your range could be from 0.2 mol dm⁻³ to 1.0 mol dm⁻³. A 1.0 mol dm⁻³ solution of sucrose will contain up to 342 g of sucrose per dm³. A 1.0 mol dm⁻³ solution of a substance contains one mole of the substance per dm³ of a solution, or one mole per litre of solution.
- Set up a series of boiling tubes with each of these solutions. Also, set up one containing distilled water. This will have a concentration of sucrose of 0.0 mol dm⁻³ and will act as the control in the experiment.
- Make sure each tube is labelled with the concentration.
- Carry out the investigation. Prepare a blank results table before you begin. Make sure when weighing the potato cylinders, that their masses are not mixed up when recording them. Each cylinder will have a different mass before and after the investigation.
- For each sucrose concentration, repeat the investigation for several potato cylinders. This allows you to make the experiment more repeatable – not all potato cylinders might behave in the same way. Making a series of repeat experiments means that any anomalous results can

Specialised cells in plants

	Cells of the...	Specialised to...
Leaf	Palisade mesophyll	Carry out photosynthesis
	Spongy mesophyll	Allow gases to circulate for the exchange of gases between the leaf and the environment, carry out some photosynthesis
	Guard cells	Open and close to control the exchange of gases – carbon dioxide, water vapour and oxygen
Phloem	Sieve tubes	Transport products of photosynthesis, including sugars and amino acids, from the leaf to where they are needed
	Companion cells	Provide the energy required for transporting substances in sieve tubes
Xylem	Xylem vessels	Transport water and dissolved minerals from the roots, up the plant
Growing points	Meristem	Produce new cells as they divide

Specialised cells in animals

Cells of the...	Specialised to...
Circulatory system	Transport substances, defend the body, regulate temperature
Excretory system	Remove waste products and unwanted substances, regulate the water content of the body
Muscular system	Bring about movement
Nervous system	Respond to internal and external stimuli and conditions, carry messages for the body work as a coordinated whole
Respiratory system	Deliver oxygen for respiration and remove waste
Reproductive system	Bring about fertilisation to produce new offspring
Skeletal system	To bring about movement, support and protect internal structures, produce blood cells, store and release calcium

Electron microscopes

Electron microscopes use a beam of electrons instead of light rays. There are two types of electron microscope:

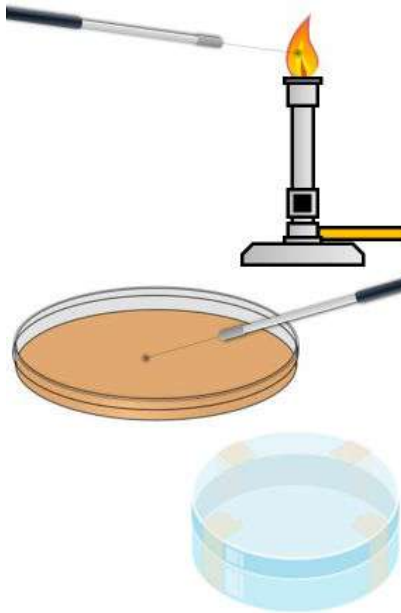
- The scanning electron microscope (SEM) has a large field of view so can be used to examine the surface structure of specimens. SEMs are often used at lower magnifications.
- The transmission electron microscope (TEM) is used to examine thin slices or sections of cells or tissues.

TEMs have a maximum magnification of around ×1 000 000, but images can be enlarged beyond that photographically. The limit of resolution of the transmission electron microscope is now less than 1 nm.

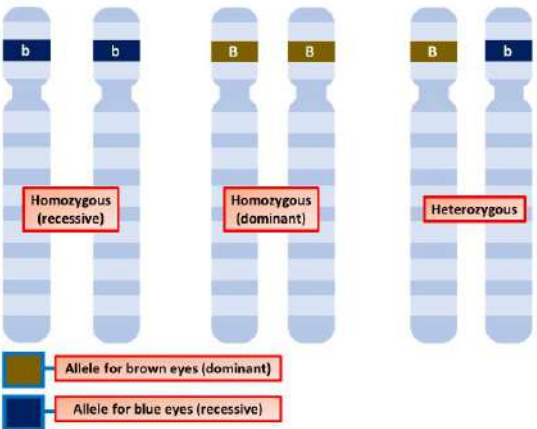
The TEM has revealed structures in cells that are not visible with the light microscope.

Growing bacteria

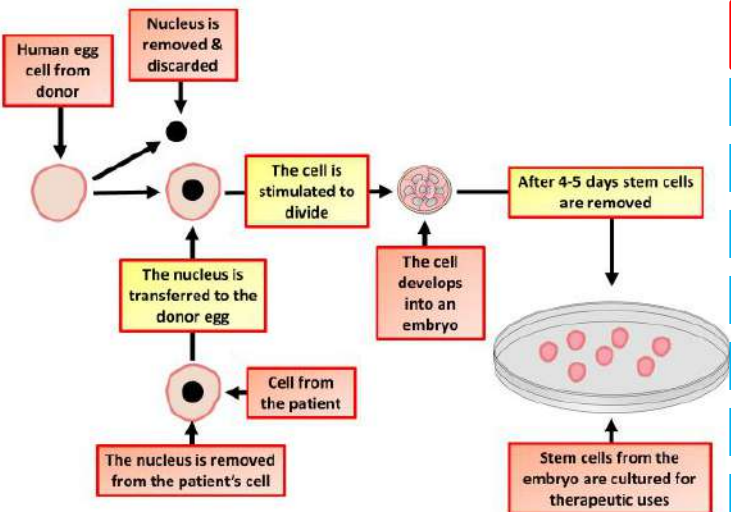
- An inoculating loop can be used to transfer bacteria. It is sterilised by heating it to red hot in a Bunsen flame, before and after use.
- To inoculate the agar, lift the lid of the Petri dish and tilt. Do not fully remove or place on the desk as the lid prevents micro-organisms from the air contaminating the culture, and vice versa
- Following inoculation, the lid of the Petri dish should be secured in place by strips of adhesive tape for safety reasons. The dish should be labelled and dated.
- Inoculated agar plates are incubated at 25°C in school laboratories for no more than 24–48 hours. This encourages growth of the culture without growing human pathogens which thrive at body temperature (37°C).



Chromosomes



- Chromosomes carry genetic information in a molecule called DNA.
- A type of cell division called mitosis ensures that when a cell divides each new cell produced has the same genetic information.
- **DNA** exists in a cell's nucleus within structures called **chromosomes**. Each section of a chromosome that contains the code for the production of a particular protein is called a **gene**.
- A human cell has 46 chromosomes



Therapeutic cloning of stem cells

Therapeutic cloning involves the replication of human embryos to harvest stem cells for medical uses. Most clones are created through a process called "somatic cell nuclear transfer." Essentially, a scientist uses a tiny needle to pull DNA material from the nucleus of a donor cell and transfer it into a hollow egg.

Therapeutic cloning could allow an individual's own cells to be used to treat or cure that person's disease, without risk of introducing foreign cells that may be rejected.

Types of Energy

There are 8 main stores of energy:

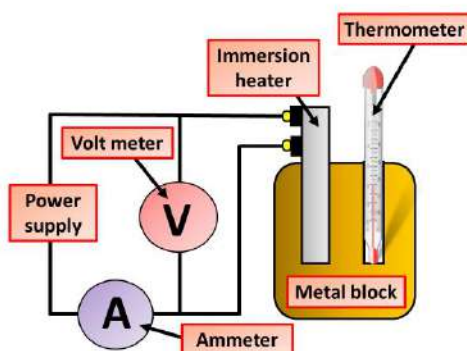
- magnetic
- internal (thermal)
- chemical
- kinetic
- electrostatic
- elastic potential
- gravitational potential
- nuclear.

Conservation of Energy

The amount of energy stays the same or is said to be conserved. This fact is known as the Principle of Conservation of Energy. Principle of Conservation of Energy: Energy can neither be created nor destroyed, but can be changed from one form to another.

SHC Required Practical

1. Place the immersion heater into the central hole at the top of the block.
2. Place the thermometer into the smaller hole and put a couple of drops of oil into the hole to make sure the thermometer is surrounded by hot material.
3. Fully insulate the block by wrapping it loosely with cotton wool.
4. Record the temperature of the block.
5. Connect the heater to the power supply and turn it off after ten minutes.
6. After ten minutes the temperature will still rise even though the heater has been turned off and then it will begin to cool. Record the highest temperature that it reaches and calculate the temperature rise during the experiment.



Energy Stores

The energy stored when like poles are pushed closer together or when unlike poles are pulled further apart.

Transferring Energy by conduction

In each of these examples, energy is transferred by one of the following four types of energy transfer:

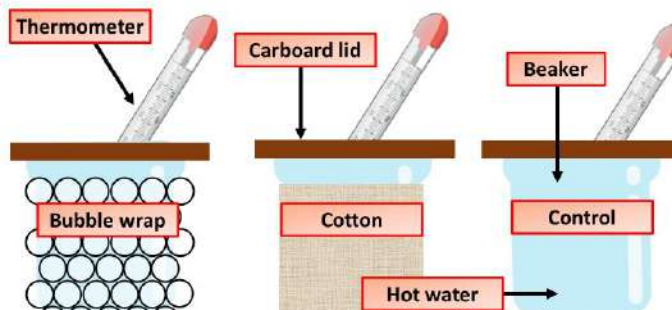
- mechanical work - a force moving an object through a distance
- electrical work - charges moving due to a potential difference
- heating - due to temperature difference caused electrically or by chemical reaction
- radiation - energy transferred as a wave, eg light and infrared - light radiation and infrared radiation are emitted from the sun

Transferring Heat Energy

All metals are good conductors. When one end of a metal rod is put into a fire, the energy from the flame makes the ions in the rod vibrate faster. Since the ions in the solid metal are close together, this increased vibration means that they collide with neighbouring ions more frequently. Energy is passed on through the metal by these collisions, transmitting the energy. More frequent collisions increase the rate of transfer.

Insulation Required Practical

1. Place a small beaker into a larger beaker.
2. Fill the small beaker with hot water from a kettle.
3. Put a piece of cardboard over the beakers as a lid. The lid should have a hole suitable for a thermometer.
4. Place a thermometer into the smaller beaker through the hole.
5. Record the temperature of the water in the small beaker and start the stopwatch.
6. Record the temperature of the water every 2 minutes for 20 minutes.
7. Repeat steps 1-6, each time packing the space between the large beaker and small beaker with the chosen insulating material.

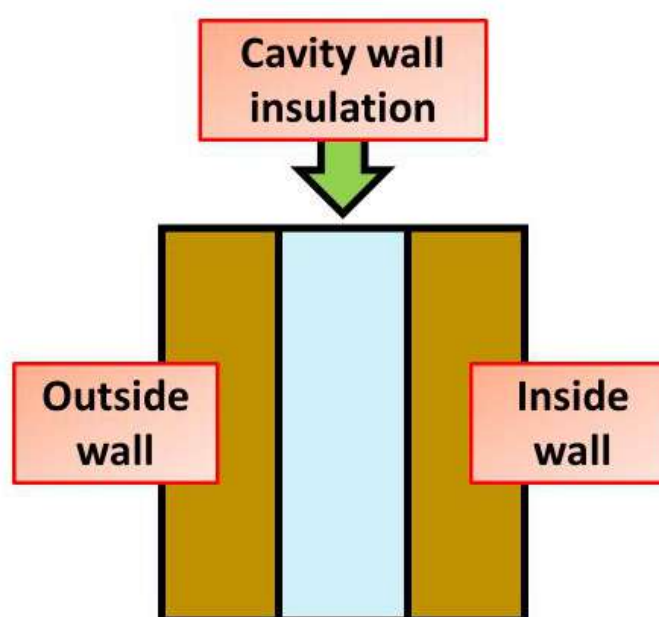


Convection

When a fluid, such as air or a liquid, is heated and then travels away from the source, it carries the thermal energy along. This type of heat transfer is called convection. The fluid above a hot surface expands, becomes less dense, and rises.

Insulation

A thermal insulator is something that prevents heat from moving from one place to another. There are 3 main ways that heat can travel: convection, conduction, and radiation. Typically the phrase 'thermal insulator' refers to a material that blocks conduction.



Total input energy: 100j

Useful energy: 80j

Wasted energy: 20j

Calculating Kinetic Energy

$$KE = \frac{1}{2} \times \text{mass} \times \text{velocity}^2$$

Calculating elastic potential energy

$$EPE = 0.5 \times \text{Spring Constant} \times \text{Extension Squared}$$

Calculating Work Done

$$\text{Work done} = \text{Force} \times \text{Distance}$$

Calculating Power

$$\text{power} = \frac{\text{work done}}{\text{time taken}}$$

Calculating Efficiency

$$\text{Efficiency} = \left(\frac{\text{Useful Energy}}{\text{Total Energy}} \right) \times 100$$

Calculating GPE

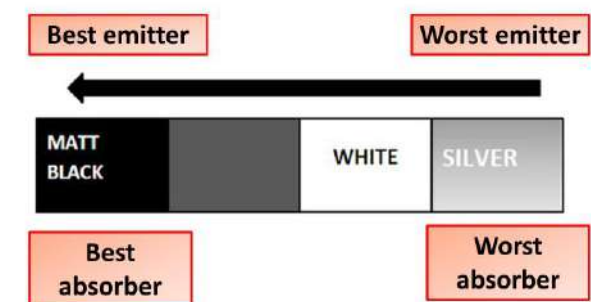
$$GPE = \text{mass} \times \text{gravitational field strength} \times \text{height}$$

Calculating SHC

$$\text{change in thermal energy} = \text{mass} \times \text{specific heat capacity} \times \text{temperature change}$$

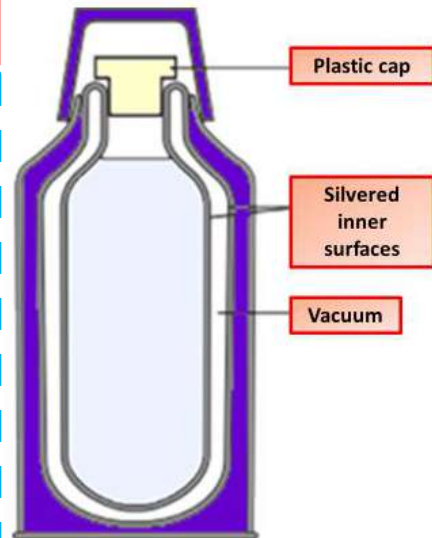
Radiation

Radiation is a method of heat transfer that does not rely upon any contact between the heat source and the heated object as is the case with conduction and convection. Heat can be transmitted through empty space by thermal radiation often called infrared radiation. This is a type electromagnetic radiation.



Thermos Flask

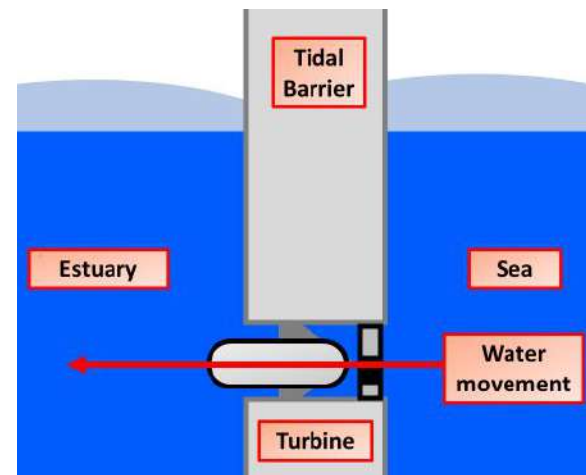
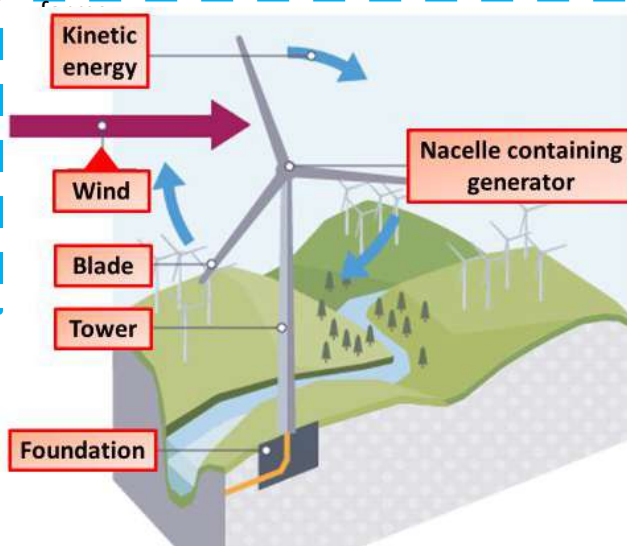
How does the thermos flask work? A thermos then goes one step further. The glass is silvered (like a mirror) to reduce infrared radiation. The combination of a vacuum and the silvering greatly reduces heat transfer by convection, conduction and radiation. ... All the thermos is doing is limiting heat transfer through the walls of the thermos.



Wind Power

Wind is produced as a result of giant convection currents in the Earth's atmosphere, which are driven by heat energy from the Sun. This means that the kinetic energy in wind is a renewable energy resource - as long as the Sun exists, the wind will too.

Wind turbines use the wind to drive turbines directly. They have huge blades mounted on a tall tower. The blades are connected to a 'nacelle', or housing, which contains gears linked to a generator. As the wind blows, it transfers some of its kinetic energy to the blades, which turn and drive the generator. Several wind turbines may be grouped together in windy locations to form wind

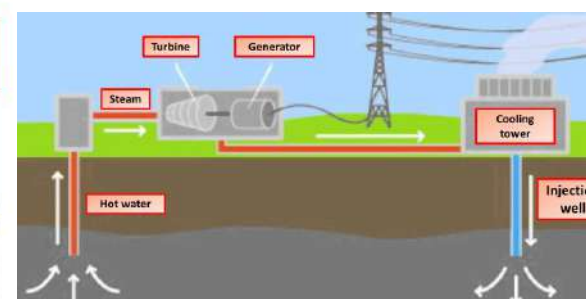


Tidal Power

Huge amounts of water move in and out of river mouths each day because of the tides. A tidal barrage is a barrier built over a river estuary to make use of the kinetic energy in the moving water. The barrage contains electricity generators, which are driven by the water rushing through tubes in the barrage.

Wave Power

The water in the sea rises and falls because of waves on the surface. Wave machines use the kinetic energy in this movement to drive electricity generators.



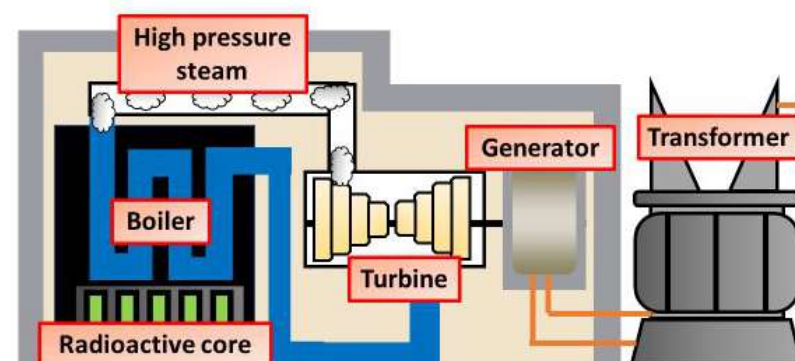
Geothermal Energy

In some places, the rocks are hot, but no hot water or steam rises to the surface. In this situation, deep wells can be drilled down to the hot rocks and cold water pumped down. The water runs through fractures in the rocks and is heated up. It returns to the surface as hot water and steam, where its energy can be used to drive turbines and electricity generators. The diagram shows how this works.

Nuclear Power

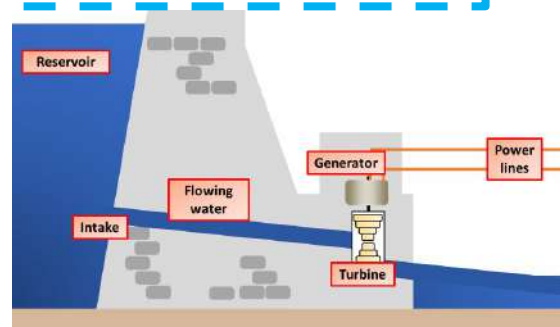
The main nuclear fuels are uranium and plutonium. In a nuclear power station, nuclear fuel undergoes a controlled chain reaction in the reactor to produce heat - nuclear energy is converted to heat energy:

- heat is used to change water into steam in the boiler
- the steam drives the turbine (heat to kinetic energy)
- this drives the generator to produce electricity - kinetic to electrical energy



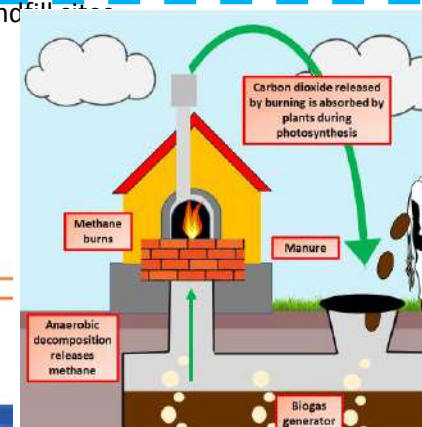
Hydroelectricity

Like tidal barrages, hydroelectric power (HEP) stations use the kinetic energy in moving water. Often, the water comes from behind a dam built across a river valley. The water high up behind the dam contains gravitational potential energy. This is transferred to kinetic energy as the water rushes down through tubes inside the dam. The moving water drives electrical generators, which may be built inside the dam.



Biogas

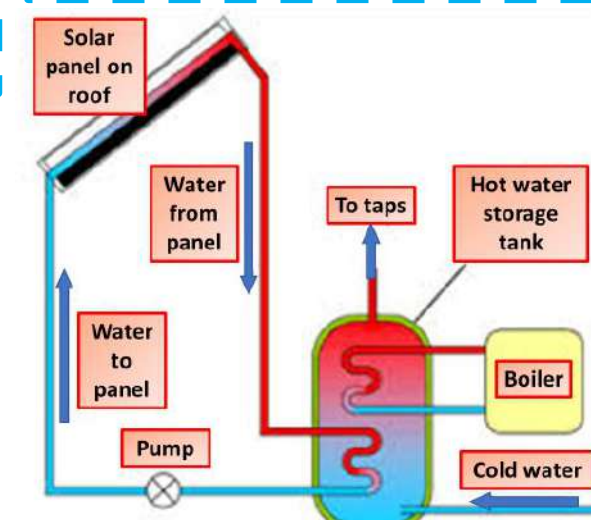
We can use the process of anaerobic decay or decomposition to provide us with fuel. Together the methane and carbon dioxide produced are called biogas. This is a source of renewable energy. Biogas generators are large vessels in which animal waste or specially grown crops such as maize are allowed to anaerobically digest. If domestic waste is used as a source of methane, this also reduces the volume of domestic waste added to land



Solar Heating

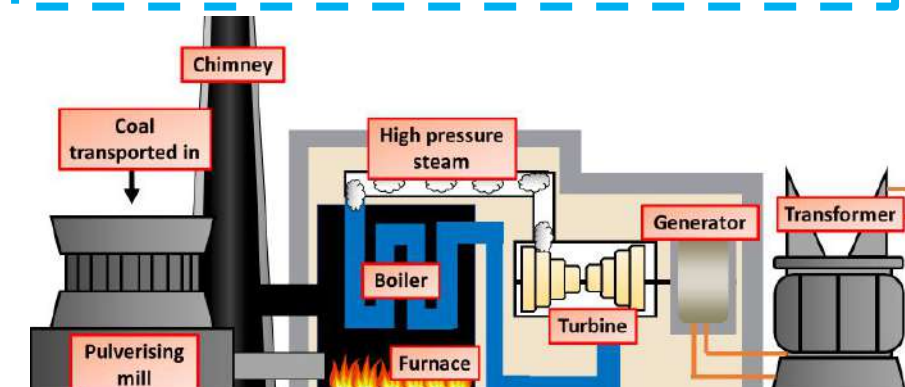
Solar panels do not generate electricity, but rather they heat up water. They are often located on the roofs of buildings where they can receive heat energy from the Sun.

- Cold water is pumped up to the solar panel, it heats up and is transferred to a storage tank.
- A pump pushes cold water from the storage tank through pipes in the solar panel. The water is heated by heat energy from the Sun and returns to the tank. In some systems, a conventional boiler may be used to increase the temperature of the water.



Generating Electricity from Fossil Fuels

A fossil fuel power station is a thermal power station which burns a fossil fuel, such as coal or natural gas, to produce electricity. Fossil fuel power stations have machinery to convert the heat energy of combustion into mechanical energy, which then operates an electrical generator.



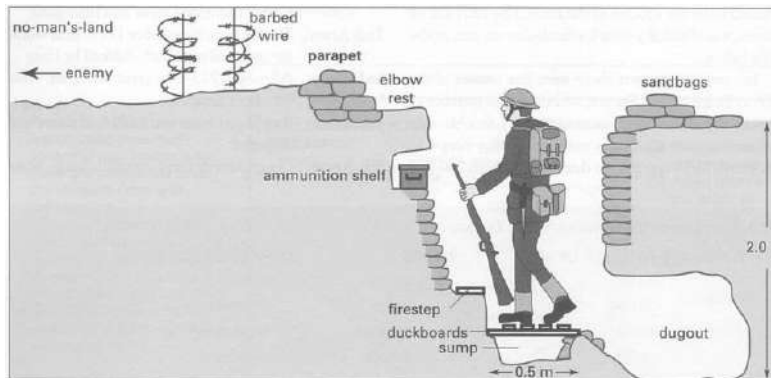
Knowledge Organiser

Why and with what consequences did the world go to war in 1914?

First World War Timeline

Date	Event
28.6.1914	Assassination of Franz Ferdinand
4.8.1914	Britain declares war on Germany
15.8.1914	Kitchener's Army recruitment
19.10.1914	First Battle of Ypres
22.4.1915	Second Battle of Ypres
27.1.1916	Military Service Act
1.7.1916 – 18. 11. 1916	Battle of the Somme and first use of the tank
8.3.17	Russian Revolution – Tsar abdicates
9.4.1917	Battle of Arras
24-25.10.1918	Communist Russian Revolution
20.11.1917	Battle of Cambrai
1.1.1918	Rationing introduced
9.11.1918	Kaiser Wilhelm II abdicates
11.11.1918	Armistice signed

Weapons	Injuries
Lee Enfield Rifle .15 rounds a minute. Accurate to 600m	Shell shock. Shaking, mental breakdown
Vickers machine gun. 10 bullets per second. Caused 40% wounds	Trench fever. Caused by lice: fever, rash, aches.
Tanks. 8mph. First used at the Battle of the Somme. 400 used at Battle of Cambrai,	Trench foot. Gangrene of feet, caused by damp
Artillery. Used to bombard the enemy for hours before an attack. Could fire 13 miles.	Shrapnel wounds. 58% wounds - 41,000 amputated limbs.



Key features of the trench system

Sandbag	Protective. Absorbs bullets, absorbs water – maintains trench walls.
Fire step	Stand on to fire over the top of the trench. Trenches were 2.5 m in height
Parapet	Low protective wall
Duckboards	Wooden boards to stop men standing in water. To prevent trench foot.
Dugout	Area dug into the side of the trench where men could take protective cover.
No Man's Land	Area between the two enemy trenches

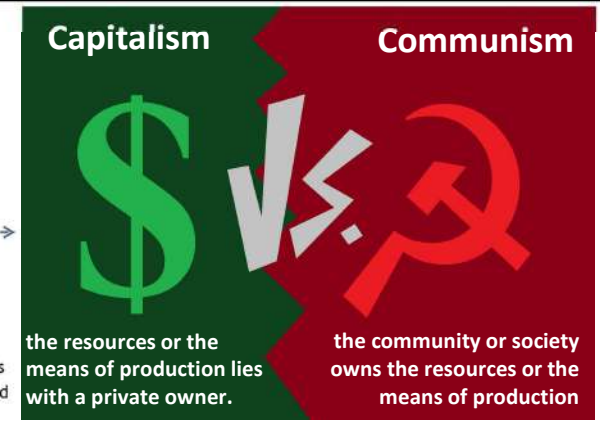
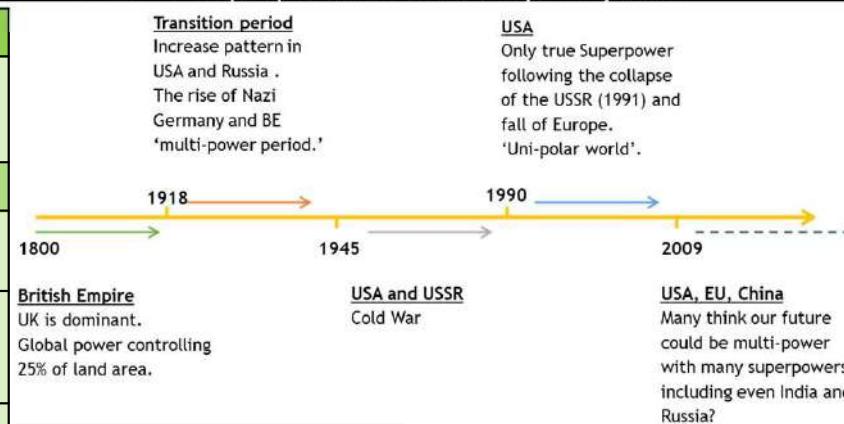
Triple Alliance	Triple Entente
- Germany - Austria-Hungary - Italy (until 1915)	- Britain - France - Russia (until 1917) - USA (1917+)

Home Front – Key terms

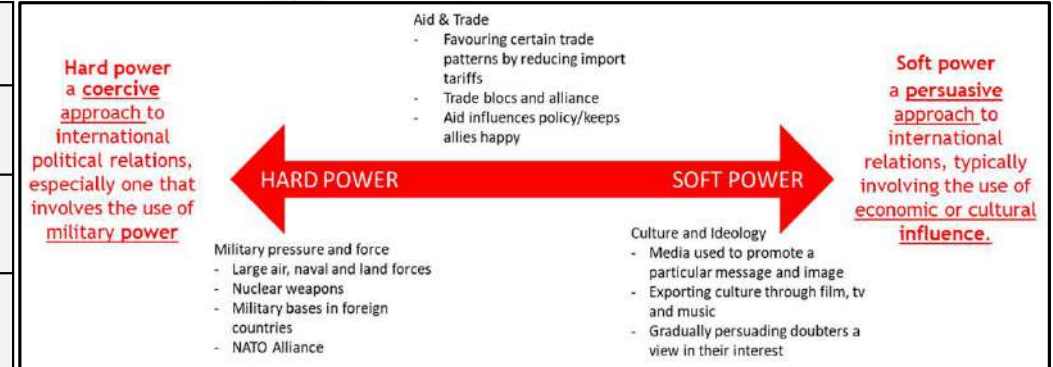
Censorship	Government powers to censor/hide information. Only letters by GHQ/ government could be published. Letters censored.
Propaganda	Boost morale. Communicate messages e.g. rationing. To recruit soldiers and female workers.
Rationing 1.1.1918	German unrestricted submarine warfare – Britain 6 weeks from starving out. Sugar rationed, then tea, jam and butter. Ration cards
Increased female employment	Munitionettes – munitions workers, nickname canary girls. Land Girls – 13,000 Transport workers. Engineers and mechanics. 1.2 million joined - start of war.
Contract workers (additional labour)	Empire -100,000 Egyptians, tens thousands Indians. Other workers: Chinese workers 100,000, refugees - Birtley Belgians
Total war	Zeppelin raids – 57 in 1915. Whitby, Hartlepool. Gotha bombers 1917. Defensive measures: barrage balloons, underground shelters

Year 9 Superpowers Knowledge Organiser

What are geopolitics?	
Geopolitics are at play when political leaders, countries, organizations, and corporations assess how their actions would affect others.	
What is a superpower?	
A superpower is a nation with strong ability to exert power on a global scale.	
Political power	being able to exert your political influence and control on an international level e.g. G8 countries, USA sanctions on Russia over Syria
Military power	being able to enforce your military strength whenever or wherever you see fit globally e.g. Russia invading/annexing Ukraine in 2014
Cultural power	using your countries unique culture and identity to attract or persuade people to buy into it from anywhere in the world e.g. McDonald's restaurants serve 68 million customers each day in 68 countries!
Economic power	being able to buy, control or enforce yourself by economic means internationally e.g. Space race USA, Russia and China



H I C	High income country e.g. USA, UK, Germany etc.
L I C	Low income country e.g. Chad, Ethiopia, Afghanistan etc.
N E E	Newly emerging economy e.g. Mexico, Turkey etc.
T N C	Trans national companies (they operate in more than one country)



	UK	USA	Brazil	Russia	India	China	Nigeria
Economic	Sixth largest economy in the world, accounting for 3.3% of global GDP. The sectors that contribute most are services, manufacturing, construction, and tourism.	Largest economy in the world, account for 22% of global GDP. They have a highly diverse economy.	Produces half of all South American GDP, with trade in automobiles, steel and petrochemicals to computers, aircraft sectors	11 th largest economy in the world, 15% of which comes from oil and gas revenue.	The fifth largest economy in the world, accounting for 3.9% of global GDP with trade in mining, construction and IT growing	Second largest economy in the world, accounting for 15% of global GDP. Trading in mining and ore processing; iron and steel; aluminium; coal, etc.	The 27 th largest economy in the world, with expanding manufacturing, financial, service, communications, technology and entertainment sectors
Military	8 th largest military in terms of firepower. Possesses nuclear weapons.	The third largest military, however they spend more than any other country and have advanced weaponry. Possesses nuclear weapons.	Accounts for 60% of all South American military spending. Does not possess nuclear weapons.	4 th largest military spending. Possesses nuclear weapons.	The second largest military in the world – fourth largest in terms of military spending. Possesses nuclear weapons.	The largest military in the world, investing 1.9% of it's GDP. Possesses nuclear weapons.	Nigeria has the 43 rd largest military in the world, spending around 0.5% of their GDP.
Political	The United Kingdom has a stable government, however Brexit has the potential to limit their political influence in Europe.	Previously at the forefront of global political, however President Trump has made numerous controversial decisions that have affected their global image.	Some domestic instability from protests over corruption and spending cuts. President Bolsonaro has made numerous controversial statements.	Russia has a stable government, however the invasion of Ukraine and the poisoning of in Salisbury has re-united the west against Russia.	The world's largest democracy. A founding member of the UN and G20. A significant contributor to global peacekeeping	An authoritarian government, rarely gets involved in international organisations, but invests heavily overseas to maintain relations.	Political unrest in Nigeria is commonplace, they have high levels of corruption, and problems with domestic terrorism from Boko Haram.
Cultural	The British empire exported the British culture to the colonies, resulting in English becoming the official language of 53 countries.	The USA is home to many large brands e.g. McDonalds, Starbucks etc. They also have the third largest film industry and export lots of TV and music.	Hosted the world cup and Olympics – so holds sporting significance. Is home to Rio Carnival, which spreads acceptance of their culture.	The Russian language is only spoken by former USSR countries, therefore the spread of their culture is limited.	Windrush generation settled in USA, Canada and UK spreading Indian culture. Bollywood is the world's largest film industry.	China's recent investment in Africa has lead to a spread of Chinese culture in Africa. However they have little global impact.	One of Nigeria's largest exports is Afrobeats, they also have the second largest film industry, Nollywood.

Christians believe God is linked with suffering, however many other people question how and why God would allow suffering to exist.

Quality	The problem
All-powerful	God can't do anything to stop suffering, so he cant be all-powerful.
All-loving	God doesn't care about human suffering, so he can't be all-loving.
All-knowing	God just doesn't know human suffering even happens, so he can't be all-knowing.

There are 2 types of evil and suffering which exist in the world;

- Moral evil is the type of evil which is caused by humans (such as a terrorist attack)
- Natural evil is the type of evil which is caused by mother nature (such as an earthquake)

Evil events like the ones above can cause one of 2 types of suffering; physical suffering is suffering which causes harm to a persons body or emotional suffering which causes harm to a persons mind.

The **Devil** is a cause of suffering. He is the opposite of God is believed to be there to test people and their faith.

Adam and Eve are believed to be a cause of suffering because they disobeyed God by eating the forbidden fruit.

Christians accept that people are **tested** throughout their lives. Such as Job who lost everything as a test of his loyalty.

Due to **Jesus** dying on the cross, Christians would argue they have a very good understanding of what suffering is like.

What is suffering?

Year RE – Unit 1

Knowledge organiser

Glossary

- Suffer** – to experience pain
- Physical suffering** – when a persons body experiences pain
- Emotional suffering** – when a persons mind experiences pain
- Moral evil** – evil caused by humans
- Natural evil** – evil caused by mother nature
- God** – supreme being
- Devil** – opposite of God
- Job** – Loyal follower of God
- Prince Siddhartha** – first Buddha to reach enlightenment
- 4 noble truths** – reasons why Buddhists believe people suffer
- Eightfold path** – 8 things Buddhists should and shouldn't do
- Enlightenment** – to gain greater knowledge

Prince Siddhartha
Siddhartha was a prince who had lots of wealth and riches. His father didn't want the prince to experience suffering and therefore he forbid the prince leaving the palace. The prince escaped the palace and had 4 sightings. These 4 sightings made him realise his father wasn't being honest and he then left the palace forever and became a holy man.

This is a Buddhist reason for suffering.



The 4 noble truths
These are the four reasons why Buddhists believe people suffer;

- The truth of suffering
- Causes of suffering
- End of suffering
- Path which frees us from suffering



The Story of Job
Job was a wealthy farmer with a large family. He was tested by the devil to see if he remains loyal. Life stock was killed as were his family and Jobs health was tested. Even with all of this, Job remained loyal to God and God restored Jobs health, double the wealth and a happy life.

Christians use this story to help them understand the role of suffering in the world.



Do You Spit Diamonds?

If so complete these tasks -

1.) Phonics - je **veux**, **quelquefois**, **le/la**, **égoïste**, je vais, dansé, allé, j'ai v je, hier

2.) Translation -

Tu aimes Facebook? Facebook c'est le réseau social le plus populaire du monde avec six-cent millions de membres en 2010. Avec Facebook, on peut se connecter facilement avec ses amis, sa famille, les amis de ses amis.... L'utilisateur moyen a cent-trent amis. Il reste plus de cinquante-cing minutes par jour sur Facebook et clique neuf fois par jour sur le bouton "j'aime". En France, il y a plus de quinze millions de personnes qui utilisent Facebook.

3.) Read aloud challenge - read the above and try and get through without making any mistakes.

4.) Grammar -

- a.) Describe yourself - hair, eyes, personality using qualifiers, ensuring adjectives agree and use the verb avoir (to have) and être (to be). Add information about your best friend too! State how you find your best friend using a direct object pronoun.
- b.) Write a role play inviting someone out with you. The person needs to decline your first answer and then agree to your second suggestion. You will need to use the near future tense and a time expression. Can you also use a natural expression? (you're joking! Etc)

Write a paragraph describing your date. State where you have been, with whom and what it was like. You need to ensure that you use the past tense both with avoir and être and at least 3 words from the high frequency word list. Can you also add an opinion in the present tense and perhaps where you are going on your next date (near future tense).

Tu es comment? • What do you look like?

J'ai les cheveux ...	I have ... hair.
blonds.	blond
noirs.	black
bruns.	brown
roux.	red
J'ai les yeux ...	I have ... eyes.
bleus.	blue
marron.	brown
gris.	grey
verts.	green
Je suis beau/belle.	I am good-looking/ beautiful.

Mon caractère • My personality

Je suis ...	I am ...
arrogant(e)	arrogant
beau/belle	good-looking/beautiful
charmant(e)	charming
drôle	funny
égoïste	selfish
généreux/généreuse	generous
gentil(le)	kind
jaloux/jalouse	jealous
joli(e)	pretty
lunatique	moody
pénible	a pain
timide	shy

Sur Facebook • On Facebook

Je vais sur ma page perso.	I go onto my home page.
Je lis mes messages.	I read my messages.
Je poste des messages.	I post messages.
Je modifie mes préférences.	I update my likes.
J'invite mes copains.	I invite my friends.
Je fais des quiz.	I do quizzes.
Je joue à des jeux.	I play games.
Je regarde des photos.	I look at photos.
Je commente des photos.	I leave comments on photos.
Je passe des heures ...	I spend hours ...
On organise des sorties.	We arrange to go out.
On partage des photos.	We share photos.
On s'envoie ...	We send each other ...
des liens vers des vidéos	video links

La fréquence • Frequency

quelquefois	sometimes
souvent	often
tous les jours	every day
tous les soirs	every evening
tous les weekends	every weekend
une fois/deux fois par semaine	once/twice a week

Year 9 Ma vie sociale d'ado

Les invitations • Invitations

Je vais/On va ...	I'm/We're going to ...
aller au cinéma/en ville	go to the cinema/into town
aller à la patinoire/à une fête	go to the skating rink/to a party
faire les magasins	go shopping
faire un pique-nique	have a picnic
Tu viens avec moi/nous?	Are you coming with me/us?
Tu veux m'/nous accompagner?	Do you want to come with me/us?
Ça t'intéresse?	Are you interested?
On se retrouve où/à quelle heure?	Where/When shall we meet?
chez moi/toi	at my/your place
Il y a une séance à ...	There's a showing at ...
À plus.	See you later.
À demain/samedi.	See you tomorrow/on Saturday.

Les réactions • Reactions

Oui, merci. Je veux bien.	Yes, please. I'd like to.
D'accord, si tu veux.	OK, if you like.
Génial! Bonne idée!	Great! Good idea!
Pourquoi pas?	Why not?
Je n'ai pas trop envie.	I don't really want to.
Tu rigoles!	You're joking!
C'est vraiment nul!	That's really rubbish!
J'ai horreur de ça!	I hate that!

Où vas-tu le weekend? • Where do you go weekend? at the weekend?

Je vais ...	I go ...
au centre commercial.	to the shopping centre.
au centre de loisirs.	to the leisure centre.
au cinéma.	to the cinema.
au fastfood.	to the fast-food restaurant.
à la patinoire.	to the ice rink.
à la piscine.	to the swimming pool.

Most adjectives have different masculine, feminine and plural forms. The two most common patterns are:

singular		plural	
masculine	feminine	masculine	feminine
charmant	charmante	charmants	charmantes
généreux	généreuse	généreux	généreuses

Les sorties • Going out

Je suis sorti(e) avec ...	I went out with ...
Je suis/On est allé(e)(s) ...	I/We went ...
au cinéma/à une fête/en ville	to the cinema/to a party/into town
J'ai/On a ...	I/We ...
bavardé	chatted
bu du coca	drank cola
fait les magasins	went shopping
fait une promenade	went for a walk
joué au bowling	went bowling
mangé un hamburger	ate a burger
regardé un DVD	watched a DVD
bien rigolé	had a real laugh
On a dansé ensemble.	We danced together.
Je suis resté(e) à la maison.	I stayed at home.

Ça s'est passé • How did it go? comment?

C'était ...	It was ...
cool/génial	cool/great
intéressant/marrant	interesting/funny
romantique/sympa	romantic/nice
affreux/bizarre	terrible/weird
ennuyeux/horrible	boring/horrible
nul/un désastre	rubbish/a disaster

Quand? • When?

ce matin/soir	this morning/evening
cet après-midi	this afternoon
demain matin	tomorrow morning
samedi après-midi	Saturday afternoon
dimanche soir	Sunday evening
hier	yesterday
samedi dernier	last Saturday
le weekend dernier	last weekend
l'année dernière	last year

Adjective

Agreement

Most verbs form the perfect tense with part of avoir + a past participle.

For regular -er verbs, take off -er and add é:

manger (to eat) → j'ai mangé (I ate/I have eaten)

boire (to drink), faire (to do/make), lire (to read), prendre (to take) and voir (to see) have irregular past participles.

j'ai	dansé/regardé
tu as	bu
il/elle/on a	fait
nous avons	lu
vous avez	pris
ils/elles ont	vu

Perfect tense

(past)

je suis	allé(e)(s)
tu es	resté(e)(s)
il/elle/on est	sorti(e)(s)
nous sommes	
vous êtes	
ils/elles sont	

To say what you are going to do, you can use the near future tense. This is formed by using the correct part of the verb aller (to go), plus the infinitive of another verb.

je vais	aller
tu vas	faire
il/elle/on va	jouer
nous allons	manger
vous allez	voir
ils/elles vont	sortir

Near Future Tense

Present Tense -er

Studio Grammaire

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In the present tense, regular -er verbs take the following endings:

passer (to spend time)

je passe nous passons

tu passes vous passez

il/elle/on passe ils/elles passent

The verbs avoir (to have), être (to be), faire (to do/make) and lire (to read) are irregular. Check their present tense endings in the Verb tables (pp. 128-130).

Direct Object Pronoun

A direct object pronoun replaces a noun which is the object of the sentence. In French, direct object pronouns go **in front of the verb**.

Comment tu trouves Frank?

Je **le** trouve gentil.

Comment tu trouves Emma?

Je **la** trouve jolie.

Comment tu trouves Thomas et Julie?

Je **les** trouve pénibles.

A few important verbs take être, not avoir.

The past participle has to agree with the subject:

Elle est allée en ville.

Year 8 Module Chez moi, chez toi!

If so complete these tasks -

1.) Phonics - j'habite, vieux/vielle, chez moi il y a. il n'y a pas de, je vais, l'armoire, le lit, sous/sur, du beurre, du pain, de thé

2.) Translation -

Tu es invite(e) à ma fête d'anniversaire, samedi soir à sept heures et demie! Je vais acheter des pizzas à emporter et du coca, mais il faut apporter un ou deux paquets de chips, s'il te plait. Comme dessert, on va manger un gâteau d'anniversaire. Miam-miam! Il faut aussi venir déguisé! Le thème de la fête, c'est les super-héros. Moi, je vais porter un costume Wolverine, parce que j'adore les X-Men! Et toi? Qu'est-ce que tu vas porter? D'abord, on va manger, puis on va faire un karaoké. On va s'amuser! Tu viens?

3.) Read aloud challenge - read the above and try and get through without making any mistakes.

4.) Grammar -

a.) Describe your bedroom using at least 5 prepositions - be careful if you use one that used de!

b.) Write what you eat for a meal using de correctly

c.) Write an ingredients list for pancakes using "you must buy"

Write a paragraph describing what you are going to do at the Carnival. Can you add what is in your picnic basket? Extend to add what you wore to a Halloween party last year. Add at least one preposition!

Les domiciles • Homes

j'habite	I live
la maison	house
l'appartement (m)	flat
la rue	street/road
à la campagne	in the country
dans un village	in a village
dans une ville	in a town



Les adjectifs • Adjectives

petit	small
grand	big
beau/belle	beautiful
joli(e)	pretty
vieux/vieille	old
nouveau/nouvelle	new
neuf/neuve	brand new
moderne	modern
confortable	comfortable
gros(se)	big (for animals and objects)/fat



Les pièces • Rooms

Chez moi, il y a ...	In my home, there is/are ...
la chambre (de mes parents/de ma sœur)	(my parents'/my sister's) bedroom
ma chambre	my bedroom
la cuisine	kitchen
le jardin	garden
la salle à manger	dining room
la salle de bains	bathroom
le salon	living room
les toilettes	toilet
Il n'y a pas de ...	There isn't a .../There aren't any ...



Les quantités • Quantities

un litre de ...	a litre of ...
un paquet de ...	a packet of ...
une tranche de ...	a slice of ...
cinq cents grammes de ...	500 grams of ...
un kilo de ...	a kilo of ...
une tablette de ...	a bar of ...
une bombe de ...	a spray can of ...



Year 8 Module Chez moi, chez toi!

Les meubles et les appareils

• Furniture and appliances

l'armoire (f)	wardrobe
le bureau	desk
le canapé/la chaise	sofa/chair
la douche	shower
la fenêtre	window
le frigo	fridge
le lavabo	wash basin
le lit	bed
la machine à laver	washing machine
la télé (satellite)	(satellite) TV



Les prépositions • Prepositions

dans/devant	in/in front of
derrière	behind
entre	between
sous	under(neath)
sur	on
à côté de	next to
à droite de/à gauche de	on the right of/on the left of
en face de	opposite



Le petit déjeuner • Breakfast

Qu'est-ce que tu prends pour le petit déjeuner?	What do you have for breakfast?
Je mange/Je prends ...	I eat/I have ...
du beurre/du pain	butter/bread
de la confiture	jam
des céréales	cereals
un croissant	a croissant
un pain au chocolat	a pain au chocolat
une baguette	a baguette
une brioche	a brioche (sweet loaf)
une tartine	a slice of bread and butter



Je bois/Je prends ...	I drink/I have ...
du café/du lait/du thé	coffee/milk/tea
du chocolat chaud	hot chocolate
du jus d'orange	orange juice

dîner • Evening meal

du fromage/du poisson	cheese/fish
du poulet/du riz	chicken/rice
de la soupe	soup
de la viande	meat
des crêpes	pancakes
des crudités	crudités
des escargots	snails
des légumes	vegetables
des pâtes	pasta
des plats à emporter	takeaway food
des pommes de terre	potatoes
des tomates	tomatoes
un fruit	a piece of fruit
un steak-frites	steak and chips
un yaourt	a yoghurt
une mousse au chocolat	a chocolate mousse
Je suis végétarien(ne).	I'm a vegetarian.



Au carnaval • At the carnival

je vais .../on va ...	I'm going to .../we're going to ...
aller au carnaval	go to the carnival
boire un coca	drink a cola
chanter et danser (sur le char)	sing and dance (on the float)
dîner au restaurant	eat in a restaurant
participer au défilé	take part in the parade
porter un costume de (pirate)	wear a (pirate) costume
prendre des photos (avec mon portable)	take photos (on my mobile phone)
regarder le défilé/le feu d'artifice	watch the parade/the fireworks
je vais m'amuser.	I'm going to have fun.
on va s'amuser.	We're going to have fun.



With quantities and containers of food and drink, you just use **de** (not du, de la, de l' or des).

un paquet **de** café un kilo **de** pommes

Les mots essentiels • High-frequency words

chez (exemple: chez moi)	at someone's home (e.g. at my home)
ici	here
là	there
là-bas	over there
voici	here is/here are
plus	more
moins	less
il y a	there is/there are
pour	for



Les provisions • Food shopping

Il faut acheter ...	I/We/You must buy ...
du chocolat	chocolate
du fromage/du jambon	cheese/ham
de la crème Chantilly	whipped cream
de la farine	flour
des bananes	bananas
des champignons	mushrooms
des fraises	strawberries
des œufs	eggs
des pommes	apples



You use comparative adjectives as follows:

plus + adjective + que	more ... than
plus grand que	bigger than
moins + adjective + que	less ... than
moins joli que	less pretty than or not as pretty as

Some prepositions are followed by **de**.

à côté de	next to
à droite de	on the right of
à gauche de	on the left of
en face de	opposite

Remember: **de + le → du**

à côté **du** salon

en face **de la** salle de bains

The partitive article (**du, de la, de l' or des**) means 'some'.

de + le = du	de + l' = de l'
de + la = de la	de + les = des

Do You Spit Diamonds?

If so, complete these tasks

- 1.) Phonics - be careful when saying cognates so they sound German, rather than English. Practise these ones especially.

Sport, Buch, Tennis, Volleyball, wandern, Musik, Computer, .

- 2.) Translation - translate the following paragraph.

Ich heiße Hans, ich bin 12 Jahre alt und ich spiele gern Sport. Ich liebe Fussball und Tennis aber ich spiele nicht gern Federball. Ich gehe gern Skateboard fahren aber meistens am Wochenende gehe ich in die Stadt und treffe ich meine Freunde. Wir sehen Filme ins Kino und mein Lieblingsfilm ist Star Wars. Mein Freund ist nicht ein Fan, sein Lieblingsfilm ist Avengers Endgame und meine Freundin mag nicht Filme sehen. Diese Wochenende möchte sie in den Jugendklub gehen, das wäre toll.

- 3.) Read the same paragraph aloud, how many words can you do without making a mistake, think about your phonics as mentioned above.

- 4.) Grammar - answer these questions -

a.) Why is it so easy to talk about "we" in German?

b.) Name three irregular verbs in German?

c.) If the verb is always the second idea in a sentence, can you highlight all the verbs in the above paragraph?

d.) His and her always stay the same no matter what they are talking about. True or False?

- 5.) Writing task - can you do adapt the paragraph above to talk about what you like to do in your freetime?

Sport

Ich spiele ...
 Ich spiele gern ...
 Ich spiele nicht gern ...
 Er / Sie spielt gern ...
 Basketball.
 Federball.
 Fußball.
 Rugby.
 Tennis.
 Tischtennis.
 Volleyball.
 Spielst du gern ...?
 Ich gehe ...
 Ich gehe gern ...
 Ich gehe nicht gern ...
 Er / Sie geht gern ...
 angeln.
 klettern.
 reiten.
 schwimmen.
 segeln.
 wandern.
 windsurfen.
 Snowboard fahren
 Wildwasser fahren
 Kanu fahren
 Mountainbike fahren

Sport

*I play ...
 I like playing ...
 I don't like playing ...
 He / She likes playing ...*
 basketball.
 badminton.
 football.
 rugby.
 tennis.
 table tennis.
 volleyball.
Do you like playing ...?
*I go ...
 I like going ...
 I don't like going ...
 He / She likes going ...*
 fishing.
 climbing.
 riding.
 swimming.
 sailing.
 hiking.
 windsurfing.
 snowboarding
 whitewater rafting
 canoeing
 mountain biking



Year 7 Echo 1 Module 4 Freizeit

Freizeit

Was machst du in deiner Freizeit?
 Ich spiele Computerspiele.
 Ich spiele Gitarre.
 Ich gehe in die Stadt.
 Ich gehe in den Jugendklub.
 Ich gehe ins Kino.
 Ich besuche meine Freunde.
 Ich fahre Rad.
 Ich faulenze.
 Ich höre Musik.

Free time

*What do you do in your free time?
 I play computer games.
 I play the guitar.
 I go into town.
 I go to the youth club.
 I go to the cinema.
 I visit my friends.
 I go cycling.
 I laze around.
 I listen to music.*

Ich lese.
 Ich sehe fern.
 Ich tanze.
 Wir gehen ins Kino.
 Hörst du gern Musik?

*I read.
 I watch TV.
 I dance.
 We go to the cinema.
 Do you like listening to music?
 Do you like cycling?
 Do you like reading?
 Do you like watching TV?
 Do you like going to the cinema?
 Do you like playing tennis?*

Fährst du gern Rad?
 Liest du gern?
 Siehst du gern fern?
 Gehst du gern ins Kino?

Spielst du gern Tennis?

Wie oft?

Wie oft spielst du Fußball?
 Wie oft gehst du schwimmen?
 Wie oft spielst du am Computer?
 Wie oft siehst du fern?
 Wie oft liest du ein Buch?
 Wie oft fährst du Rad?

How often?

*How often do you play football?
 How often do you go swimming?
 How often do you play on the computer?
 How often do you watch TV?
 How often do you read a book?
 How often do you go cycling?
 Every day.
 Once a week.*

Am Wochenende.
 Oft.
 Immer.
 Manchmal.
 Nie.

*At the weekend.
 Often.
 Always.
 Sometimes.
 Never.*

Lieblingssachen

Was ist dein ...
 Lieblingsauto?
 Lieblingshaustier?
 Lieblingssport?
 Was ist deine ...
 Lieblingssendung?
 Lieblingsmannschaft?
 Lieblingsfarbe?
 Lieblingsmusik?
 Lieblingszahl?
 Mein / Meine ... ist ...
 Sein / Seine ... ist ...
 Ihr / Ihre ... ist ...

Favourite things

*What is your ...
 favourite car?
 favourite pet?
 favourite sport?
 What is your ...
 favourite programme?
 favourite team?
 favourite colour?
 favourite music?
 favourite number?
 My ... is ...
 His ... is ...
 Her ... is ...*

Pläne

Hast du am Samstag Zeit?
 Möchtest du ...
 Fußball spielen?
 Tennis spielen?
 Basketball spielen?
 ins Kino gehen?
 in die Stadt gehen?
 in die Disko gehen?
 in den Jugendklub gehen?
 Ja, gern.
 Ja, das mag ich.
 Nein, das mag ich nicht.
 Nein, das ist langweilig.
 Wann treffen wir uns?
 Um ... Uhr.
 Bis dann.
 Bis Samstag.

Plans

*Have you got time on Saturday?
 Would you like to ...
 play football?
 play tennis?
 play basketball?
 go to the cinema?
 go into town?
 go to the disco?
 go to the youth club?
 Yes, I would.
 Yes, I like that.
 No, I don't like that.
 No, that's boring.
 When shall we meet?
 At ... o'clock.
 Till then.
 Till Saturday.*

ECHO • Detektiv

Remember the present tense regular verb endings:

spielen – to play **gehen – to go**
 ich spiele ich gehe
 du spielst du gehst
 er / sie spielt er / sie geht

ECHO • Detektiv

Gern

The word **gern** just after the verb shows you like doing something:

Ich spiele **gern** Fußball.
 I like playing football.

Use **nicht gern** to show you don't like doing something:

Ich spiele **nicht gern** Volleyball.
 I don't like playing volleyball.

ECHO • Detektiv

Irregular verbs

lesen – to read

ich lese
 du liest
 er / sie liest

sehen – to see/watch

ich sehe
 du siehst
 er / sie / sieht

fahren – to travel

ich fahre
 du fährst
 er / sie fährt

ECHO • Detektiv

In German sentences, the **verb** is always the **second idea** in the sentence.

1	2	3
Nina	spielt	um elf Uhr Tennis.
Um elf Uhr	spielt	Nina Tennis.

ECHO • Detektiv

Saying 'we' in German

wir = we



The verb ending for **wir** is **-en**:

Wir **spielen** Basketball. = We play basketball.
 Wir **gehen** ins Kino. = We go to the cinema.
 Wir **tanzen**. = We dance.
 Wir **lesen**. = We read.
 Wir **besuchen** Freunde. = We visit friends.

ECHO • Detektiv

Möchtest du ...? = Would you like ...?

This can be used with an infinitive, e.g. **spielen, gehen, sehen**.
 The infinitive is always at the end of the sentence.

What do these questions mean?
Möchtest du Tennis spielen? = ?
Möchtest du ins Kino gehen? = ?

ECHO • Detektiv

Modal Verbs – mag and kann

Ich mag Tennis spielen.
 I like playing tennis.

Man kann Tennis spielen.

One can (People can) play tennis.

These two useful verbs are always used with an infinitive (**-en**) at the end of the sentence, in the same way as with **möchtest du ...?**

Now translate these into English:
Ich mag Wildwasser fahren.
Man kann Mountainbike fahren.

ECHO • Detektiv

sein = his **ihr** = her

Just like **ein, mein** and **dein**, **sein** and **ihr** change with the noun they are describing.

m **Sein** / **Ihr** Lieblingssport ist Tennis.
f **Seine** / **Ihre** Lieblingsfarbe ist Grün.
n **Sein** / **Ihr** Lieblingsauto ist ein VW.

Do You Spit Diamonds?

If so, complete these tasks

- 1.) Phonics - Practise these key words.

Stadt, Einfamilienhaus, Esszimmer, es gibt, ich höre, es war, ich hatte, auf, unter, neben.

- 2.) Translation - translate the following paragraph.

Ich heiße Anna, ich bin 14 Jahre alt und ich wohne in einem Doppelhaus in Nottingham. Nottingham ist eine Großstadt in England. Mein Haus ist gross und es liegt an Gartenstrasse 78. Meine Telefonnummer ist vierundzwanzig, achtundsechzig, fünfundsiebzig, dreissig, null neun. In meinem Haus gibt es drei Schlafzimmer, ein Badezimmer, einen Garten, zwei Wohnzimmer, eine Küche und eine Garage. Leider gibt es kein Esszimmer. Ich studiere im Wohnzimmer und meine Mutter isst in der Küche. In meinem Zimmer gibt es einen Kleiderschrank neben meinem Bett und ein Regal hinter dem Schreibtisch. Auf dem Regal gibt es eine Stereoanlage. Ich hatte einen Nachttisch aber es war alt und ist jetzt kaputt.

- 3.) Read the same paragraph aloud, how many words can you do without making a mistake, think about your phonics as mentioned above.

- 4.) Grammar - answer these questions -

- a.) How many meanings does the word "es gibt" have? Name them both
- b.) Name three irregular verbs in German
- c.) If the verb is always the second idea in a sentence, can you highlight all the verbs in the above paragraph?
- d.) "War" and "hatte" are in a tense with a specific name. What is the name of that tense?

- 5.) Writing task - can you adapt the paragraph above to talk about what your house is like and was like?

Mein Zuhause

Wo wohnst du?
Ich wohne ...
in einem Dorf.
in einer Stadt.
in einer Großstadt.
an der Küste.
in den Bergen.
auf dem Land.

My home

Where do you live?
I live ...
in a village.
in a town.
in a city.
on the coast.
in the mountains.
in the country.

Häuser

Ich wohne in ...
Er / Sie wohnt in ...
einer Wohnung.
einem Einfamilienhaus.
einem Doppelhaus.
einem Reihnhaus.
einem Bungalow.
Mein Haus ist ...
groß.
mittelgroß.
klein.

Houses

I live in ...
He / She lives in ...
a flat.
a detached house.
a semi-detached house.
a terraced house.
a bungalow.
My house is ...
big.
medium-sized.
small.

Kontakte

Wie ist deine Adresse?
Meine Adresse ist ...
Wie ist deine Telefonnummer?
Meine Telefonnummer ist ...
Wie bitte?
Langsamer bitte.

Getting in touch

What's your address?
My address is ...
What's your phone number?
My phone number is ...
Pardon?
More slowly, please.

Mein Zimmer

Wie ist dein Zimmer?
Mein Zimmer ist ...
klein.
groß.
hell.
dunkel.
ordentlich.
unordentlich.
sehr
ziemlich
nicht sehr

My room

What's your room like?
My room is ...
small.
big.
bright.
dark.
tidy.
untidy.
very
quite
not very

Freizeit

Ich höre Musik.
Ich spiele am Computer.
Ich koche.
Ich arbeite im Garten.
Ich esse.
Ich lese.
Ich sehe fern.
Ich schlafe.
Er / Sie isst.
Er / Sie sieht fern.
Er / Sie liest.
Er / Sie schläft.
im Garten
im Keller
in der Küche
im Wohnzimmer
im Schlafzimmer
im Badezimmer
im Esszimmer

Free time

I listen to music.
I play on the computer.
I cook.
I work in the garden.
I eat.
I read.
I watch TV.
I sleep.
He / She eats.
He / She watches TV.
He / She reads.
He / She sleeps.
in the garden
in the basement
in the kitchen
in the living room
in the bedroom
in the bathroom
in the dining room

ECHO • Detektiv

Irregular verbs

	ich	du	er / sie
essen – to eat	esse	isst	isst
sehen – to see	sehe	siehst	sieht
lesen – to read	lese	liest	liest
schlafen – to sleep	schlafe	schläfst	schläft

Die Zimmer

Es gibt ...
einen Garten.
einen Balkon.
einen Keller.
einen Dachboden.
eine Küche.
eine Toilette.
eine Garage.

Rooms

There's ...
a garden.
a balcony.
a basement/cellar.
an attic/a loft.
a kitchen.
a toilet.
a garage.

Year 7 Echo 1 Module 5 Mein Zuhause

ECHO • Detektiv

es gibt – there is / there are

Use es gibt einen / eine / ein to say there is something:

Es gibt einen Keller. There is a basement.

Use es gibt keinen / keine / kein to say there isn't something:

Es gibt keinen Keller. There isn't a basement.

ein Wohnzimmer.
ein Badezimmer.
ein Esszimmer.
zwei Schlafzimmer.
Es gibt keinen Garten.
Es gibt kein Esszimmer.

a living room.
a bathroom.
a dining room.
two bedrooms.
There isn't a garden.
There isn't a dining room.

ECHO • Detektiv

Prepositions in the dative

Words like **auf**, **in** and **unter** are called **prepositions**. After a preposition, *der*, *die* and *das* change:

der Schreibtisch	→	auf dem Schreibtisch
die Kommode	→	in der Kommode
das Bett	→	unter dem Bett

Wo ist es?

Wo ist die Katze?
Die Katze ist ...
auf dem Regal.
unter dem Bett.
in dem Kleiderschrank.
neben dem Stuhl.
zwischen dem Bett und dem Schreibtisch.
hinter dem Computer.

Where is it?

Where's the cat?
The cat is ...
on the shelf.
under the bed.
in the wardrobe.
next to the chair.
between the bed and the desk.
behind the computer.

ECHO • Detektiv

war / hatte

War means *was* and **hatte** means *had*. If you see **war** or **hatte** in a German sentence, it is easy to see that it is about the past.

Mein Zimmer **war** dunkel.
My room **was** dark.

Ich **hatte** eine Stereoanlage.
I **had** a hi-fi.

Mein zimmer war (klein).
Mein Zimmer war (dunkel).
Ich hatte (keine Stereoanlage).
Ich hatte (kein Regal).
jetzt
vorher

My room was small.
My room was dark.
I didn't have a stereo.
I didn't have a shelf.
now
before

Die Möbel

In meinem Zimmer
habe ich ...
einen Schreibtisch.
einen Kleiderschrank.
einen Stuhl.
einen Computer.
einen Fernseher.
einen Spiegel.
eine Lampe.
eine Kommode.
eine Stereoanlage.
ein Bett.
ein Regal.
ein Sofa.

Furniture

I've got ... in my room.
a desk
a wardrobe
a chair
a computer
a TV
a mirror
a lamp
a chest of drawers
a hi-fi
a bed
a shelf
a sofa

ECHO • Detektiv

In statements, the verb is always the second idea:

1st idea	2nd idea
Ich	habe einen Schreibtisch.
In meinem Zimmer	habe ich einen Schreibtisch.

1

Music Timeline

15th Century

16th Century

17th Century

18th Century

19th Century

20th Century

1450

1500

1550

1600

1650

1700

1750

1800

1850

1900

1950

2000

Renaissance

Baroque
1600-1750

Classical
1750-1820

Romantic
1820-1900

Modern
1900-2000

2

Baroque music

- Small **orchestras** which were made up of mainly strings and horns
 - The **harpsichord** was a popular instrument
 - The **dynamics** were either loud or quiet (**terraced dynamics**)
 - The **harmony** was **diatonic** (it sounded nice)
- Famous **composers** included Handel, Bach and Pachelbel

3

Classical music

- The **orchestras** got a little bigger and started to include some woodwind instruments
 - **Chamber orchestras** and **string quartets** were popular
 - The harpsichord was no longer used, a **conductor** was used instead
 - The **dynamics** included some gradual changes between loud and quiet (**crescendos** and **diminuendos**)
- Famous **composers** included Beethoven, Mozart and Haydn

4

Romantic music

- The **orchestras** were a lot bigger and included string, woodwind, brass and percussion instruments
 - The music was sometimes called **programme music** (music for a story, mood or emotion)
 - The **dynamics** were more **expressive**
 - The **harmony** sometimes used notes that clash (**dissonance**)
- Famous **composers** included Chopin, Brahms and Tchaikovsky

5

Expressionism music (1900-1920)

- The sounds and notes used were **dissonant** (clashed)
 - There were **extreme contrasts** in dynamics
 - There were **wide leaps** in pitch
 - Sometimes **instruments** would be played in an unusual way
 - The **melodies** and **harmonies** didn't go very well together
- Famous **composers** included Schoenberg, Berg and Webern

Drama Knowledge Organiser: Year 9 Unit 1 – Devised - Naturalism

Key Skills		Devising process	
Volume	How loud or quiet you speak	Discuss	In your group you should look at the stimulus and discuss potential ideas that you could turn into a Drama
Tone	Matching mood or emotion	Decide	Once you have discussed ideas you should decide what idea you wish to make into a Drama.
Pace	How fast or slow you speak	Develop	You should explore different ideas/characters and experiment with different scenes to make your idea work.
Pitch	How high or low you speak	Rehearse	Once you have your ideas sorted - You should practice all scenes in order to make it ready to perform.
Body Language	How you use your body to show something	Perform	Performing to an audience
Gestures	How you use your hands to communicate	Staging	
Facial Expression	How you use your face to communicate an emotion	1. Lighting 2.Sound 3.Costume 4.Props 5.Set 6.4th Wall	The use of lights to create a particular atmosphere
Stage Directions	Where on the stage you are positioned Movement Using the whole stage		Adding sound or music to create an effect
			What the character would wear
			Items used within the performance
			Backdrops and items to create an atmosphere
			A naturalistic production will be solid, three dimensional, and most often in a proscenium theatre that enhances the sense of that fourth wall, creating the illusion of real life being played out.
Rehearsal Techniques		Theatre Practitioner	
Emotional Memory	An actor recalls own experiences of a physical, mental or emotional time and uses this in character	Konstantin Stanislavski is one of the greatest and most influential of modern theatre practitioners. The main thing to remember is that he takes the approach that the actors should really inhabit the role that they are playing. So the actor shouldn't only know what lines he needs to say and the motivation for those lines, but also every detail of that character's life offstage as well as onstage. In this way we can establish Stanislavski as a director and practitioner whose productions are naturalistic. Lee Strasberg was inspired by Stanislavski to develop his Method acting techniques! STANISLAVSKI Fact- Many actors use his Naturalistic techniques when preparing for film roles, for example: Angelina Jolie, Scarlett Johansson and Steve Buscemi	
Circle of Attention	The more focused the actor is on the stage, the more focused the audience are on the play Improvisation Created spontaneously or without preparation		
Magic If	Think about what you would do if you were in the characters situation		
	What, Who, When, Where, How and why of the character		
Given Circumstances	What are you trying to show about the character? What's their objective		
Super Objectives	Used to remove tension and relax muscles, in preparation for acting		
Relaxation			



Y9 PE: Half Term 1 - Muscular System

Achieve
Believe
Commit

1

Key terminology

Movement

Explanation

Flexion – Knee and elbow

Bending a Joint

Extension - Knee and elbow

Straightening a Joint

Abduction - shoulder and hip

Taking a limb away from the mid line of the body

Adduction - shoulder and hip

Bringing a limb into the mid line of the body

Rotation – shoulder, hip and wrist

Pivoting around the longitudinal axis

2

Key information:



Abduction at the shoulder

Extension of the knee



Flexion of the knee and elbow

3



Adduction of the lower shoulder

Rotation of the wrist



4

Web links:

<https://www.bbc.co.uk/bitesize/guides/zct2hv4/revision/1>

<https://www.youtube.com/watch?v=5BfpNgrrrBM>

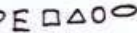
UNDER THE SEA

YEAR 9 KNOWLEDGE ORGANISER

ART

Introduction: This project will teach you how to apply the 'formal elements' of art. You will be creating your own artwork inspired by sea creatures.

FORMAL ELEMENTS: the parts used to make an artwork

LINE  **TEXTURE** 
tone  **PATTERN** 
SHAPE  **COLOUR** 
FORM 

KEY VOCABULARY

colour theory
 tessellation
 symmetrical/asymmetrical
 pattern
 slip
 glaze
 kiln
 proportion

Georgia O'Keeffe: www.okneffemuseum.org
 M.C. Escher: www.mcesher.com
 Drew Brophy: www.drewbrophy.com
 Kate Malone: www.katemaloneyceramics.com
 Dale Chihuly: www.chihuly.com

ARTISTS WHO EXPLORE NATURE

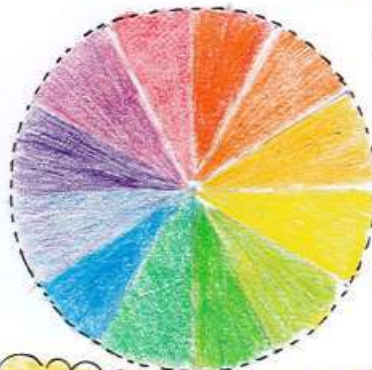
M.C. ESCHER (ERNST HAECKEL) (GEORGIA O'KEEFE)



KEY FACTS ABOUT OCEANS

- 70% of the earth's surface is ocean
- 70% of the oxygen we breathe is produced by oceans
- The Great Barrier Reef can be seen from space
- The Mariana Trench is 36,853 feet deep (Pacific Ocean)
- We have only explored 5% of the world's oceans.

COLOUR THEORY - use this knowledge to mix your own colours



Primary

Secondary

Tertiary

COLORS

Harmonious
 Complementary / contrasting
 Monochromatic

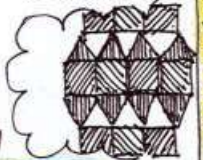
ART TECHNIQUES

watercolours 
 collage  ← layers of torn or cut papers

ART MATERIALS

pen
 pencil
 watercolour
 paint
 paper
 ink drawing
 screen printing

collage
 clay
 chalk



TESSELLATIONS

HOW TO DRAW A SHELL

- Step 1** - analyse the overall shape
 sketch a basic outline
 Is it round, triangular, oval or a combination of shapes?
- Step 2** - sketch other main shapes in
- Step 3** - start to add tone (light, medium & dark) to create 3D form
- Step 4** - use mark-making to add texture detail
- Step 5** - add shadow underneath



SYMMETRY

Year 9 Computing – Unit 9.1 – Create a CD Cover

Lesson 1 – Successful Design

1. Designing a successful cover relies on the combination of important factors
2. What is the **purpose** (have you made it the right size? Does it look like a CD cover?)
3. Who is the **audience** (who will view the cover?)
4. Who is the cover for eg: artist or band
5. What do existing covers look like?
 - Is there a style they already use?
 - Are their similarities with other artists in this genre?
6. Colour, font, text, images – appropriate?
7. Are things laid out right?
8. Is the image balanced? (white space)

Lesson 2 – Sourcing Assets

Lesson 1 homework – find out about: white space, image resolution, CMYK/RGB colour mode

1. **Assets**, sometimes called ‘digital artefacts’, are items we use in documents
2. For the CD cover, our assets will be the **images** and **text** we use
3. When we are preparing to make a document like a CD cover, we must **source** the assets we need
4. This means to get them from the Internet, create them, get photos etc
5. When we collect them we also need to be aware of **copyright** law

Lesson 3 – Creating your Cover

Lesson 2 homework – research copyright law

1. We create our cover in **Adobe Photoshop**
2. It's a very powerful, professional program
3. When we create the document, we use high quality settings:
 - **12x12cm** – the size we want to match a CD cover
 - **300ppi (pixels per inch)**, the **resolution** which relates to quality
 - **CMYK** (the same colour mode **printers** use)
4. This is to make sure the document looks great when it's printed

Lesson 4 – Tools

1. There are lots of tools in Photoshop, here are the most important ones:

CTRL R	Rulers
CTRL + / -	Zoom in / out
CTRL T	Transform (resize)
	History tool (better than Undo)
	Text tool
	Selection tool
	Magic Wand
	Marquee tool

Lesson 5 – Completing Your CD Cover

1. You need to make sure your CD cover meets set criteria for it to be successful:
 - Has the **artist** and **album name**
 - Is **12x12 cm, CMYK** and **300PPI**
 - Images are chosen **appropriately** (no JPEG **artefacts** – blurry blocks)
 - **Colours** match the style of your chosen artist
 - **Fonts** (style of the text) match the style – you might even have a **logo** to use for them
 - The document is well **balanced** – **white space** is good
 - It closely **follows** your plan – remember your artist or their team would have reviewed it and would expect to see the cover matching it!

Lesson 6 – Saving the Cover

1. Before sending our file off, we would email it to the artist to check their approval
2. Photoshop files are **large** and many email systems won't allow it
3. Not everyone has Photoshop – it's expensive and **specialist software**
4. We **compress** our image to make it small enough to send, in a **file format** that everyone can open
5. **Compression** reduces file sizes
6. There are two types: **lossy** and **lossless**
7. **Lossy** removes **data** to **shrink** the file size. **Some loss of quality.**
8. **Lossless re-orders** the data to shrink the size – but doesn't effect the quality. **Bigger files.**

Extra Reading Links: Photoshop Basics from Adobe: <http://shorturl.at/ciJMO> BBC Bitesize: <http://shorturl.at/flozD> (Compression)

KEY WORDS: audience, purpose, design, assets, digital artefacts, source, copyright, resolution, colour mode, white space, compression, lossy, lossless

Year 9 Computing – Unit 9.2 – App Design

Lesson 1 – Apps vs Mobile Sites

1. An app is a piece of **application software**
2. This is designed for a **specific** job eg: just emailing
3. We can access websites on our phone **web browsers** – these are **mobile sites**
4. They are **similar** to apps (eg: you can go to YouTube.com)
5. However – they can't use the same **features** of your phones:
 - Notifications, GPS, camera, Bluetooth, NFC, vibrations
6. Also, apps can *look* better (**downloaded** and **installed**)

Lesson 2 – User eXperience

1. The **User eXperience (UX)** is how easy it is to use our apps
2. When designing an app, we need to consider **the hardware features** to improve the UX:
 - we can make the phone **vibrate** when touched (**haptics**)
 - **Buttons** get **bigger** etc when touched (**interactive**)
 - The app **rotates** to fill the screen when the phone turns (**accelerometer**)
 - **Biometrics** could be used to login (eg: face or finger print)

Lesson 3 – Complete your Designs

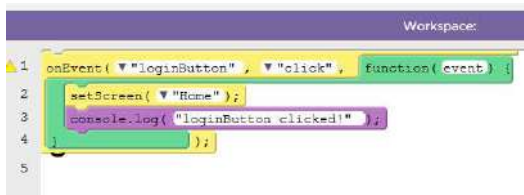
1. There is a set of success criteria for good app design:
 - **Home screen** clear and buttons well place
 - 3 screens designed for other app **functions**
 - **Colours** improve the UX
 - Buttons are '**finger-sized**'
 - **Icons** on buttons clearly suit their **purpose**
 - **Font** makes the UX easy to **read**
 - **Navigation** of the app makes the UX better (swipe? Buttons?)
 - **Login** identified and secure
 - App clearly for all school users

Lesson 4 – Creating your App

1. Code.org > Projects > App Lab to create the app
2. The login screen is important as it needs to **authenticate** who is logging in (staff, parent or pupils)
3. It stops people **accessing private information** (illegal! **GDPR**)
4. The home screen has all the **buttons** to **link** to the other app pages
5. Use clear icons
6. Any code uses **camel case** (eg: camelCase)

Lesson 5 – Link the App Together

1. Your **buttons** need to **link screens** together, using **code**
2. App Lab uses **JavaScript**
3. It presents this in **block code** format – easy to drag and drop, no need to type the code
4. To make the code easier to understand, make sure each **element** of your pages are named correctly with **camelCase** (eg: loginScreen)



Lesson 6 – Continue the App



As you add more button links, you will have more of these 'click events'. On each one the **onEvent** will be different, and the **setScreen** will need changing too. EG: onEvent "logoutButton", setScreen "loginScreen" would log out the app.

Lesson 7 – Advanced Code

1. The code used up to Lesson 7 is quite simple and repeats
2. To add login code:



This code uses **variables** (var) which are places to store things in code. The login code looks at what is stored for the **username** and **password** variables, and checks the inputs to see if they match!

Lesson 8 – Debugging Code

1. As you learnt in Year 7 and 8, **debugging** means to find **errors** in code and **fix them**
2. **Logic errors** cause the code not work as expected (eg: it lets you login in, but you got your password wrong)
3. **Syntax errors** break programs, because you've typed some of the code wrong
4. Debugging allows you to **test** the code, try to break it, then correct any errors
5. To find errors, we have to **decompose** the problem
6. This means to **break it down**

Extra Reading Links: Code.org <http://code.org> (see your login slips too) | BBC Bitesize: <https://www.bbc.co.uk/bitesize/topics/zh939j6>

KEY WORDS: app, application, software, web browser, hardware, user experience, haptics, biometrics, interactive, navigation, code, camelCase, debugging

Year 9 DT Engineering Knowledge Organiser.

Week 1 – Types of Motion

There are four basic types of motion in mechanical systems

Linear motion: movement in a straight line, such as on a paper trimmer



Reciprocating motion: movement backwards and forwards, or up and down in a straight line, such as the movement of a needle on a sewing machine



Rotary motion: movement round in a circle, such as a wheel turning



Oscillating motion: movement swinging from side to side, such as a swing or the pendulum on a clock



Week 2 – Gears

D: Gear trains

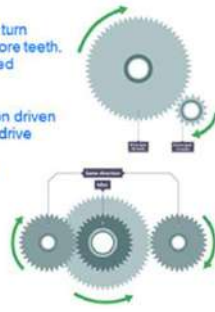
Gears are toothed wheels that interlock. They transfer motion from one part of a machine to another.

Gear trains transmit or change rotary motion. A gear train is where two or more gears are linked together. They can be used to change the direction of motion or change the magnitude of the input force.

Smaller gears with fewer teeth turn faster than larger gears with more teeth. This difference in speed is called the gear ratio.

Gear ratio = number of teeth on driven gear ÷ number of teeth on the drive gear for example:
Gear ratio = $20 \div 10 = 2/1$ or $2:1$

If the drive gear and the driven gear are separated by another gear, called the idler, they will move in the same direction.



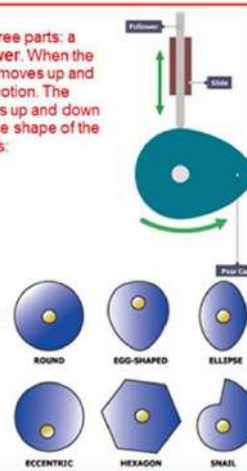
Week 3 – Cams

E: Cams and followers

A cam mechanism has three parts: a cam, a slide and a follower. When the cam rotates, the follower moves up and down in a reciprocating motion. The pattern the follower moves up and down in, varies depending on the shape of the cam; it can do three things:

- go up (rise)
- go down (fall)
- Stay still (dwell)

Cams come in many different shapes to create different combinations of rise, fall and dwell.



Week 4 & 5 – Quality Control

Quality Control refers to the checks carried out on a product by workers, during stages of its manufacture. These checks may include, simply ensuring that components are positioned correctly, or that they are the correct type and size.

A final quality check should include, testing the product to ensure it is to the correct standard, before it is distributed to the retailer / customer. A combination of visual checks and automated checks (by sensors and computers) are usually carried out.



Week 6 – Evaluation

1. What do you think of the overall design ? What changes would you make ?
2. Are you happy with the materials you chose ? Would you make adjustments next time ?
3. Is the colour scheme exactly what you expected ? What alterations would you make ?
4. Did the project take too long to make ? Would this alter the cost of manufacture ?
5. Would it be easy to set up a production line for the manufacture of your solution ?
6. Is your solution safe ? Could it be made safer ?
7. Are the techniques you used to make your solution adequate or would you use a different range of manufacturing techniques ?
8. Is the solution the right size/shape ?
9. What are the views of other people regarding your design ?
10. Does it work ? What changes are required

Week 7 Inputs, process and outputs

A **system** has various parts that **work together** to perform a **set function**. Systems can be broken down into these simple **stages**:



INPUT—is the signal which starts the system off e.g. a button being pressed.

PROCESS—what happens to the input to change it to the output e.g. working of a computer processor.

OUTPUT—is the final result of the system e.g. sound of an alarm.

This is called a block diagram. Each block represents a "subsystem" - one part of the whole system.

Week 8 Working safely with tools



- Be sensible.
- If blade is blunt, let me know.
- Use with a cutting mat.
- Where possible, cut against a metal edge.
- Some cuts will be better done with scissors.
- If in doubt, ask.

Useful links

<https://www.technologystudent.com.com>

<https://www.bbc.co.uk/bitesize>.

Year 9 Food, Cooking & Nutrition Knowledge Organiser. Additional pupil copy A3 size

Week 1 – Chef's PPE



Week 2 – Cross Contamination

Cross contamination is when **bacteria** from **raw food**, especially meat, contaminates **cooked food**. It involves another 'object' to cross the bacteria from one place to another. Recently a purple 'allergen' board has just been introduced.



Week 3 – Sensory Descriptors

Sensory descriptors are the **adjectives** that are used to describe the **appearance**, **smell**, **taste**, **feel** and **sound** of food! It looks...It smells...It tastes...It feels...It sounds...



Week 4 & 8 – Recipe adaptation

Recipes can be **adapted** to change number of **portions**, make it suitable for special **dietary needs**, make it **healthier**, to use **seasonal** ingredients, to make a more **creative** product, to meet **personal taste** preference, to make it more economical or more luxurious



Week 5 – Chef allergen cards

Food can be **contaminated** with **allergens**. By **law**, allergen information (of 14 named foods) has to be on product **labels**. When you eat out, allergen information must be available for all products on a **menu**. This information could be on the menu or there must be guidance on where to find information eg ask staff. Chefs produce **allergen cards** for the foods they make. They will need to check all the ingredients every time they are used as they might change eg oil might contain nut oil. It is vital that this is **accurate** and available to everyone who is **cooking and serving food**, and mostly importantly, the **customer**

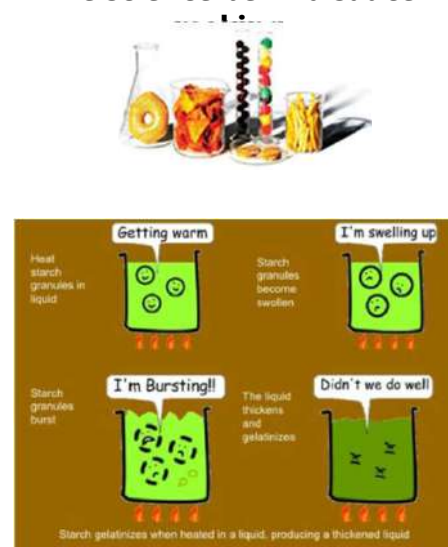


Molluscs are **seafood** in a **shell** eg mussels. **Lupins** are similar to nuts or soya bean and can be found in some **flours** and **baked foods**. **Sulphites** can be found in **dried fruit** and some **meat products**

Week 6 – Nutrients



Week 9 – Gelatinisation The science behind sauce



Week 9 – Sugar App

Sugar is a type of **carbohydrate**. The body uses it for **energy**. However most of us eat too much. Too much is linked to **tooth decay**, **obesity** and type 2 **diabetes**. Sugar is often 'hidden' in foods. You should only have **24g** or **6 cubes** of sugar a day. Download the **Change for life sugar app** to see how much is in the food you eat



<https://www.youtube.com/watch?v=JCQW2ewOA0c>

More links

<https://www.bbcgoodfood.com>

<https://www.nhs.uk/change4life>

<https://www.nutrition.org.uk/healthy-living/resources/eatwellguide.html>

eattheseasons.co.uk

KEY WORDS: Hazard. Hygiene. Safety. Contamination. Bacteria. PPE. Food provenance. Seasonality. Diet. Nutrition.. Sensory descriptors. Allergen. Gelatinisation

SCAN ME !

Rules of Composition



Exposure



Panning



Shutter Speed



Depth of field



Macro



Andrew White

Legography



Sinkachu –

Little people project



Julie Waterhouse-
Expressions



Rule of thirds



Leading Lines



Framing



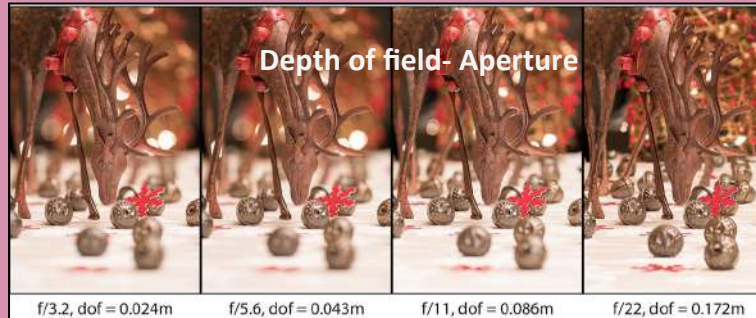
Foreground interest



Key words and phrases

Depth of field	Explore
Focus	Masterpiece
Macro	SD Card
Focal length	Composition
Close up	Exposure
Panning	Aperture
Macro	Shutter
Subject	Shutter speed
Contact Sheet	Crop
DSLR	Explore
Annotate	Mimic

Depth of field- Aperture



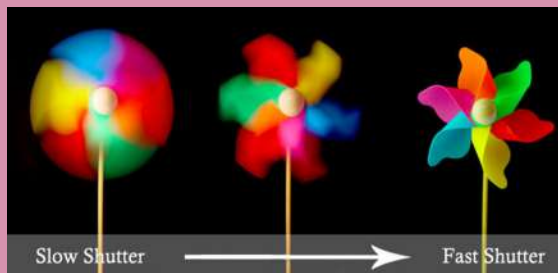
Macro



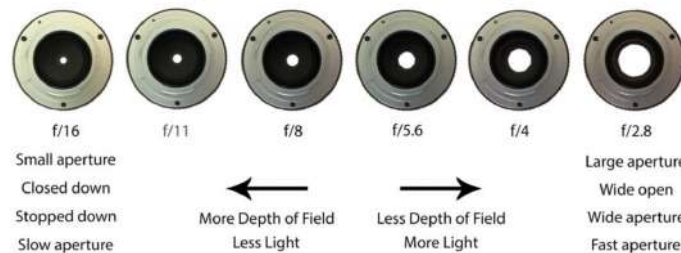
Shutter

Speed

Motion



Aperture Scale - Some Common Terminology



Knowledge
Organiser
Year 9

Photographic Art