

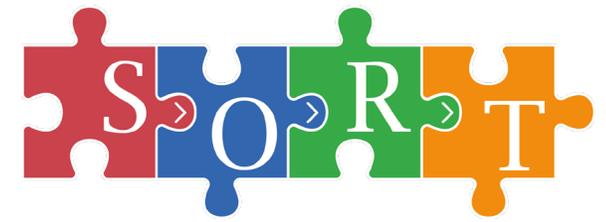
**Year 10**

**Learning Cycle 2**

**Preparing for Assessment**

Student Name: \_\_\_\_\_

# Instructions on how to use your learning cycle booklet:



At Poltair we **SORT** it!

The aim is for all students to be fully prepared and ready for all assessments in all subjects.

To help them with this we have a whole school revision/study strategy – SORT.

There will be two learning cycles throughout Year 10. At the beginning of each learning cycle students will be issued with a booklet that details all knowledge they will be expected to know and recall in the assessments.

Each day, for home learning, students will be set a task of memorising a part of a knowledge organiser from two subjects.

<b>Summarise</b>	<b>Organise</b>	<b>Recall</b>	<b>Test</b>
Summarise and condense any class notes, revision guides and revision.	Organise your revision materials by topic/subtopic. Traffic light your PLC sheets to identify areas of weakness or gaps (Red/Amber) that need to be prioritised.	Use active recall and spaced repetition to memorise your knowledge organisers until you can recall the information eg. Look, cover, write or self-testing	Use low stakes online tests/quizzes and answer high stakes past paper/sample questions to check and apply knowledge and understanding
<b>Strategies</b>			
<ul style="list-style-type: none"> <li>• Cornell Notes</li> <li>• Flash cards</li> <li>• Mind mapping</li> <li>• Revision clocks</li> <li>• Dual coding</li> </ul>	<ul style="list-style-type: none"> <li>• How to use your PLC</li> <li>• How to schedule your home learning and stick to it!</li> </ul>	<ul style="list-style-type: none"> <li>• Look cover &amp; test</li> <li>• Leitner system</li> <li>• Blurt it</li> <li>• Transform it</li> </ul>	<ul style="list-style-type: none"> <li>• Low stakes</li> <li>• Self-quizzing</li> <li>• Quiz each other</li> <li>• Online quizzes</li> <li>• High stakes</li> <li>• Exam style questions</li> </ul>

# Instructions on how to use your learning cycle booklet:

Learning cycle 1 will focus on all the SORT strategies:



Summarise	Organise	Recall	Test

## Using the PLC

- Review each key idea on the PLC
- In the **Organise** column write R, A or G depending on your understanding. **Red** = no understanding, **Amber** = Some understanding but needs work, **Green** – Secure understanding
- When you complete a **Summarise** activity for each key idea, tick the S column
- When you complete a **Recall** activity for each key idea, tick the R column
- When you **Test** by self-quizzing or complete an online-quiz for each key idea, tick the T column

Videos explaining all of the SORT strategies can be found on the Student SharePoint

## Home Learning timetable – when I am going to complete my home learning

	Mon A	Tue A	Wed A	Thu A	Fri A
Core activity	Complete Maths goal				
Subject 1	Science	English	Science	Maths	Option A
Subject 2	Option D	Option B	Option C	English	Independent revision using the knowledge organisers
	Mon B	Tue B	Wed B	Thu B	Fri B
Core activity	Complete Maths goal				
Subject 1	Science	English	Science	Maths	Option A
Subject 2	Option D	Option B	Option C	English	Independent revision using the knowledge organisers

## My computer passwords

Platform	User Name	Password
School system		
Complete Maths		
Educake		
Memrise		

**#revise25**

# REVISE FOR 25

Record every 15 minutes that you revise. You are aiming to complete a minimum of 25 hours ahead of your PPEs. This can include time spent in planned revision sessions, or independent study.

**#revise25**

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25





# Year 10 Learning Cycle 1 Personal Learning Check lists

## Spanish/ French

Key Ideas	S	O	R	T

## Computing

Key Ideas	S	O	R	T
I can explain the purpose of a computer network				
I can define the differences between WAN, LAN and PAN				
I can identify different network topologies				
I can explain the effects of different network vulnerabilities.				
I can describe different methods for preventing network threats				
I can explain the different Network protocols and layers				
I can explain the roles of an operating system.				
I can identify utility software and their use.				
I can discuss the Cultural, Legal, Environmental and Ethical issues in technology development				

## Art

Key Ideas	S	O	R	T
Explain and use tone, texture, line, shape, scale and composition to create an interesting observational drawing.				
Experiment with a range of materials.				
Refine work through annotation.				
Record ideas and observations.				
Develop ideas through investigation.				
Present a personal and meaningful response.				
Explain and discuss how decisions have been made through annotation.				

# Year 10 Learning Cycle 1 Personal Learning Check lists

## D&T

Key Ideas	S	O	R	T
I can give examples from the main material categories.				
I can create a detailed specification- (Access FM)				
I can use a specification to evaluate designs and products.				
I can explain the benefits of one off, batch, mass and continuous production.				
I can create isometric drawings and 1 point perspective drawings				
I can use presentation techniques to improve design communication.				

## Engineering

Key Ideas	S	O	R	T
I can describe and give examples of the main material categories.				
I can create 3D drawings using 1 point and 2 point perspective.				
I can name and describe the main functions of each Engineering hand tools.				
I can name and describe the method of using engineering measuring and marking tools.				
I can describe the main scales of production One off, batch, mass and continuous				
I can carry out calculations for area and volume of 2D and 3D shapes.				

## Hospitality and catering

Key Ideas	S	O	R	T
I can describe Control measures for common risks and hazards in the hospitality industry - slips, trips, falls, burns, scalds.				
I can describe chemical, physical and biological hazards and control processes such HACCP, risk assessments - Food safety procedures.				
I can identify high risk foods and methods of reducing risk - Food related causes of ill health				
I can describe causes of food poisoning and identify visible and invisible symptoms.				
I can explain the importance of the Environmental Health Officer and describe their roles and responsibilities				
I can explain the nutritional requirements of Vulnerable groups of people.				
I can demonstrate the techniques and skills - yeast products, enriched dough, knife skills, pastry making, chicken portioning, white sauce- roux sauce, cake making				

# Year 10 Learning Cycle 1 Personal Learning Check lists – Paper 2 Biology

## 4.7.3 Biodiversity and the effect of human interaction on ecosystems

Describe what biodiversity is, why it is important, and how human activities affect it

Describe the impact of human population growth and increased living standards on resource use and waste production

Explain how pollution can occur, and the impacts of pollution

Describe how humans reduce the amount of land available for other animals and plants

Explain the consequences of peat bog destruction

Describe what deforestation is and why it has occurred in tropical areas

Explain the consequences of deforestation

Describe how the composition of the atmosphere is changing, and the impact of this on global warming

Describe some biological consequences of global warming

Describe both positive and negative human interactions in an ecosystem and explain their impact on biodiversity

Describe programmes that aim to reduce the negative effects of humans on ecosystems and biodiversity

## 4.7.4 Trophic levels in an ecosystem

*Bio ONLY: Describe the different trophic levels and use numbers and names to represent them*

*Bio ONLY: Describe what decomposers are and what they do*

*Bio ONLY: Construct pyramids of biomass accurately from data and explain what they represent*

*Bio ONLY: State how much energy producers absorb from the Sun and how much biomass is transferred*

*Bio ONLY: Explain how biomass is lost between trophic levels, including the consequences of this and calculate efficiency between trophic levels*

## 4.7.5 Food production

*Bio ONLY: Explain the term 'food security' and describe biological factors that threaten it*

# Year 10 Learning Cycle 1 Personal Learning Check lists – Chemistry paper 1

4.3.1 Chemical measurements, conservation of mass and the quantitative interpretation

State that mass is conserved and explain why, including describing balanced equations in terms of conservation of mass

Explain the use of the multipliers in equations in normal script before a formula and in subscript within a formula

Describe what the relative formula mass ( $M_r$ ) of a compound is and calculate the relative formula mass of a compound, given its formula

Calculate the relative formula masses of reactants and products to prove that mass is conserved in a balanced chemical equation

Explain observed changes of mass during chemical reactions in non-enclosed systems using the particle model when given the balanced symbol equation

Explain why whenever a measurement is made there is always some uncertainty about the result obtained

4.3.2 Use of amount of substance in relation to masses of pure substances

**HT ONLY: State that chemical amounts are measured in moles (mol) and explain what a mol is with reference to relative formula mass and Avogadro's constant**

**HT ONLY: Use the relative formula mass of a substance to calculate the number of moles in a given mass of the substance**

**HT ONLY: Calculate the masses of reactants and products when given a balanced symbol equation**

**HT ONLY: Use moles to write a balanced equation when given the masses of reactants and products (inc changing the subject of the equation)**

**HT ONLY: Explain the effect of limiting the quantity of a reactant on the amount of products in terms of moles or masses in grams**

Calculate the mass of solute in a given volume of solution of known concentration in terms of mass per given volume of solution

**HT ONLY: Explain how the mass of a solute and the volume of a solution is related to the concentration of the solution**

4.3.3 Yield and atom economy of chemical reactions

*Chem ONLY: Explain why it is not always possible to obtain the calculated or expected amount of a product*

*Chem ONLY: Calculate the theoretical amount of a product and percentage yield of a product using the formula **% yield = mass of product made / max theoretical mass of product x 100***

**Chem & HT ONLY: Calculate the theoretical mass of a product from a given mass of reactant and the balanced equation for the reaction**

*Chem ONLY: Describe atom economy as a measure of the amount of reactants that end up as useful products*

# Year 10 Learning Cycle 1 Personal Learning Check lists – Chemistry paper 1

4.3.1 Chemical measurements, conservation of mass and the quantitative interpretation

State that mass is conserved and explain why, including describing balanced equations in terms of conservation of mass

4.4.1 Reactivity of metals

Describe how metals react with oxygen and state the compound they form, define oxidation and reduction

Describe the arrangement of metals in the reactivity series, including carbon and hydrogen, and use the reactivity series to predict the outcome of displacement reactions

Recall and describe the reactions, if any, of potassium, sodium, lithium, calcium, magnesium, zinc, iron and copper with water or dilute acids

Relate the reactivity of metals to its tendency to form positive ions and be able to deduce an order of reactivity of metals based on experimental results

Recall what native metals are and explain how metals can be extracted from the compounds in which they are found in nature by reduction with carbon

Evaluate specific metal extraction processes when given appropriate information and identify which species are oxidised or reduced

**HT ONLY: Describe oxidation and reduction in terms of loss and gain of electrons**

**HT ONLY: Write ionic equations for displacement reactions, and identify which species are oxidised and reduced from a symbol or half equation**

**HT ONLY: Explain in terms of gain or loss of electrons that the reactions between acids and some metals are redox reactions, and identify which species are oxidised and which are reduced (Mg, Zn, Fe + HCl & H<sub>2</sub>SO<sub>4</sub>)**

Explain that acids can be neutralised by alkalis, bases and metal carbonates and list the products of each of these reactions

Predict the salt produced in a neutralisation reaction based on the acid used and the positive ions in the base, alkali or carbonate and use the formulae of common ions to deduce the formulae of the salt

Describe how soluble salts can be made from acids and how pure, dry samples of salts can be obtained

**Required practical 1: preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate using a Bunsen burner to heat dilute acid and a water bath or electric heater to evaporate the solution**

Recall what the pH scale measures and describe the scale used to identify acidic, neutral or alkaline solutions

Define the terms acid and alkali in terms of production of hydrogen ions or hydroxide ions (in solution), define the term base

Describe the use of universal indicator to measure the approximate pH of a solution and use the pH scale to identify acidic or alkaline solutions

4.4.2 Reactions of acids

# Year 10 Learning Cycle 1 Personal Learning Check lists – Chemistry paper 1

## 4.5.1 Exothermic and endothermic reactions

Describe how energy is transferred to or from the surroundings during a chemical reaction

Explain exothermic and endothermic reactions on the basis of the temperature change of the surroundings and give examples of everyday uses

**Required practical 4:** *investigate the variables that affect temperature changes in reacting solutions*

Describe what the collision theory is and define the term activation energy

Interpret and draw reaction profiles of exothermic and endothermic reactions, inc identifying the relative energies of reactants and products, activation energy and overall energy change

**HT ONLY: Explain the energy changes in breaking and making bonds and calculate the overall energy change using bond energies**

## 4.5.2 Chemical cells and fuel cells

*Chem ONLY: Describe what a simple cell and a battery is and how they produce electricity*

*Chem ONLY: Describe why alkaline batteries are non-rechargeable, state why some cells are rechargeable and evaluate the use of cells*

*Chem ONLY: Describe fuel cells and compare fuel cells to rechargeable cells and batteries*

*Chem ONLY: Describe the overall reaction in a hydrogen fuel cell*

*Chem & HT ONLY: Write half equations for the electrode reactions in a hydrogen fuel cell*

# Year 10 Learning Cycle 1 Personal Learning Check lists – Physics paper 1

4.3.1 Changes of state and the particle model	Calculate the density of a material by recalling and applying the equation: [ $\rho = m/V$ ]
	Recognise/draw simple diagrams to model the difference between solids, liquids and gases
	Use the particle model to explain the properties of different states of matter and differences in the density of materials
	Required practical 5: use appropriate apparatus to make and record the measurements needed to determine the densities of regular and irregular solid objects and liquids
	Recall and describe the names of the processes by which substances change state
	Use the particle model to explain why a change of state is reversible and affects the properties of a substance, but not its mass
4.3.2 Internal energy and energy transfers	State that the internal energy of a system is stored in the atoms and molecules that make up the system
	Explain that internal energy is the total kinetic energy and potential energy of all the particles in a system
	Calculate the change in thermal energy by applying but not recalling the equation [ $\Delta E = m c \Delta\theta$ ]
	Calculate the specific latent heat of fusion/vaporisation by applying, but not recalling, the equation: [ $E = mL$ ]
	Interpret and draw heating and cooling graphs that include changes of state
	Distinguish between specific heat capacity and specific latent heat
4.3.3 Particle model and pressure	Explain why the molecules of a gas are in constant random motion and that the higher the temperature of a gas, the greater the particles' average kinetic energy
	Explain, with reference to the particle model, the effect of changing the temperature of a gas held at constant volume on its pressure
	Calculate the change in the pressure of a gas or the volume of a gas (a fixed mass held at constant temperature) when either the pressure or volume is increased or decreased
	PHY ONLY: Explain, with reference to the particle model, how increasing the volume in which a gas is contained can lead to a decrease in pressure when the temperature is constant
	PHY ONLY: Calculate the pressure for a fixed mass of gas held at a constant temperature by applying, but not recalling, the equation: [ $pV = \text{constant}$ ]
	PHY & HT ONLY: Explain how work done on an enclosed gas can lead to an increase in the temperature of the gas, as in a bicycle pump

# Year 10 Learning Cycle 1 Personal Learning Check lists – Physics paper 1

## 4.4.1 Atoms and isotopes

Describe the basic structure of an atom and how the distance of the charged particles vary with the absorption or emission of electromagnetic radiation

Define electrons, neutrons, protons, isotopes and ions

Relate differences between isotopes to differences in conventional representations of their identities, charges and masses

Describe how the atomic model has changed over time due to new experimental evidence, inc discovery of the atom and scattering experiments (inc the work of James Chadwick)

## 4.4.2 Atoms and nuclear radiation

Describe and apply the idea that the activity of a radioactive source is the rate at which its unstable nuclei decay, measured in Becquerel (Bq) by a Geiger-Muller tube

Describe the penetration through materials, the range in air and the ionising power for alpha particles, beta particles and gamma rays

Apply knowledge of the uses of radiation to evaluate the best sources of radiation to use in a given situation

Use the names and symbols of common nuclei and particles to complete balanced nuclear equations, by balancing the atomic numbers and mass numbers

Define half-life of a radioactive isotope

**HT ONLY: Determine the half-life of a radioactive isotope from given information and calculate the net decline, expressed as a ratio, in a radioactive emission after a given number of half-lives**

Compare the hazards associated with contamination and irradiation and outline suitable precautions taken to protect against any hazard the radioactive sources may present

Discuss the importance of publishing the findings of studies into the effects of radiation on humans and sharing findings with other scientists so that they can be checked by peer review

## 4.4.3 Hazards and uses of radioactive emissions and of background radiation

*PHY ONLY: State, giving examples, that background radiation is caused by natural and man-made sources and that the level of radiation may be affected by occupation and/or location*

*PHY ONLY: Explain the relationship between the instability and half-life of radioactive isotopes and why the hazards associated with radioactive material differ according to the half-life involved*

*PHY ONLY: Describe and evaluate the uses of nuclear radiation in exploration of internal organs and controlling or destroying unwanted tissue*

*PHY ONLY: Evaluate the perceived risks of using nuclear radiation in relation to given data and consequences*

*PHY ONLY: Describe nuclear fission*

*PHY ONLY: Draw/interpret diagrams representing nuclear fission and how a chain reaction may occur*

# Year 10 Knowledge Organiser – J.B. Priestley’s ‘An Inspector Calls’

## 1. Context:

**1a. IMPORTANCE OF ERA** The play was first performed at the end of World War II, which was a time of remarkable social and political change. Clement Attlee was elected as Prime Minister in 1945 by a significant majority. The Labour campaign was based on the slogan ‘Let Us Face the Future’. By contrast, the play is set in 1912, which was a time of rigid social divisions. Women were still unable to vote and the tensions that eventually lead to the Russian Revolution were becoming increasingly visible.

### 1b. Socialism and Capitalism

we know about the divide between the rich and poor, but the two political movements giving this divide momentum were socialism and capitalism. Socialism is the idea that all wealth should be distributed equally amongst the population, however, capitalism relies on industry and business to create wealth, and this wealth of course goes to the bourgeoisie.

You might be able to guess that the upper class and aristocracy were not pleased with the idea of sharing their wealth with the lower classes. This is seen through the character Arthur Birling, who is a blatant capitalist in the play. He alludes to Bernard Shaws and HG Wells (who were famous socialists), and claims “they can’t do the talking”. He also refers to them as “cranks”, which was an offensive term. Despite his strong and confident political views, Mr Birling proves that he is not a reliable character when he exclaims that “Germans don’t want war” and refers to the “unsinkable Titanic”. Priestley clearly uses this character to critique the obvious arrogance of the upper class, as the audience will unlikely believe him when he says that socialism has no value.

**1c. THE TITANIC** The Titanic was one of three ‘Olympic Class’ ships belonging to the White Star Line. These ships were significantly advanced for their time with progressive engineering, size, and speed. The ship was completed in only three years and was ready to sail from Southampton to New York with a variety of people seeking a better life in America. It’s trip ended 4th April 1912 and tragically took over 1500 lives with it. The Titanic represented the luxury of the Edwardian era and foreshadowed the tragedy of World War One. The Titanic was viewed as indestructible and was seen as a symbol of strength, wealth and prosperity. It saw the loss of both rich and poor however the rich were more likely to survive due to the location of the life-rafts.

### 1d. The Suffragette Movement

In 1865, upper and middle-class women began pushing for universal suffrage: the right for all adult women to vote and stand in political elections. However, this movement did not accelerate until 1903, when Emmeline Pankhurst founded the Women’s Social and Political Union, later known as the Suffragettes. In 1912, when An Inspector Calls is set, the Suffragettes started more aggressive tactics, such as chaining themselves to buildings, setting fire to post boxes and smashing windows. In the play, Eva Smith represents the struggles of the suffrage movement. Her encounter with Mr Birling mirrors the failed attempts of the Suffragettes to convince MPs to vote for universal suffrage prior to WW1. Therefore, Priestley uses Mr Birling as a reminder of the backwards thinking of men in the Edwardian era.

**1e. SOCIETAL NORMS** An Inspector Calls was written in 1945, however, it is set in 1912 and reflects the Edwardian era. King Edward ruled from 1901 to 1910, but the Edwardian era itself spans from the mid-1890s to 1914, the year when WW1 began. During these times, political movements were common: the main being the struggles of proletariats (the working class), highlighted against the growing success of the bourgeoisie (industry and business owners).

Put simply, there was a big divide between the rich and the poor, which caused society to be conducted by a number of unsaid rules in order to keep the status quo. The rich perceived poor people to have no manners or sophistication, and it was strongly believed that no poor person could ever become wealthy. Not only this, but the rich treated the poor extremely inhumanely. They did not want to see or hear from the poor as they believed they were only there to serve a purpose. The rich were entitled to employ the poor and could sack and punish them as they pleased without consequence. The societal norm can therefore be put plainly: the rich were simply “better” than the poor. This led to the clear exploitation of the working class, allowing the rich to get richer and the poor to get poorer. Priestley critiques this flawed system throughout the play and suggests it is merely hypocritical and ineffective.

### 1f. World Wars

The play itself is a historical drama, set in the run-up to WW1. Dramatic irony is used by Priestley throughout the play - a situation in which the audience knows something that the characters do not. The characters constantly refer to the mere possibility of a World War, and the calamities that would be huge landmarks in history to a post-war audience. Not only this, the small-scale but devastating violence in the play alludes to the slaughter of many thousands that would come only a few years later in WW2.

## 2. PLOT & KEY QUOTATIONS

## 3. Vocabulary

### 2a. ACT ONE

1. The Birling family live in a **'fairly large suburban house'** and, at rise of curtain, they are **'pleased with themselves'**.
2. Birling remarks awkwardly that **'it's a pity Sir George and – er – Lady Croft can't be with us'**.
3. Gerland presents Sheila with an engagement ring and she exclaims, **'Oh – it's wonderful!'**
4. Birling makes predictions about the future; he says, **'we're in for a time of steadily increasing prosperity'**.
5. Birling is unrepentant about his role in the suicide of Eva Smith, remarking that **'it's a free country'**.
6. Eric disagrees by saying that **'it isn't if you can't go and work somewhere else'**.
7. Eva does manage to find another job because **'Milwards suddenly found themselves short-handed'**.
8. Sheila feels deeply guilty about using her influence to get Eva sacked; she says that **'if I could help her now, I would –'**.
9. The Inspector reveals that Eva changed her name to Daisy Renton, which prompts Gerald to ask **'[startled] what?'**
10. Gerald asks Sheila not to tell the Inspector about his relationship with Daisy; he says, **'we can keep it from him'**.

### 2b. ACT TWO

1. Gerald tries to deter Sheila from staying to witness the questions and answers that are **'bound to be unpleasant'**.
2. Mrs Birling notes Eric's absence and remarks that he **'seems to be in an excitable silly mood'**.
3. Gerald concedes to the Inspector that he met the **'quite different'** and **'young and pretty'** Daisy in the disreputable Palace Bar.
4. Gerald says that he **'broke it off'** with her before he went away for **'several weeks'** on business.
5. The Inspector reveals that Daisy kept a diary, in which she wrote that **'she felt there'd never be anything as good again for her'**.
6. Obviously upset, Gerald excuses himself and leaves; however, he says, **'I'm coming back'**.
7. Mrs Birling claims that she **'did nothing I'm ashamed of or that won't bear investigation'**.
8. She refused Eva charity money, stating that it is the father's **'responsibility'** to support her.
9. Mrs Birling defiantly says, **'I blame the young man who was the father of the child she was going to have'**.
10. When it is implied that Eric is the father, Mrs Birling becomes agitated and says, **'I won't believe it'**.

### 2c. ACT THREE

1. Eric says bitterly to his mother that **'you haven't made it any easier for me'**.
2. Eric admits that he was **'a bit squiffy'** when he met Eva and **'was in that state when a chap easily turns nasty'**.
3. He saw Eva again; he **'liked'** her, but **'wasn't in love with her or anything'**.
4. Eric tells the Inspector that Eva **'didn't want me to marry her'**.
5. Eric admits to taking money from his father; Birling reacts angrily and says that Eric has been **'spoilt'**.
6. As the Inspector prepares to leave, he highlights to the Birlings and Gerald that each of them **'helped to kill'** Eva.
7. He asks them to remember that **'there are millions and millions and millions of Eva Smiths and John Smiths still left with us'**.
8. The Inspector leaves and Birling says that he is **'absolutely ashamed'** of Eric; Eric says that he is **'ashamed'** of his father **'as well'**.
9. Birling believes that he and the rest of the family were **'bluffed'**; he later confidently concludes that the Inspector was a **'fake!'**
10. The play ends with Birling reporting that **'a police inspector is on his way here – to ask some – questions'**.

**3a = socialist (adj/noun)** Believing in sharing wealth and resources equally in society.

**3b = capitalist (adj/noun)** Belief in the rights of the individual to make money (capital).

**3c = Patriarchy (noun)** A system of society in which men hold the power and women are largely excluded from it.

**3d = moral (adj/noun)** concerned with ideas about right and wrong behaviour

**3e = status (adj)** Someone's position or standing in society

**3f = omniscient (adj)** Knowing everything

**3g = prosperous (adj)** Financially successful; having lots of money

**3h = portentous (adj)** of great importance or done in an overly serious way in order to impress

**3i = prejudiced (adjective)** having or showing a dislike or distrust that is based on unreasonable hatred towards a group or individual

**3j = disconcerting (adjective)** Causing someone to feel unsettled or anxious

**3k = agony (noun)** Great pain and suffering

**3l = triumphantly (adverb)** Done in a way that shows great happiness or joy at a victory or achievement.

## 4. Characters

<p><b>4a. Inspector Goole</b>          ✓ Priestley's mouthpiece          ✓ Impressive</p>	<p>✓ Commanding          ✓ Social justice          ✓ Omnipotent</p>	<p>"Massiveness, solidity and purposefulness."          "But after all it's better to ask for the earth than to take it."          "It's my duty to ask questions."          "A nice promising life there, I thought, and a nasty mess somebody's made of it."          "You see, we have to share something. If there's nothing else, we'll have to share our guilt."          "One Eva Smith has gone – but there are millions and millions and millions of Eva Smiths and John Smiths still left with us." "Fire and blood and anguish"</p>	
<p><b>4b. Mr Arthur Birling</b>          ✓ Capitalist          ✓ Arrogant</p>	<p>✓ Verbose          ✓ Stubborn          ✓ Industrialist</p>	<p>"Heavy looking, rather portentous man"          "A hard-headed practical man of business"          "Just a knighthood, of course."          "A man has to mind his own business and look after himself...."          "Look - there's nothing mysterious – or scandalous – about this business..."</p>	
<p><b>4c. Mrs Sybil Birling</b>          ✓ Judgmental          ✓ Old money</p>	<p>✓ Traditional          ✓ Insincere          ✓ Controlling</p>	<p>"Rather cold woman... her husband's social superior."          "Please don't contradict me like that"          "It's disgusting to me."          "Unlike the other three, I did nothing I'm ashamed of or that won't bear investigation."          "He didn't make me confess – as you call it."</p>	
<p><b>4d. Sheila Birling</b>          ✓ Intelligent          ✓ Feminine</p>	<p>✓ Emotional          ✓ Transformative          ✓ Empowered</p>	<p>"But these girls aren't cheap labour – they're people"          "I had her turned out of a job"          "At least I'm trying to tell the truth. I expect you've done things you're ashamed of."          "Why – you fool – he knows!"          "The point is, you don't seem to have learnt anything."</p>	
<p><b>4e. Eric Birling</b>          ✓ Irresponsible          ✓ Spoilt</p>	<p>✓ Reckless          ✓ Immature          ✓ Transformative</p>	<p>"Not quite at ease half shy, half assertive."          "I wasn't in love with her or anything –but I liked her –she was pretty and a good sport"          "In a way, she treated me – as if I were a kid"          "You're not the kind of father a chap could go to when he's in trouble."          "You're beginning to pretend that nothing's really happed at all. And I can't see it like that."</p>	
<p><b>4f. Gerald Croft</b>          ✓ Aristocratic          ✓ Secretive</p>	<p>✓ Traditional          ✓ Privileged          ✓ Evasive</p>	<p>"Easy, well-bred young man-about-town."          "You seem to be a nice well-behaved family"          "You're just the kind of son-in-law I always wanted."          "The hero... the wonderful Fairy prince."          "I'm rather more upset – by this business than I probably appear to be –"</p>	
<p><b>4g. Eva Smith / Daisy Renton</b>          ✓ Working class          ✓ Determined</p>	<p>✓ Vulnerable          ✓ Emblematic          ✓ Allegorical</p>	<p>"A lively good-looking girl – country bred... and a good worker too."          "She had a lot to say – far too much – so she had to go."          "She was very pretty and looked as if she could take care of herself."          "Now she had to try something else."          She went away "to be alone, to be quiet, to remember all that had happened."</p>	

## 5. Themes

<b>Wealth, power and influence</b>	<p>The Birlings are a family of wealth and power, who take pride in their high social position. <b>Mr Birling</b> is a successful businessman, and the family inhabits a nice home with a maid (and likely other servants). The play begins with the family celebrating and feeling generally pleased with themselves and their fortunate circumstance. Throughout the <b>Inspector's</b> investigation, however, it comes out that several of the Birlings have used their power and influence immorally, in disempowering and worsening the position of a girl from a lower class: <b>Mr. Birling</b> used his high professional position to force <b>Eva Smith</b> out of his factory when she led a faction of workers in demanding a raise; <b>Sheila</b>, in a bad temper, used her social status and her family's reputation to have the girl fired from Milward's; <b>Mrs. Birling</b> used her influence in the Women's Charity Organization to deny the girl monetary aid. Both <b>Sheila</b> and <b>Mrs. Birling</b> acted upon petty motivations in injuring the girl; Mr. Birling acted upon selfish, capitalist motivations.</p>
<b>Blame and Responsibility</b>	<p>The question asked throughout the play is: who is responsible for the suicide of <b>Eva Smith</b>? Who is to blame? The arc of the play follows the gradual spreading of responsibility, from <b>Mr. Birling</b>, to <b>Mr. Birling</b> and <b>Sheila</b>, to <b>Mr. Birling</b> and <b>Sheila</b> and <b>Gerald</b>, and so on and so forth. Each of the characters has different opinions about which of them is most responsible for the girl's suicide. <b>Mrs. Birling</b>, most extremely, ends up blaming her own son, by suggesting that the person most responsible is the man that impregnated the girl, before realizing that the person in question is Eric.</p> <p>In the end, the <b>Inspector</b> universalizes the shared responsibility that the Birlings feel for the girl's death, into a plea for something like Socialism: "We are members of one body. We are responsible for each other. And I tell you that the time will soon come when if men will not learn that lesson, then they will be taught it in fire and blood and anguish." The lesson of the <b>Inspector</b>, and of the play at large, is that our actions have an influence beyond themselves and therefore that we are <i>already</i> responsible for each other so long as we are responsible for ourselves and our own actions.</p>
<b>Class Politics</b>	<p><b>Mr. Birling</b> describes the politics of the day as revolving around "Capital versus Labor agitations." <b>Mr. Birling</b> is a representative Capitalist, who cares only about his company's profit. He speaks of himself as "a hard-headed, practical man of business," and looks forward to the prospect of being knighted. The girls who lead a worker's strike in his factor, meanwhile, represent the Labor side of the conflict in trying to improve the rights and wages of laborers and the lower classes.</p> <p><b>Birling</b> loosely articulates his understanding of the agitations in his speech to <b>Eric</b> and <b>Gerald</b>: "a man has to make his own way—has to look after himself...and so long as he does that he won't come to much harm... But the way some of these cranks talk and write now, you'd think everybody has to look after everybody else, as if we were all mixed up together like bees in a hive—a man has to mind his own business and look after himself." The <b>Inspector</b> speaks the voice of Socialism, of the Labor side of the conflict; he seeks to make the Birlings realize the implicit corruption of Capitalism by emphasizing how easy it was for them to cause pain for the lower class without even realizing at the time the significance of their own actions.</p>
<b>Age</b>	<p>Age is an important theme in <i>An Inspector Calls</i>. Priestley uses it to show how he believed that there was hope in the younger generation's ability to learn and change.</p> <p>The older characters' opinions and behaviours are stubbornly fixed. Mr Birling refuses to learn and Mrs Birling cannot see the obvious about herself and her children. Eric and Sheila however are younger - they accept their mistakes and offer the chance for a brighter future.</p>
<b>Gender</b>	<p><i>An Inspector Calls</i> was written after World War Two. As many British men went away to fight during the war, their positions in work had to be filled by women. This helped change existing perceptions. Men had to acknowledge the fact that women were just as capable as them. As a result of this, many women enjoyed a newfound freedom that working and earning money allowed them. Not all men saw this change in attitude as a good thing and stayed stuck in the past. Priestley explores the impact of these new gender roles through the independence of Eva Smith and the sexist attitudes of Mr. Birling and Alderman Meggarty.</p>

## 6. Authorial Intent

J.B. Priestley wrote this didactic play for a number of reasons...

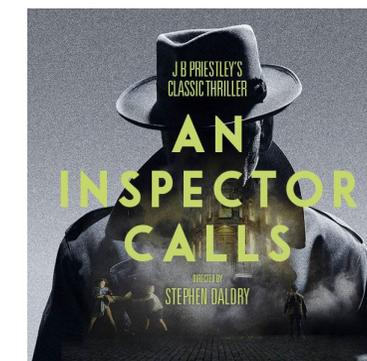
**6a - To encourage...** his audience to consider its own attitude towards the working and middle classes, entrepreneurs and gender issues

**6b - To expose...** the hypocrisy and double standards of certain strands of Edwardian society.

**6c - To refute...** Capitalist ideologies and highlight the exploitative nature of Capitalist societies.

**6d - To warn...** of the terrifying consequences of forsaking social responsibility and neglecting the needs of those who are less fortunate

**6e - The text is relevant today as...** social inequality, prejudice and injustice still affect many people in modern Britain, as evidenced by the cost of living crisis and the rising number of people accessing food banks.



## Year 10 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key quotations
<b>1. Ozymandias – Percy Bysshe Shelley</b>	<ul style="list-style-type: none"> <li>The narrator meets a traveller who tells him about a decayed stature that he saw in a desert.</li> <li>The statue was of a long forgotten ancient King: the arrogant Ozymandias, 'king of kings.'</li> <li>The poem is ironic and one big metaphor: Human power is only temporary – the statue now lies crumbled in the sand, and the most powerful human creations cannot resist the power of nature.</li> </ul>	<ul style="list-style-type: none"> <li>Shelley was a poet of the 'Romantic period' (late 1700s and early 1800s).</li> <li>Romantic poets were interested in emotion and the power of nature.</li> <li>Shelley also disliked the concept of a monarchy and the</li> <li>oppression of ordinary people.</li> <li>He had been inspired by the</li> <li>French revolution – when the French monarchy was overthrown.</li> </ul>	<ul style="list-style-type: none"> <li>'sneer of cold command': Verb and alliteration - the king was arrogant, this has been recognised by the sculptor, the traveller and the narrator.</li> <li>'Look on my works, ye Mighty, and despair.': 'Look' = imperative, stressed syllable highlights commanding tone; ironic – he's telling other 'mighty' kings to admire the size of his statue and 'despair'. To despair because power is temporary.</li> <li>'The lone and level sands stretch far away.': the desert is vast, lonely, and lasts far longer than a statue</li> </ul>	<ul style="list-style-type: none"> <li>A sonnet (14 lines) but with an unconventional structure... the structure is normal until a turning point (a volta) at Line 9 (.these words appear). This reflects how human structures can be destroyed or decay.</li> <li>The iambic pentameter rhyme scheme is also disrupted or decayed.</li> <li>First eight lines (the octave) of the sonnet: the statue is described in parts to show its destruction.</li> <li>Final two lines: the huge &amp; immortal desert is described to emphasise insignificance of human power.</li> </ul>	<ul style="list-style-type: none"> <li>'I met a traveller from an antique land.'</li> <li>'Two vast and trunkless legs of stone'.</li> <li>'Sneer of cold command.'</li> <li>'Look on my works, ye Mighty,</li> <li>and despair!'</li> <li>'Round the decay of that colossal wreck, boundless and</li> <li>bare.'</li> <li>'Lone and level sands stretch far</li> <li>away.'</li> </ul>
<b>2. London – William Blake</b>	<p>The narrator is describing a walk around London and how he is saddened by the sights and sounds of poverty.</p> <p>The poem also addresses the loss of innocence and the determinism of inequality: how new-born infants are born into poverty.</p> <p>The poem uses rhetoric (persuasive techniques) to convince the reader that the people in power (landowners, Church, Government) are to blame for this inequality.</p>	<p>Poem was published in 1794, at a time of great poverty in many parts of London.</p> <p>Blake was an English poet and artist. Much of his work was influenced by his radical political views: he believed in social and racial equality.</p> <p>This poem is part of the 'Songs of Experience' collection, which focuses on how innocence is lost, and society is corrupt.</p> <p>Questioned the teachings of the Church &amp; decisions of Govt.</p>	<p>Sensory language creates an immersive effect: visual imagery ('Marks of weakness, marks of woe') and aural imagery "'cry of every man'</p> <p>'mind-forged manacles': they are trapped in poverty. Rhetorical devices to persuade: repetition ('In every..'); emotive language ('infant's cry of fear').</p> <p>Criticises the powerful: 'each chartered street' – everything is owned by the rich; 'Every black'ning church appals' - the church is corrupt; 'the hapless soldier's sigh /Runs in blood down palace walls'–soldiers suffer/die due to decisions of powerful.</p>	<p>A dramatic monologue, there is a first- person narrator ('I) who speaks passionately about what he sees.</p> <p>Simple ABAB rhyme scheme: reflects the unrelenting misery of the city, and perhaps the rhythm of his feet as he trudges around the city.</p> <p>First two stanzas focus on people; third stanza focuses on the institutions he holds responsible; fourth stanza returns to the people – they are the central focus.</p>	<p>'I wander through each chartered street.'</p> <p>'Marks of weakness, marks of woe.'</p> <p>'Every cry of every man'.</p> <p>'Every black'ning church appals'.</p> <p>'Hapless soldier's sigh runs in blood down palace walls.'</p> <p>'Youthful harlot's curse'.</p>

## Year 11 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key quotations
<b>3. Extract from, The Prelude – William Wordsworth</b>	<ul style="list-style-type: none"> <li>The story of a boy's love of nature and a night-time adventure in a rowing boat that instils a deeper and fearful respect for power of nature.</li> <li>At first, the boy is calm and confident, but the sight of a huge mountain that comes into view scares the boy and he flees.</li> <li>He is now in awe of the mountain &amp; fearful of the power of nature (described as 'huge and mighty forms') We should respect nature &amp; not take it for granted.</li> </ul>	<ul style="list-style-type: none"> <li>Published shortly after his death, The Prelude was a very long poem (14 books) that told the story of Wordsworth's life.</li> <li>This extract is the first part of a book entitled 'Introduction – Childhood and School-Time'.</li> <li>Like Percy Shelley, Wordsworth was a romantic poet and his poetry explores themes of nature, human emotion and how humans are shaped by their interaction with nature.</li> </ul>	<ul style="list-style-type: none"> <li>'One summer evening (led by her)': 'her' might be nature personified – this shows his love for nature.</li> <li>'an act of stealth / And troubled pleasure': confident, but oxymoron suggests he knows it's wrong; forebodes troubling events that follow.</li> <li>'nothing but the stars and grey sky': emptiness of sky. 'the horizon's bound, a huge peak, black and huge': the image of the mountain is more shocking (contrast).</li> <li>'Upreared its head' and 'measured motion like a living thing': mountain is personified as a powerful beast, but calm – contrasts with his own inferior panic.</li> <li>'There hung a darkness': lasting effects of mountain.</li> </ul>	<ul style="list-style-type: none"> <li>First person narrative – creates a sense that it is a personal poem.</li> <li>The regular rhythm and enjambment add to the effect of natural speech and a personal voice.</li> <li>The extract can be split into three sections, each with a different tone to reflect his shifting mood: Lines 1-20: (rowing) carefree and confident Lines 21-31: (the mountain appears) dark and fearful. Lines 32-44: (following days) reflective and troubled</li> <li>Contrasts in tone: 'lustily I dipped my oars into the silent lake' versus 'I struck and struck again' and 'with trembling oars I turned'.</li> </ul>	<ul style="list-style-type: none"> <li>'Straight I unloosed her chain'.</li> <li>'It was an act of stealth and troubled pleasure'.</li> <li>'Leaving behind her still, on either side, small circles glittering idly in the moon'.</li> <li>'I fixed my view upon the summit of a craggy ridge'.</li> <li>'Lustily I dipped my oars into the silent lake'.</li> <li>'My boat went heaving through the water like a swan'.</li> <li>'With trembling oars I turned'.</li> </ul>
<b>4. My Last Duchess – Robert Browning</b>	<ul style="list-style-type: none"> <li>The Duke is showing a visitor around his large art collection and proudly points out a portrait of his last wife, who is now dead. He reveals that he was annoyed by her over-friendly and flirtatious behaviour.</li> <li>He can finally control her by objectifying her and showing her portrait to visitors when he chooses.</li> <li>He is now alone as a result of his need for control.</li> <li>The visitor has come to arrange the Duke's next marriage, and the Duke's story is a subtle warning about how he expects his next wife to behave.</li> </ul>	<ul style="list-style-type: none"> <li>Browning was a British poet, and lived in Italy. The poem was published in 1842.</li> <li>Browning may have been inspired by the story of an Italian Duke (Duke of Ferrara): his wife died in suspicious circumstances and it was rumoured that she had been poisoned.</li> </ul>	<ul style="list-style-type: none"> <li>'Looking as if she was alive': sets a sinister tone.</li> <li>'Will't please you sit and look at her?' rhetorical question to his visitor shows obsession with power.</li> <li>'she liked whate'er / She looked on, and her looks went everywhere.': hints that his wife was a flirt.</li> <li>'as if she ranked / My gift of a nine-hundred- years old name / With anybody's gift': she was beneath him in status, and yet dared to rebel against his authority.</li> <li>'I gave commands; Then all smiles stopped together': euphemism for his wife's murder.</li> </ul>	<ul style="list-style-type: none"> <li>Dramatic Monologue, in iambic pentameter.</li> <li>It is a speech, pretending to be a conversation – he doesn't allow the other person to speak!</li> <li>Enjambment: rambling tone, he's getting carried away with his anger. He is a little unstable.</li> <li>Heavy use of caesura (commas and dashes): stuttering effect shows his frustration and anger: 'She thanked men, – good! but thanked / Somehow – I know not how'</li> <li>Dramatic Irony: the reader can read between the lines and see that the Duke's comments have a much more sinister undertone.</li> </ul>	<ul style="list-style-type: none"> <li>'That's my last Duchess painted on the wall, / Looking as if she were alive'.</li> <li>'I call that piece a wonder, now'.</li> <li>Too easily impressed; she liked whate'er she looked on'.</li> <li>'Who'd stoop to blame this sort of trifling?'</li> <li>'and I choose never to stoop.'</li> <li>'Notice Neptune, though, / Taming a sea-horse'.</li> </ul>

## Year 11 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key quotations
<p><b>5. The Charge of the Light Brigade – Alfred Lord Tennyson</b></p>	<ul style="list-style-type: none"> <li>Published six weeks after a disastrous battle against the Russians in the (unpopular) Crimean War</li> <li>Describes a cavalry charge against Russians who shoot at the lightly-armed British with cannon from three sides of a long valley.</li> <li>Of the 600 hundred who started the charge, over half were killed, injured or taken prisoner.</li> <li>It is a celebration of the men's courage and devotion to their country, symbols of the might of the British Empire.</li> </ul>	<ul style="list-style-type: none"> <li>As Poet Laureate, he had a responsibility to inspire the nation and portray the war in a positive light: propaganda.</li> <li>Although Tennyson glorifies the soldiers who took part, he also draws attention to the fact that a commander had made a mistake: "Someone had blunder'd".</li> <li>This was a controversial point to make in Victorian times when blind devotion to power was expected.</li> </ul>	<ul style="list-style-type: none"> <li>"Into the valley of Death": this Biblical imagery portrays war as a supremely powerful, or even spiritual, experience.</li> <li>"jaws of Death" and "mouth of Hell": presents war as an animal that consumes its victims.</li> <li>"Honour the Light Brigade/Noble six hundred": language glorifies the soldiers, even in death. The 'six hundred' become a celebrated and prestigious group.</li> <li>"shot and shell": sibilance creates whooshing sounds of battle.</li> </ul>	<ul style="list-style-type: none"> <li>This is a ballad, a form of poetry to remember historical events – we should remember their courage.</li> <li>6 verses, each representing 100 men who took part.</li> <li>First stanza tightly structured, mirroring the cavalry formation. Structure becomes awkward to reflect the chaos of battle and the fewer men returning alive.</li> <li>Dactylic dimeter (HALF-a league / DUM- de-de) mirrors the sound of horses galloping and increases the poem's pace.</li> <li>Repetition of 'the six hundred' at the end of each stanza (epistrophe) emphasises huge loss.</li> </ul>	<p>'Half a league, half a league, half a league onward.'</p> <p>'All in the valley of Death / Rode the six hundred'.</p> <p>'Charge for the guns!'</p> <p>'Cannon to the right of them'.</p> <p>'Storm'd at with shot and shell'.</p> <p>'Boldly they rode and well, / Into the jaws of Death'.</p> <p>'Flash'd all their sabres bare'.</p> <p>'Plunged in the battery-smoke.'</p> <p>'Whole horse and hero fell'.</p> <p>'Honour the charge they made!'</p> <p>'Honour the Light Brigade, / Noble six hundred.'</p>
<p><b>6. Exposure – Wilfred Owen</b></p>	<ul style="list-style-type: none"> <li>Speaker describes war as a battle against the weather and conditions.</li> <li>Imagery of cold and warm reflect the delusional mind of a man dying from hypothermia.</li> <li>Owen wanted to draw attention to the suffering, monotony and futility of war.</li> </ul>	<ul style="list-style-type: none"> <li>Written in 1917 before Owen went on to win the Military Cross for bravery, and was then killed in battle in 1918: the poem has authenticity as it is written by an actual soldier.</li> <li>Of his work, Owen said: "My theme is war and the pity of war".</li> <li>Despite highlighting the tragedy of war and mistakes of senior commanders, he had a deep sense of duty: "not loath, we lie out here" shows that he was not bitter about his suffering.</li> </ul>	<ul style="list-style-type: none"> <li>"Our brains ache" physical (cold) suffering and mental (PTSD or shell shock) suffering. - Semantic field of weather: weather is the enemy.</li> <li>"the merciless iced east winds that knife us..." – personification (cruel and murderous wind); sibilance (cutting/slicing sound of wind); ellipsis (never-ending).</li> <li>Repetition of pronouns 'we' and 'our' – conveys togetherness and collective suffering of soldiers.</li> <li>'mad gusts tugging on the wire' – personification</li> </ul>	<ul style="list-style-type: none"> <li>Contrast of Cold&gt;Warm&gt;Cold imagery conveys Suffering&gt;Delusions&gt;Death of the hypothermic soldier.</li> <li>Repetition of "but nothing happens" creates circular structure implying never ending suffering</li> <li>Rhyme scheme ABBA and hexameter gives the poem structure and emphasises the monotony.</li> <li>Pararhymes (half rhymes) ("nervous / knife us") only barely hold the poem together, like the men.</li> </ul>	<p>'Our brains ache, in the merciless iced east winds that knife us.'</p> <p>'Low, dropping flares confuse our memory of the salient.'</p> <p>'Worried by silence'.</p> <p>'We hear the mad gusts tugging on the wire.'</p> <p>'The flickering gunnery rumbles.'</p> <p>'The poignant misery of dawn begins to grow.'</p> <p>'Sudden successive flights of bullets streak the silence.'</p> <p>'Slowly our ghosts drag home'.</p>

## Year 11 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key quotations
<b>7. Storm on the Island – Seamus Heaney</b>	<ul style="list-style-type: none"> <li>The narrator describes how a rural island community prepared for a coming storm, and how they were confident in their preparations.</li> <li>When the storm hits, they are shocked by its power: its violent sights and sounds are described, using the metaphor of war.</li> <li>The final line of the poem reveals their fear of nature's power</li> </ul>	<ul style="list-style-type: none"> <li>Seamus Heaney was Northern Irish, he died in 2013.</li> <li>This poem was published in 1966 at the start of 'The Troubles' in Northern Ireland: a period of deep unrest and violence between those who wanted to remain part of the UK and those who wanted to become part of Ireland.</li> <li>The first eight letters of the title spell 'Stormont': this is the name of Northern Ireland's parliament.</li> <li>The poem might be a metaphor for the political storm that was building in the country at the time.</li> </ul>	<ul style="list-style-type: none"> <li>'Nor are there trees which might prove company': the island is a lonely, barren place.</li> <li>Violent verbs are used to describe the storm:</li> <li>'pummels', 'exploding', 'spits'.</li> <li>Semantic field of war: 'Exploding comfortably'</li> <li>(also an oxymoron to contrast fear/safety); 'wind dives and strafes invisibly' (the wind is a fighter plane); 'We are bombarded by the empty air' (under ceaseless attack).</li> <li>This also reinforces the metaphor of war / troubles. -'spits like a tame cat turned savage': simile compares the nature to an animal that has turned on its owner.</li> </ul>	<ul style="list-style-type: none"> <li>Written in blank verse and with lots of enjambment: this creates a conversational and anecdotal tone.</li> <li>We' (first person plural) creates a sense of community, and 'You' (direct address) makes the reader feel immersed in the experience.</li> <li>The poem can split into three sections: Confidence: 'We are prepared:' (ironic) The violence of the storm: 'It pummels your house' Fear: 'it is a huge nothing that we fear.'</li> <li>There is a turning point (a volta) in Line 14: 'But no:'. This monosyllabic phrase, and the caesura, reflects the final calm before the storm.</li> </ul>	<p>'We are prepared: we build our houses squat'.  'Sink walls in rock and roof'.  'there are no stacks or stooks that can be lost'.  'Blast: you know what I mean'.  'leaves and branches / Can raise a tragic chorus in a gale.'  'It pummels your house too.'  'The flung spray hits / The very windows.'  'Spits like a tame cat / Turned savage.;  'Ve are bombarded by the empty air.'</p>
<b>8. Bayonet Charge – Ted Hughes</b>	<ul style="list-style-type: none"> <li>Describes the terrifying experience of 'going over the top': fixing bayonets (long knives) to the end of rifles and leaving a trench to charge directly at the enemy.</li> <li>Steps inside the body and mind of the speaker to show how this act transforms a soldier from a living thinking person into a dangerous weapon of war.</li> <li>Hughes dramatises the struggle between a man's thoughts and actions.</li> </ul>	<ul style="list-style-type: none"> <li>Published in 1957, but most- likely set in World War 1.</li> <li>Hughes' father had survived the battle of Gallipoli in World War 1, and so he may have wished to draw attention to the hardships of trench warfare.</li> <li>He draws a contrast between the idealism of patriotism and the reality of fighting and killing. ("King, honour, human dignity, etcetera")</li> </ul>	<ul style="list-style-type: none"> <li>The patriotic tear that brimmed in his eye Sweating like molten iron": his sense of duty (fear) has now turned into hot sweat of fear/pain.</li> <li>"cold clockwork of the stars and nations": the soldiers are part of a cold and uncaring machine of war.</li> <li>"his foot hung like statuary in midstride.": he is frozen with fear/bewilderment. The caesura (full stop) jolts him back to reality.</li> <li>"a yellow hare that rolled like a flame And crawled in a threshing circle": impact of war on nature – the hare is distressed like the soldiers</li> </ul>	<ul style="list-style-type: none"> <li>The poem starts 'in medias res': in the middle of the action, to convey shock and pace.</li> <li>Enjambment maintains the momentum of the charge.</li> <li>Time stands still in the second stanza to convey the soldier's bewilderment and reflective thoughts.</li> <li>Contrasts the visual and aural imagery of battle with the internal thoughts of the soldier = adds to the confusion.</li> </ul>	<p>'Suddenly he awoke and was running – raw.'  'Raw-seamed hot khaki.'  'Bullets smacking the belly out of the air.'  'The patriotic tear that had brimmed in his eye.'  'Sweating like molten iron from the centre of his chest.'  'Threw up a yellow hare that rolled like a flame.'  'He plunged past with his bayonet toward the green hedge.'  'King, honour, human dignity, etcetera'.</p>

## Year 11 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key Quotations
<b>9. Remains – Simon Armitage</b>	<ul style="list-style-type: none"> <li>□ Written to coincide with a TV documentary about those returning from war with PTSD.</li> <li>□ Based on Guardsman Tromans, who fought in Iraq in 2003.</li> <li>□ Speaker describes shooting a looter dead in Iraq and how it has affected him.</li> <li>□ To show the reader that mental suffering can persist long after physical conflict is over.</li> </ul>	<ul style="list-style-type: none"> <li>□ These are poems of survivors – the damaged, exhausted men who return from war in body but never, wholly, in mind.” Simon Armitage</li> <li>□ Poem coincided with increased awareness of PTSD amongst the military, and aroused sympathy amongst the public – many of whom were opposed to the war.</li> </ul>	<ul style="list-style-type: none"> <li>□ “Remains” -images/suffering remain.</li> <li>□ “Legs it up the road” - colloquial language = authentic voice</li> <li>□ “Then he’s carted off in the back of a lorry” – reduction of humanity to waste or cattle.</li> <li>□ “he’s here in my head when I close my eyes / dug in behind enemy lines” – metaphor for a war in his head; the PTSD is entrenched.</li> <li>□ his bloody life in my bloody hands” – alludes to Macbeth: Macbeth the warrior with PTSD and Lady Macbeth’s bloody hands and guilt.</li> </ul>	<ul style="list-style-type: none"> <li>□ Monologue, told in the present tense to convey a flashback (a symptom of PTSD).</li> <li>□ First 4 stanzas are set in Iraq; last 3 are at home, showing the aftermath.</li> <li>□ Enjambment conveys his conversational tone and gives it a fast pace, especially when conveying the horror of the killing</li> <li>□ Repetition of ‘Probably armed, Possibly not’ conveys guilt and bitterness</li> </ul>	<ul style="list-style-type: none"> <li>□ ‘We get sent out to tackle looters raiding a bank’.</li> <li>□ ‘Probably armed, possibly not’.</li> <li>□ ‘Three of a kind all letting fly’.</li> <li>□ ‘I see broad daylight on the other side’.</li> <li>□ ‘So we’ve hit this looter a dozen times’.</li> <li>□ ‘the image of agony’.</li> <li>□ ‘One of my mates goes by and tosses his guts back into his body’.</li> <li>□ ‘I walk right over it week after week’.</li> </ul>
<b>10. Poppies – Jane Weir</b>	<ul style="list-style-type: none"> <li>□ A modern poem that offers an alternative interpretation of bravery in conflict: it does not focus on a soldier in battle but on the mother who is left behind and must cope with his death.</li> <li>□ The narration covers her visit to a war memorial, interspersed with images of the soldier’s childhood and his departure for war.</li> </ul>	<ul style="list-style-type: none"> <li>□ Set around the time of the Iraq and Afghan wars, but the conflict is deliberately ambiguous to give the poem a timeless relevance to all mothers and families.</li> <li>□ There are hints of a critical tone; about how soldiers can become intoxicated by the glamour or the military: “a blockade of yellow bias” and “intoxicated”.</li> </ul>	<ul style="list-style-type: none"> <li>□ Contrasting semantic fields of home/childhood (“cat hairs”, “play at being Eskimos”, “bedroom”) with war/injury (“blockade”, “bandaged”, “reinforcements”)</li> <li>□ Aural (sound) imagery: “All my words flattened, rolled, turned into felt” shows pain and inability to speak, and “I listened, hoping to hear your playground voice catching on the wind” shows longing for dead son.</li> <li>□ “I was brave, as I walked with you, to the front door”: different perspective of bravery in conflict.</li> </ul>	<ul style="list-style-type: none"> <li>□ This is an Elegy, a poem of mourning.</li> <li>□ Strong sense of form despite the free verse, stream of consciousness addressing her son directly – poignant</li> <li>□ No rhyme scheme = melancholic</li> <li>□ Enjambment gives it an anecdotal tone.</li> <li>□ Nearly half the lines have caesura – she is trying to hold it together, but can’t speak fluently as she is breaking inside.</li> <li>□ Rich texture of time shifts, and visual, aural and touch imagery.</li> </ul>	<ul style="list-style-type: none"> <li>□ ‘Crimped petals, spasms of paper red, disrupting a blockade of yellow bias binding around your blazer’.</li> <li>□ ‘Sellotape bandaged around my hand.’</li> <li>□ ‘I wanted to graze my nose across the tip of your nose.’</li> <li>□ ‘I resisted the impulse to run my fingers through the gelled blackthorns of your hair.’</li> <li>□ ‘A split second and you were away, intoxicated’.</li> <li>□ ‘The dove pulled freely against the sky’.</li> </ul>

## Year 11 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key Quotations
<b>11. War Photographer – Carol Ann Duffy</b>	<p>Tells the story of a war photographer developing photos at home in England: as a photo develops he begins to remember the horrors of war - painting a contrast to the safety of his dark room.</p> <ul style="list-style-type: none"> <li>□ He appears to be returning to a warzone at the end of the poem.</li> <li>□ Duffy conveys both the brutality of war and the indifference of those who might view the photos in newspapers and magazines: those who live in comfort and are unaffected by war.</li> </ul>	<p>Like Tennyson and Ted Hughes, Duffy was the Poet Laureate.</p> <ul style="list-style-type: none"> <li>□ Duffy was inspired to write this poem by her friendship with a war photographer. She was intrigued by the challenge faced by these people whose job requires them to record terrible, horrific events without being able to directly help their subjects.</li> <li>□ The location is ambiguous and therefore universal: ("Belfast. Beirut. Phnom Penh.")</li> </ul>	<p>All flesh is grass": Biblical reference that means all human life is temporary – we all die eventually.</p> <ul style="list-style-type: none"> <li>□ "He has a job to do": like a soldier, the photographer has a sense of duty.</li> <li>□ "running children in a nightmare heat": emotive imagery with connotations of hell.</li> <li>□ "blood stained into a foreign dust": lasting impact of war – links to Remains and 'blood shadow'.</li> <li>□ "he earns a living and they do not care": 'they' is ambiguous – it could refer to readers or the wider world</li> </ul>	<p>Enjambment – reinforces the sense that the world is out of order and confused.</p> <ul style="list-style-type: none"> <li>□ Rhyme reinforces the idea that he is trying to bring order to a chaotic world – to create an understanding.</li> <li>□ Contrasts: imagery of rural England and nightmare war zones.</li> <li>□ Third stanza: A specific image – and a memory – appears before him</li> </ul>	<ul style="list-style-type: none"> <li>□ 'In his darkroom he is finally alone'.</li> <li>□ 'The only light is red and softly glows'.</li> <li>□ 'All flesh is grass'.</li> <li>□ 'Solutions slop in trays beneath his hands'.</li> <li>□ 'A stranger's features faintly start to twist before his eyes, a half-formed ghost'.</li> <li>□ 'The blood stained into foreign dust'.</li> <li>□ 'The reader's eye balls prick with tears'.</li> </ul>
<b>12. Tissue – Imtiaz Dharker</b>	<ul style="list-style-type: none"> <li>□ Two different meanings of 'Tissue' (homonyms) are explored: firstly, the various pieces of paper that control our lives (holy books, maps, grocery receipts); secondly, the tissue of a human body.</li> <li>□ The poet explores the paradox that although paper is fragile, temporary and ultimately not important, we allow it to control our lives.</li> <li>□ Also, although human life is much more precious, it is also fragile and temporary.</li> </ul>	<p>Imtiaz Dharker was born in Pakistan and grew up in Glasgow.</p> <ul style="list-style-type: none"> <li>□ 'Tissue' is taken from a 2006 collection of poems entitled 'The Terrorist at My Table': the collection questions how well we know people around us.</li> <li>□ This particular poem also questions how well we understand ourselves and the fragility of humanity.</li> </ul>	<ul style="list-style-type: none"> <li>□ Semantic field of light: ('Paper that lets light shine through', 'The sun shines through their borderlines', 'let the daylight break through capitals and monoliths') emphasises that light is central to life, a positive and powerful force that can break through 'tissue' and even monoliths (stone statues).</li> <li>□ 'pages smoothed and stroked and turned': gentle verbs convey how important documents such as the Koran are treated with respect.</li> <li>□ 'Fine slips [...] might fly our lives like paper kites': this simile suggests that we allow ourselves to be controlled by paper.</li> </ul>	<ul style="list-style-type: none"> <li>□ The short stanzas create many layers, which is a key theme of the poem (layers of paper and the creation of human life through layers)</li> <li>□ The lack of rhythm or rhyme creates an effect of freedom and openness.</li> <li>□ All stanzas have four lines, except the final stanza which has one line ('turned into your skin'): this line focuses on humans, and addresses the reader directly to remind us that we are all fragile and temporary</li> <li>□ Enjambment creates an effect of freedom and flowing movement.</li> </ul>	<ul style="list-style-type: none"> <li>□ "If buildings were paper, I might feel their drift."</li> <li>□ "Paper thinned by age or touching."</li> <li>□ "The kind you feel in well-used books."</li> <li>□ "Paid by credit card might fly our lives like paper kites."</li> <li>□ "Living tissue, raise a structure never meant to last."</li> <li>□ "Paper smoothed and stroked and thinned to be transparent."</li> <li>□ "Turned in to your skin."</li> <li>□ "Shapes that pride can make."</li> <li>□ "Never wish to build again with brick."</li> </ul>

## Year 11 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key Quotations
<b>13. The Emigree – Carol Rumens</b>	<ul style="list-style-type: none"> <li>□ Emigree' – a female who is forced to leave their county for political or social reasons.</li> <li>□ The speaker describes her memories of a home city that she was forced to flee. The city is now "sick with tyrants".</li> <li>□ Despite the cities problems, her positive memories of the place cannot be extinguished.</li> </ul>	<ul style="list-style-type: none"> <li>□ Emigree was published in 1993. The home country of the speaker is not revealed – this ambiguity gives the poem a timeless relevance.</li> <li>□ Increasingly relevant to many people in current world climate</li> </ul>	<ul style="list-style-type: none"> <li>□ "I left it as a child": ambiguous meaning – either she left when she was a child or the city was a child (it was vulnerable and she feels a responsibility towards it).</li> <li>□ "I am branded by an impression of sunlight": imagery of light - it will stay with her forever.</li> <li>□ Personification of the city: "I comb its hair and love its shining eyes" (she has a maternal love for the city) and "My city takes me dancing" (it is romantic and passionate lover)</li> <li>□ "My city hides behind me": it is vulnerable and – despite the fact that she had to flee – she is strong.</li> <li>□ Semantic field of conflict: "Tyrant, tanks, frontiers"</li> </ul>	<ul style="list-style-type: none"> <li>□ First person.</li> <li>□ The last line of each stanza is the same (epistrophe): "sunlight": reinforces the overriding positivity of the city and of the poem.</li> <li>□ The first two stanzas have lots of enjambment – conveys freedom.</li> <li>□ The final stanza has lots of full-stops – conveys that fact that she is now trapped.</li> </ul>	<ul style="list-style-type: none"> <li>□ "There once was a country... I left it as a child."</li> <li>□ "The worst news I receive of it cannot break."</li> <li>□ "It may be at war, it may be sick with tyrants."</li> <li>□ "The graceful slopes glow even clearer as time rolls its tanks."</li> <li>□ "That child`s vocabulary I carried here like a hollow doll."</li> <li>□ "Soon I shall have every coloured molecule of it."</li> <li>□ "I have no passport, there`s no way back at all."</li> <li>□ "My city takes me dancing through the city."</li> </ul>
<b>14. Checking Out Me History – John Agard</b>	<ul style="list-style-type: none"> <li>□ Represents the voice of a black man who is frustrated by the Eurocentric history curriculum in the UK – which pays little attention to the black history.</li> <li>□ Black history is quoted to emphasise its separateness and to stress its importance.</li> </ul>	<ul style="list-style-type: none"> <li>□ John Agard was born in the Caribbean in 1949 and moved to the UK in the 1970s.</li> <li>□ His poetry challenge racism and prejudice.</li> <li>□ This poem may, to some extent, have achieved its purpose: in 2016, a statue was erected in London in honour of Mary Seacole, one of the subjects of the poem.</li> </ul>	<ul style="list-style-type: none"> <li>□ Imagery of fire and light used in all three stanzas regarding black historic figures: "Toussaint de beacon", "Fire-woman", "yellow sunrise".</li> <li>□ Uses non-standard phonetic spelling ("Dem tell me wha dem want", to represent his own powerful accent and mixes Caribbean Creole dialect with standard English.</li> <li>□ "I carving out me identity": metaphor for the painful struggle to be heard, and to find his identity.</li> </ul>	<ul style="list-style-type: none"> <li>□ Dramatic monologue, with a dual structure.</li> <li>□ Stanzas concerning Eurocentric history (normal font) are interspersed with stanzas on black history (in italics to represent separateness and rebellion).</li> <li>□ Black history sections arranged as serious lessons to be learned; traditional history as nursery rhymes, mixed with fairytales (mocking of traditional history).</li> <li>□ The lack of punctuation, the stanzas in free verse, the irregular rhyme scheme and the use of Creole could represent the narrator`s rejection of the rules.</li> <li>□ Repetition of "Dem tell me": frustration.</li> </ul>	<ul style="list-style-type: none"> <li>□ "Dem tell me bout 1066 and all dat."</li> <li>□ "Bandage up me eye with me own history."</li> <li>□ "But Toussaint L`Ouverture no dem never tell me bout dat."</li> <li>□ "Dem never tell me bout Shaka de great Zulu."</li> <li>□ "Dem never tell me bout Mary Seacole."</li> <li>□ "From Jamaica she travel far to the Crimean War."</li> <li>□ "But now I checking out me own history."</li> <li>□ I carving out me identity."</li> </ul>

## Year 11 Knowledge Organiser – Power and Conflict Poetry

Poem	Content, Meaning and Purpose	Context	Language	Form and Structure	Key Quotations
<b>15. Kamikaze – Beatrice Garland</b>	<ul style="list-style-type: none"> <li>□ In World War 2, Japanese Kamikaze pilots would fly manned missiles into targets such as ships.</li> <li>□ This poem explores a kamikaze pilot's journey towards battle, his decision to return, and how he is shunned when he returns home.</li> <li>□ As he looks down at the sea, the beauty of nature and memories of childhood make him decide to turn back</li> </ul>	<ul style="list-style-type: none"> <li>□ Cowardice or surrender was a great shame in wartime Japan.</li> <li>□ To surrender meant shame for you and your family, and rejection by society: "he must have wondered which had been the better way to die".</li> </ul>	<ul style="list-style-type: none"> <li>□ The Japanese word 'kamikaze' means 'divine wind' or 'heavenly wind', and has its origin in a heaven-sent storm that scattered an invading fleet in 1250.</li> <li>□ "dark shoals of fish flashing silver": image links to a Samurai sword – conveys the conflict between his love for nature/life and his sense of duty. Also has sibilance.</li> <li>□ "they treated him as though he no longer existed": cruel irony – he chose to live but now must live as though he is dead.</li> <li>□ "was no longer the father we loved": the pilot was forever affected by his decision.</li> </ul>	<ul style="list-style-type: none"> <li>□ Narrative and speaker is third person, representing the distance between her and her father, and his rejection by society.</li> <li>□ The first five stanzas are ordered (whilst he is flying on his set mission).</li> <li>□ Only full stop is at the end of Stanza Five: he has made his decision to turn back.</li> <li>□ The final two are in italics and have longer line to represent the fallout of his decision: his life has shifted and will no longer be the same.</li> <li>□ Direct speech ("My mother never spoke again") gives the poem a personal tone.</li> </ul>	<ul style="list-style-type: none"> <li>□ "Her father embarked at sunrise."</li> <li>□ "In the cockpit, a shaven head full of powerful incantations."</li> <li>□ "For a one-way journey in to history."</li> <li>□ "Beneath them, arcing in swathes like a huge flag."</li> <li>□ "Remembered how he and his brothers waiting on the shore."</li> <li>□ "Yes, grandfather's boat – safe."</li> <li>□ "Gradually we too learned to be silent, to live as though he had never returned."</li> </ul>
	<b>16. Poetic techniques</b>	<p><b>Stanza</b> – a group of lines in a poem.</p> <p><b>Repetition</b> – repeated words or phrases</p> <p><b>Enjambment</b> – a sentence or phrase that runs onto the next line.</p> <p><b>Irony</b> – language that says one thing but implies the opposite e.g. sarcasm.</p>	<p><b>Caesura</b> – using punctuation to create pauses or stops.</p> <p><b>Contrast</b> – opposite concepts/feelings in a poem. <b>Juxtaposition</b> – contrasting things placed side by side.</p> <p><b>Oxymoron</b> – a phrase that contradicts itself.</p>	<p><b>Volta</b> – a turning point in a poem.</p> <p><b>Persona</b> – the narrator, or person in the poem.  <b>Free verse</b> – poetry that doesn't rhyme.  <b>Blank verse</b> – poem in iambic pentameter, but with no rhyme. <b>Sonnet</b> – poem of 14 lines with clear rhyme scheme.</p> <p><b>Rhyming couplet</b> – a pair of rhyming lines next to each other.</p>	<p><b>Tone</b> – the mood or feeling created in a poem.</p> <p><b>Metaphor</b> – comparing one thing to another using 'is' although it is not literally applicable.  <b>Simile</b> – comparing two things using 'like' or 'as'  <b>Personification</b> – giving an inanimate object human characteristics / qualities  <b>Imagery</b> – language that makes us imagine a sight (visual), sound (aural), touch (tactile), smell, taste.</p> <p><b>Pathetic Fallacy</b> – giving emotion to weather to create a mood within a text.</p>

# Year 10 English Language Paper 1 Knowledge Organiser (80 marks & 50% of English Language GCSE)

## Section A – READING 40 marks (50% of Language Paper 1 – 1 hour: 15 minutes reading and 45 minutes writing)

### 1. The Questions

Question 1: List four things... [4]	Question 2: Language [8]	Question 3: Structural terminology [8]	Question 4: Evaluation (use methods from Questions 1 and 2 + effect + evaluate statement) [20]
-------------------------------------	--------------------------	--	--

2. Language Methods Terms		2. Structure Methods Terms		3. Verbs for Analysis				4. Connectives for Developing Ideas	
Noun	Identifies a person, thing, idea or state	Chronological	The order of sequenced events	achieves	affects	allows	alludes to	Firstly...secondly	Moreover
Verb	Describes an action, event, situation or change	Linear	Events are told chronologically	possibly	builds	concludes	confirms	Furthermore	Again
Adverb	Gives information about a verb	Non-Linear	Events are not told chronologically	conveys	denotes	develops	demonstrates	In addition	Besides
Diction	The writer's choice of words	Dual	Told by two perspectives	displays	causes	exaggerates	encourages	Above all	In fact
Imagery	When the writer provides mental "pictures"	Cyclical	Ends the same way it begins	enhances	establishes	exemplifies	explains	Finally	To conclude
Irony	Like sarcasm, where the opposite is implied	Opening	The way the extract begins	explores	exposes	forces	generates	Lastly	Simply
List of three	A trio of events or adjectives	Focusing	Our attention is aimed at something	highlights	hints	gives a sense	illustrates	In view of this	With this in mind
Metaphor	Something is described as something else	Building	When an idea/tension is increased	impacts	implies	identifies	indicates	That is to say	In other words
Pathos	Language used to appeal to the emotions	Developing	An earlier point is extended	initiates	introduces	involves	justifies	For example	By contrast
Personification	Giving human traits to something non-human	Narrative shift	A swift or change of focus	juxtaposes	maintains	manifests	offers	Alternatively	On the contrary
Semantic field	A set of words related in meaning	Zooming in	Detailed description of something	portrays	presents	produces	promotes	Despite	Although
Simile	Something is presented as like something else	Zooming out	Showing the reader the bigger picture	provokes	questions	represents	reveals	Therefore	It is evident that
Onomatopoeia	Sound words	Concluding	Ideas/events are drawn to a close	signifies	suggests	symbolises	typifies	However	Conversely
Pathetic fallacy	Weather reflects the mood	Flash-forward	Presents future events	upholds	validates	verifies	yields	This also	Meanwhile
Colloquialisms	Slang or informal language	Foreshadowing	Hints at what's to come	augments	opposes	creates	links to	On the other hand	Consequently
Adjectives	Words that describe the noun	Climax	The most intense point	serves	isolates	adds to	reinforces	Regardless of	What is more
Hyperbole	Purposely exaggerated ideas	Dialogue	Lines spoken by characters	dictates	amplifies	extends	shows	Basically	Then again
Juxtaposition	Two opposing ideas	Flashback	Presents past events	expresses	advocates	encompasses	influences	Ultimately	Subsequently

## Section B – Writing 40 marks (50% of Language Paper 1 – 45 minutes)

5. Vocabulary to Describe Positive Characters, Settings or Events							6. Vocabulary to Describe Negative Characters, Settings or Events						
Awe	Ethereal	Euphoric	Enlightened	Opulent	Emanates	Alluring	Melancholy	Cacophony	Ominous	Malicious	Morose	Vile	Dire
Serene	Thriving	Exuberant	Vivacious	Virtuous	Luminous	Captivating	Heinous	Loathsome	Grave	Savage	Withering	Flawed	Venomous

# Year 10 Science Knowledge Organiser Learning Cycle 2 – Particle model of matter

1

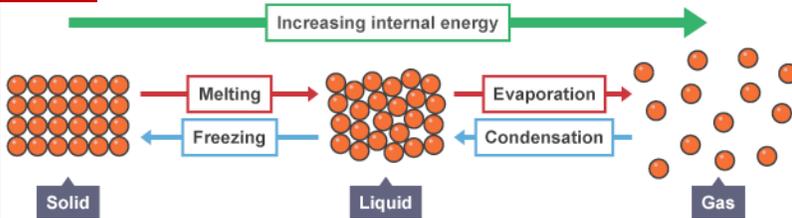
Key words

Definition

Evaporation	Turning from a liquid to a gas
Condensation	Turning from a gas to a liquid
Melting	Turning from a solid to a liquid
Freezing	Turning from a liquid to a solid
Density	The amount of mass in a certain volume of a substance
Specific heat capacity	The amount of energy required to raise the temperature of 1kg of a substance by 1°C
Specific latent heat of fusion/vaporization	The amount of energy required change the state of 1kg of a substance

2

## States of matter



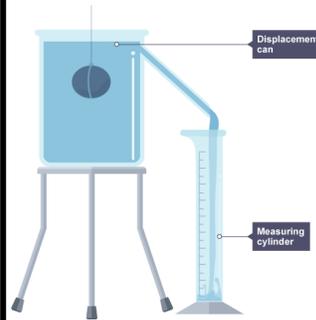
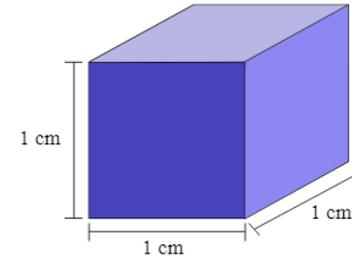
Solid	Liquid	Gas
Very close	Close	Far apart
Regular pattern	Randomly arranged	Randomly arranged
Vibrate around a fixed position	Move around each other	Move quickly in all directions
Low energy	Greater energy	Highest energy

3

## Density

### Required practical – investigating density of a regular shape

1. Record the mass of an object using a balance
2. Calculate its volume using length x width x height.
3. Calculate density.



### Required practical – investigating density of an irregular shape

1. Record the mass of an object using a balance
2. Carefully add the object to a full displacement can and record the volume of displaced water using a measuring cylinder.
3. Calculate density.

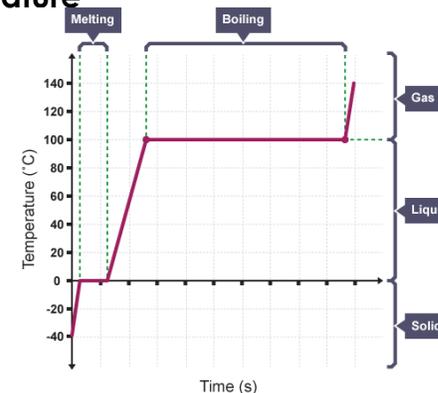
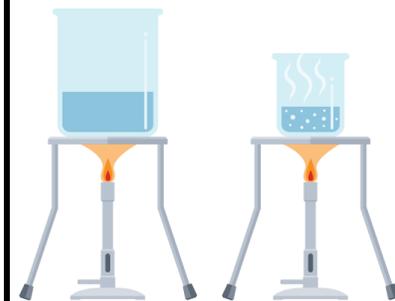
$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

- density ( $\rho$ ) is measured in kilograms per metre cubed ( $\text{kg/m}^3$ )
- mass ( $m$ ) is measured in kilograms (kg)
- volume ( $V$ ) is measured in metres cubed ( $\text{m}^3$ )

All information resourced from BBC bitesize and savemyexams

5

## Energy and temperature



4

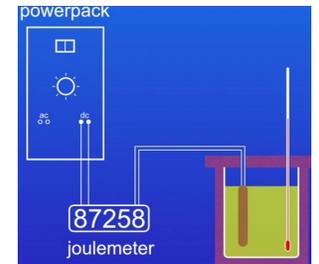
## Specific heat capacity

$$\Delta E_t = m \times c \times \Delta \theta$$

- change in thermal energy ( $\Delta E_t$ ) is measured in joules (J)
- mass ( $m$ ) is measured in kilograms (kg)
- specific heat capacity ( $c$ ) is measured in joules per kilogram per degree Celsius ( $\text{J/kg}^\circ\text{C}$ )
- temperature change ( $\Delta \theta$ ) is measured in degrees Celsius ( $^\circ\text{C}$ )

### Required practical – investigating specific heat capacity

1. Record the mass of an object using a balance
2. Record the start temperature of the object
3. Use a heater to heat the object for 10 minutes, recording the amount of energy transferred
4. Record the end temperature and calculate temperature change
5. Calculate specific heat capacity

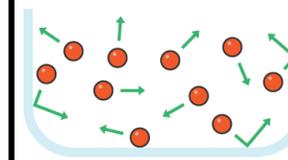


6

## Particle motion of gases

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

- pressure ( $p$ ) is measured in newtons per metre squared ( $\text{N/m}^2$ )
- force ( $F$ ) is measured in newtons (N)
- area ( $a$ ) is measured in metres squared ( $\text{m}^2$ )



Gas pressure is caused by the frequency of the collisions between gas particles and the walls of the container.

Gas pressure can be changed by changing the temperature of the substance, or the volume of the container.

# Year 10 Science Knowledge Organiser Learning Cycle 2 – Quantitative chemistry

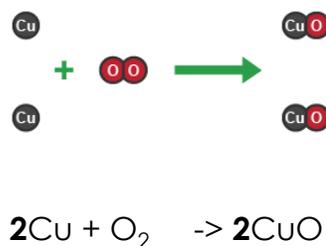
## 1 Definition

### Key words

Conservation of mass	No atoms are lost or gained in a chemical reaction
Reactants	Substances found on the left side of a chemical equation
Products	Substances found on the right side of a chemical equation
Uncertainty	A measure of how precise a value is
Concentration	A measure of the number of particles dissolved in a certain volume of solution
HT only – Avogadro's constant	$6.02 \times 10^{23}$ , the number of particles in 1 mole of a substance
HT only – limiting reactant	The reactant which is used up in a reaction
HT only – reactant in excess	The reactant which is left over at the end of a reaction

## 2 Conservation of mass

- No atoms are lost or gained in a chemical reaction
- Equations are balanced so that there is the same number of atoms of each element in the reactants as there is in the products



## 3 Relative formula mass and percentage by mass

- The relative formula mass ( $M_r$ ) is the sum of the mass numbers of the atoms found in the formula.



Example: Calculate the relative formula mass ( $M_r$ ) of carbon dioxide ( $\text{CO}_2$ )  
 $12 + (16 \times 2) = 44$

- Percentage by mass is calculated by dividing the atomic mass by the formula mass and then multiplying by 100.

Example: Calculate the percentage by mass of carbon in carbon dioxide ( $\text{CO}_2$ )  
 $(12 \div 44) \times 100 = 27.27\%$



## 4 Concentration

$$\text{concentration in g/dm}^3 = \frac{\text{mass of solute in g}}{\text{volume in dm}^3}$$

Example: 8g of sodium hydroxide is dissolved in  $2\text{dm}^3$  of water. Calculate the concentration of the solution.

$$\text{concentration} = \frac{\text{mass of solute in g}}{\text{volume in dm}^3}$$

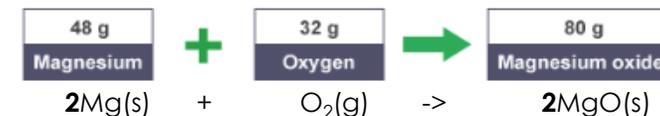
$$\text{concentration} = \frac{8 \text{ g}}{2 \text{ dm}^3}$$

$$\text{concentration} = 4 \text{ g/dm}^3$$

## 5 Mass changes in a reaction

- When a reactant or product is a gas, the reactants can appear to have gained or lost mass.

Example: magnesium reacting with oxygen to make magnesium oxide



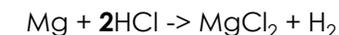
## 6 HT only – moles

1 mole is equal to  $6.02 \times 10^{23}$  particles.

Important equations

- Number of moles = mass (g) ÷ formula mass
- Concentration ( $\text{mol/dm}^3$ ) = moles ÷ volume ( $\text{dm}^3$ )

A chemical equation tells you the ratio in which the substances react.



1 mole of magnesium reacts with 2 moles of hydrochloric acid to make 1 mole of magnesium chloride and 1 mole of hydrogen.

Example question: If 12g of magnesium reacts completely with hydrochloric acid, what mass of hydrochloric acid reacts?

- How many moles of magnesium react?  
 $12 \div 24 = 0.5$  moles of magnesium
- How many moles of hydrochloric acid reacts?  
 $2 \times 0.5 = 1$  mole of hydrochloric acid
- What is the mass of 1 mole of hydrochloric acid?  
 $1 \times 36.5 = 36.5$  g of hydrochloric acid

# Year 10 Science Knowledge Organiser Learning Cycle 2 – Chemical and energy changes

## 1 Key words

### Definition

Endothermic reaction	A reaction which takes energy in from the surroundings to break chemical bonds
Exothermic reaction	A reaction which releases energy from the surroundings when chemical bonds are made
Electrolysis	The splitting up of a molten or dissolved ionic compound using electricity
Titration	A technique used to determine the concentration of an acid or alkali
Acid	A solution with more H <sup>+</sup> ions than OH <sup>-</sup> ions
Alkali	A solution with more OH <sup>-</sup> ions than H <sup>+</sup> ions
Salt	A compound containing a metal and a non-metal
Neutralisation reaction	A reaction between an acid and alkali, making a salt plus water

## 2 Reactivity

Metal	Reactivity
Potassium	Most reactive
Sodium	
Lithium	
Calcium	
Magnesium	
(Carbon)	
Zinc	
Iron	
(Hydrogen)	
Copper	
Gold	Least reactive

### Equations to remember

Metal + water → metal hydroxide + water

Metal + acid → salt + hydrogen

### Metal extraction using carbon

Metal oxide + carbon → metal + carbon dioxide

### Oxidation

Metal + oxygen → metal oxide

### Neutralisation

Acid + base → salt + water

## 3 Electrolysis

Electrolysis is used to extract metals which are more reactive than carbon.

Positive ions move to the negative electrode (cathode), whilst negative ions move to the positive electrode (anode).

### Molten substances

At the cathode (-)  
The metal will form

At the anode (+)  
The non-metal will form

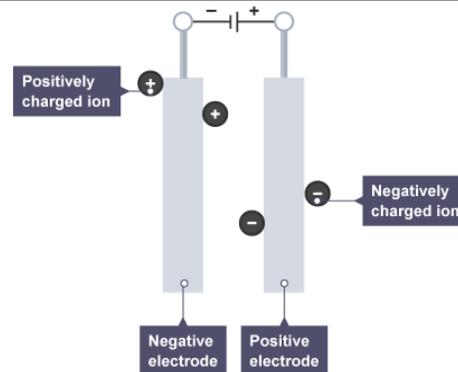
### Substances in solution

At the cathode (-)  
If the metal ion is less reactive than hydrogen, a metal will be formed

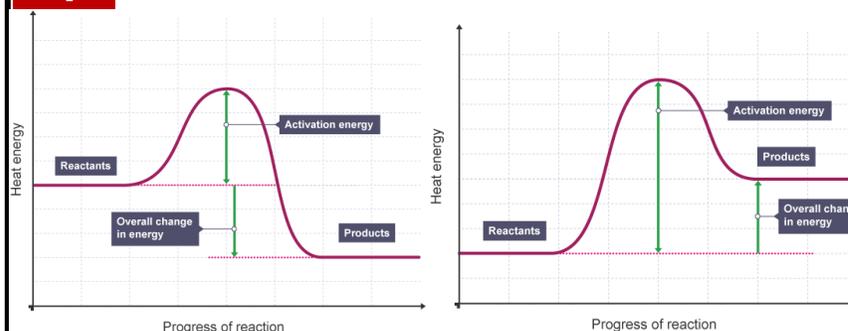
If the metal ion is more reactive than hydrogen, hydrogen will be formed.

At the anode (+)  
If the non-metal ion is in group 7, a group 7 molecule will be formed

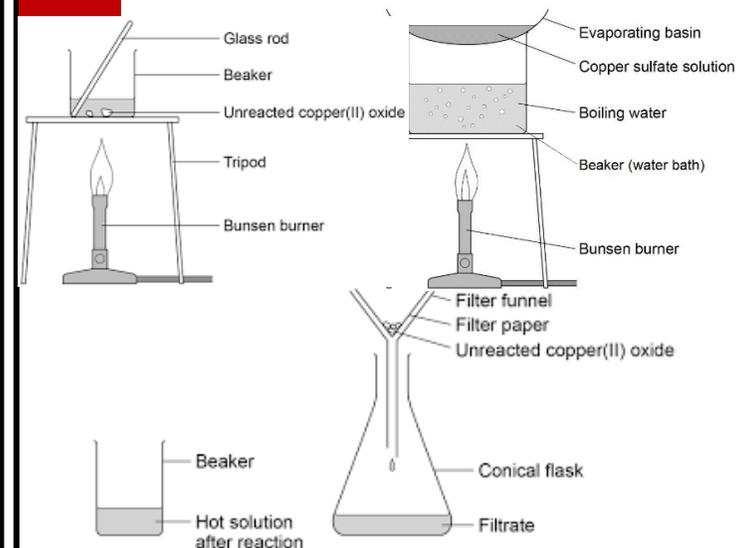
If the non-metal ion is not a halide, oxygen will be formed.



## 4 Endothermic and exothermic reactions



## 5 Making a soluble salt

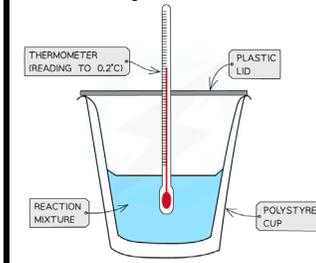


## 6 Temperature changes required practical

### Method

Reacting two solutions, e.g. acid and alkali

- Place the polystyrene cup inside the glass beaker to make it more stable.
- Measure an appropriate volume of each liquid, e.g. 25 cm<sup>3</sup>.
- Place one of the liquids in a polystyrene cup.



- Record the temperature of the solution.
- Add the second solution and record the highest or lowest temperature obtained.
- Change your **independent variable** and repeat the experiment. Your independent variable could be the concentration of one of the reactants, or the type of acid/alkali being used, or the type of metal/metal carbonate being used.

# Year 10 Science Knowledge Organiser Learning Cycle 2 – Chemical and energy changes (Triple Science only)

**Fuel cells** work in a different way than chemical cells. Fuel cells produce a **voltage** continuously, as long as they are supplied with:

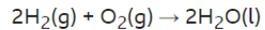
- a constant supply of a suitable **fuel**
- oxygen, eg from the air

The fuel is **oxidised** electrochemically, rather than being burned, so the reaction takes place at a lower temperature than if it was to be burned. Energy is released as electrical energy, not **thermal energy** (heat).

## Hydrogen-oxygen fuel cells

Hydrogen-oxygen fuel cells are an alternative to rechargeable cells and batteries. In a hydrogen-oxygen fuel cell, hydrogen and oxygen are used to produce a voltage. Water is the only product. The overall reaction in a hydrogen-oxygen fuel cell is:

hydrogen + oxygen → water

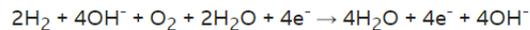


## Electrode half equations - Higher

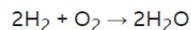
At the negative electrode:  $2\text{H}_2 + 4\text{OH}^- \rightarrow 4\text{H}_2\text{O} + 4\text{e}^-$

At the positive electrode:  $\text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}^- \rightarrow 4\text{OH}^-$

When you add these two half equations together, you get the following overall equation:



The hydroxide ions, electrons and two  $\text{H}_2\text{O}$  molecules will now cancel because they are on both sides, leaving the overall equation:



## Chemical cells

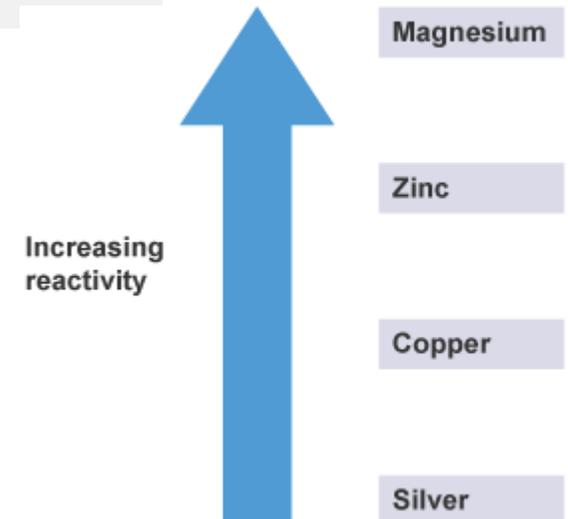
**Chemical cells** use chemical reactions to transfer energy by **electricity**. The **voltage** of a cell depends upon a number of factors, including what the **electrodes** are made from, and the substance used as the **electrolyte**.

	Magnesium -2.37	Zinc -0.76	Copper +0.34
Magnesium	0.00 V	1.61 V	+2.71
Zinc	-1.61 V	0.00 V	+1.10 V
Copper	2.71 V	-1.10 V	0.00 V

A simple cell can be made by connecting two different metals in contact with an electrolyte. A number of cells can be connected in series to make a **battery**, which has a higher voltage than a single cell.

In non-rechargeable cells, eg alkaline cells, a **voltage** is produced until one of the **reactants** is used up. When this happens, we say the battery 'goes flat'.

In rechargeable cells and batteries, like the one used to power your mobile phone, the chemical reactions can be reversed when an **external circuit** is supplied.



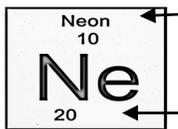
# Year 10 Science Knowledge Organiser Learning Cycle 1 – Atomic structure

## 1 Definition

Key words	Definition
Isotope	Atoms of an element with the same number of protons and electrons but a different number of neutrons
Radioactive Decay	Unstable nuclei break apart or change, and release radiation
Alpha Radiation	Subatomic particle consisting of 2 protons and 2 neutrons
Beta Radiation	A type of ionizing radiation consisting of one electron
Gamma radiation	A type of ionising radiation that is also part of the EM spectrum
Half-Life	The time taken for the number of radioactive nuclei in an isotope to halve
Contamination	When an object is touched or mixed with a source of radiation
Irradiation	When an object is exposed to a source of radiation

## 2 Recap of Atomic Structure

<b>Central nucleus</b>	Contains protons and neutrons	
<b>Electron shells</b>	Contains electrons	
Name of Particle	Relative Charge	Relative Mass
Proton	+1	1
Neutron	0	1
Electron	-1	Very small



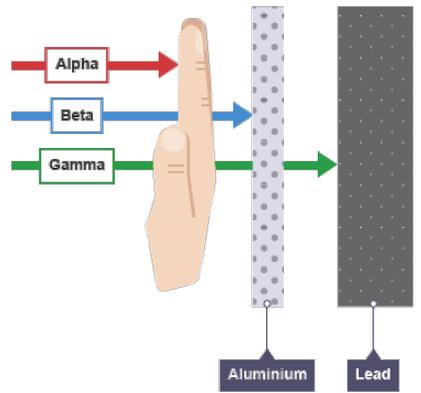
Atomic number: the number of protons in the atom. This is also the number of electrons

Mass number: the sum of the protons and neutrons

## 3 Alpha, Beta and Gamma Properties

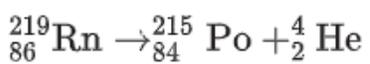
Nuclei with too many, or too few, neutrons do exist naturally but are unstable and will **decay** by emitting **radiation**. An unstable nucleus can decay by emitting an **alpha particle**, a **beta particle**, a **gamma ray** or in some cases a single neutron.

Alpha	α	Skin/paper	High	< 5 centimetre (cm)
Beta	β	3 mm aluminium foil	Low	≈ 1 metre (m)
Gamma	γ	Lead/concrete	Very low	> 1 kilometre (km)

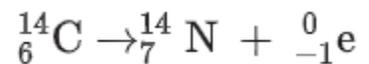


## 4 Nuclear Equations

A nucleus changes into a new element by emitting **alpha** or **beta particles**. These changes are described using nuclear equations.



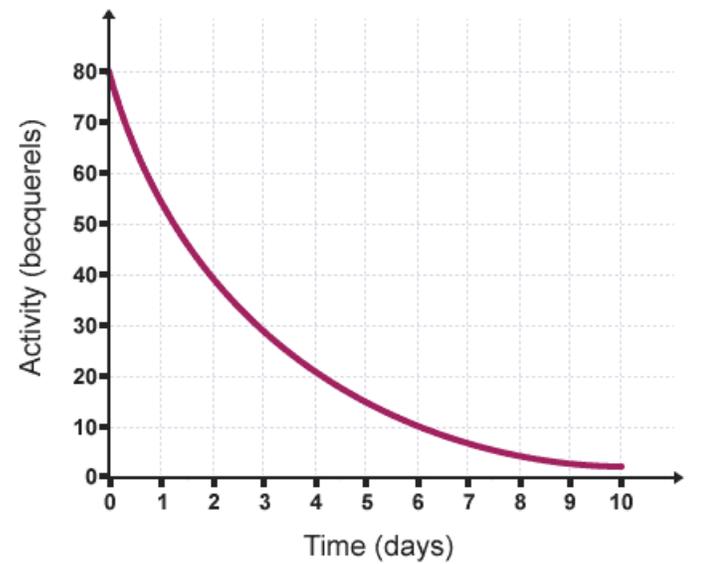
Alpha decay will always emit 2 protons and 2 neutrons, like a helium atom



Beta decay will always emit 1 electron

**Gamma** is pure energy and will not change the structure of the nucleus in any way.

## 5 Half- Life



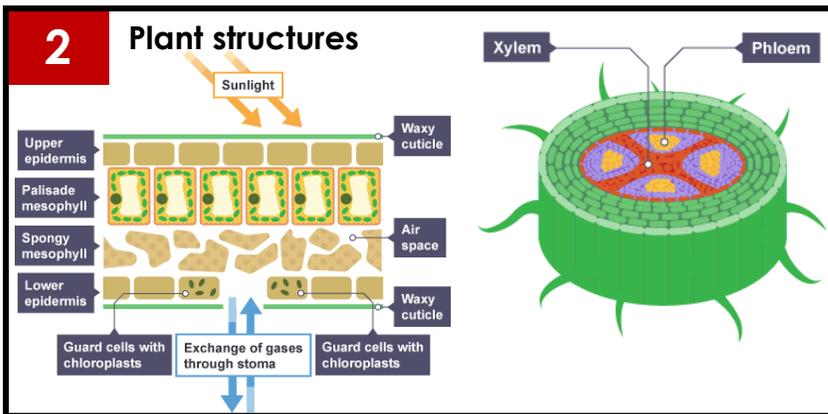
Half-life is the time it takes for half of the unstable nuclei in a sample to decay

## 6 Contamination and Irradiation

Irradiation	Contamination
Occurs when an object is exposed to a source of radiation outside the object.	Occurs if the radioactive source is on or in the object.
Doesn't cause the object to become radioactive.	A contaminated object will be radioactive for as long as the source is on or in it.
Can be blocked with suitable shielding or moving away.	Once an object is contaminated, the radiation cannot be blocked from it.
Stops as soon as the source is removed.	It can be very difficult to remove all of the contamination.

# Year 10 Science Knowledge Organiser Learning Cycle 1 – Cell transport, bioenergetics and ecology

1 Key words	Definition
Translocation	Movement of sugars up and down the plant, in the phloem
Transpiration	Movement of water and minerals up the plant, in the xylem
Osmosis	The diffusion of water molecules, from a region where the water molecules are in higher concentration, to a region where they are in lower concentration, through a partially permeable membrane.
Diffusion	The movement of particles from a high concentration to a low concentration
Active transport	The movement of particles from a low concentration to a high concentration across a cell membrane, using energy.
Photosynthesis	Carbon dioxide + water -> glucose + oxygen
Adaptation	A feature which allows an organism to survive and reproduce
Interdependence	If the population of one organism rises or falls, then this can affect the rest of the ecosystem.



## 3 Photosynthesis

### Required practical – the effect of light intensity on photosynthesis.

- Submerge a 10cm piece of pond weed in a boiling tube of sodium hydrogen carbonate solution
- Place the boiling tube 10cm from an LED lamp and record the number of bubbles produced in 1 minute.
- Repeat step 2 at 4 more distances.
- Repeat steps 2 and 3, identify anomalies and calculate a mean.

Rate of photosynthesis vs Light intensity

Rate of photosynthesis vs Temperature

$$\text{Carbon dioxide} + \text{Water} \xrightarrow[\text{Chlorophyll}]{\text{Light}} \text{Glucose} + \text{Oxygen}$$

All information resourced from BBC bitesize and savemyexams

## 5 Adaptation and competition

### Arctic ecosystem

The arctic fox has white fur for camouflage and thick fur, to keep warm.

### Plants compete for:

- Water
- Space
- Minerals
- Sunlight

### Desert ecosystem

The cactus has spines to prevent it from being eaten and deep root systems to collect water.

### Animals compete for:

- Food
- Water
- Mates
- Territory

## 4 Osmosis

### Required practical – the effect of osmosis on plant tissue.

- Record the mass of 5 pieces of potato.
- Place each piece of potato in 5 different concentrations of sugar solution for 24 hours.
- Dry the potato pieces, and record their final mass
- Calculate percentage change

Diffusion of water

$$\text{change in mass} = \frac{\text{mass at end} - \text{mass at start}}{\text{mass at start}} \times 100$$

## 6 Interdependence

The graph shows cyclical changes in population size. When the prey population grows, the predator population also grows, which then causes the prey population to decline, leading to a decline in the predator population.

Grass  
Producer

Grasshopper  
Primary consumer

Frog  
Secondary consumer

Snake  
Tertiary consumer

Hawk  
Quaternary consumer

# Year 10 Science Knowledge Organiser Learning Cycle 1 – Triple only

## Biology

Key words	Definition
Antibacterial chemicals	Naturally occurring chemicals made by plants like mint and witch hazel which protect them from bacterial pathogens
Mimicry	The ability of some organisms to copy the appearance or behaviour of others
Deficiency disease	A disease that develops because an organism (plant or animal) does not have enough vitamins or minerals ions.
Fungicide	A chemical which kills fungi

**Magnesium ion deficiency**  
Plants use magnesium ions to make chlorophyll in their leaves. Like in nitrate deficiency, the plant is limited in terms of its photosynthetic ability and the plant growth is compromised. Magnesium is a **limiting factor** in healthy plant growth.



**Nitrate deficiency**  
Plants use **nitrates** as a supply of nitrogen, which is needed to make proteins for healthy growth. Plants absorb nitrates in water through their roots. Nitrates are present in high levels in plant fertilisers.

Without nitrates, the amount of **chlorophyll** in leaves reduces. This means leaves turn a pale green or yellow colour. This reduces the plant's ability to **photosynthesise** and grow properly, which reduces the farmers' **crop yield**. Farmers or gardeners can add chemical or natural fertilisers, such as manure to increase nitrate levels.

### Symptoms

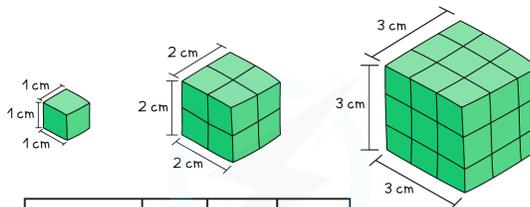
Plant **pathogens** cause diseases with a range of different symptoms. These symptoms can be used to identify the pathogen and then treat the disease, or limit its effects. The symptoms of common plant infections are shown below.

### Identification

Farmers and gardeners often use books and the internet to identify plant diseases. They can also take a small cutting of an infected plant (or a photograph of it) to a local garden centre, which have staff that can often help identify and treat the disease. For diseases that are more difficult to identify, cuttings of the plant may be analysed by scientists in laboratories using testing kits containing monoclonal antibodies.

## Chemistry

Key words	Definition
Nanoparticle	Particles between 1 and 100 nanometres (nm) in size and are made up of a few hundred atoms.
Homologous series	A family of organic compounds with the same functional groups and similar chemical properties
Polymer	A large molecule, made of repeating subunits called monomers

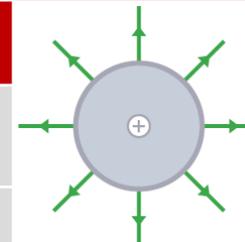


Surface area	6 cm <sup>2</sup>	24 cm <sup>2</sup>	54 cm <sup>2</sup>
Volume	1 cm <sup>3</sup>	8 cm <sup>3</sup>	27 cm <sup>3</sup>
Surface area: volume	6:1	3:1	2:1

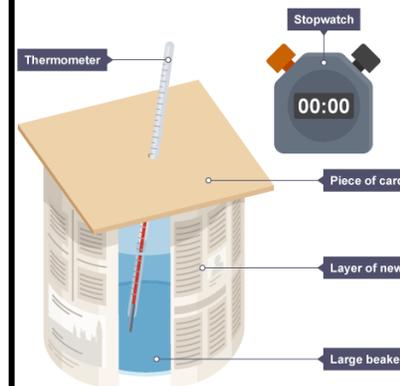
FAMILY	FUNCTIONAL GROUP	NAME
ALKANE	$\begin{array}{c} \text{H} \quad \text{H} \\   \quad   \\ -\text{C}-\text{C}- \\   \quad   \\ \text{H} \quad \text{H} \end{array}$	-ANE
ALKENE	$\begin{array}{c} \text{H} \quad \text{H} \\   \quad   \\ -\text{C}=\text{C}- \\   \quad   \end{array}$	-ENE
ALCOHOL	-C-OH	-ANOL
CARBOXYLIC ACID	$\begin{array}{c} \text{O} \\    \\ -\text{C}-\text{OH} \end{array}$	-ANOIC ACID
AMINE	$\begin{array}{c} \text{NH}_2 \\   \\ -\text{C}- \\   \end{array}$	-AMINE
ESTER	$\begin{array}{c} \text{O} \\    \\ -\text{C}-\text{O}-\text{C}- \\   \end{array}$	-YL -ANOATE

## Physics

Key words	Definition
Insulator	A material which does not let heat or electricity pass easily through it
Charge	A property of matter which causes a force when near another charge. Charges are either positive or negative.
Electric field	An area surrounding an electric charge which may influence other charged particles



The radial field around a positive charge



### Required practical – investigating methods of insulation

1. Add 100cm<sup>3</sup> of boiling water to a beaker with a lid fitted
2. Record the start temperature of the water
3. Record the temperature of the water every 2 minutes for 60 minutes
4. Repeat steps 1-3 with different types of insulation around the beaker.

For a fixed mass of gas at a constant temperature:

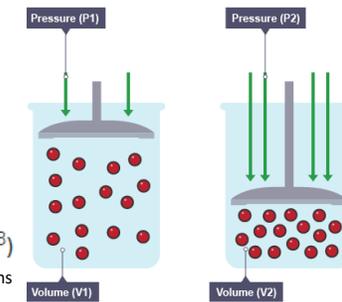
pressure × volume = constant

$pV = \text{constant}$

This is when:

- pressure ( $p$ ) is measured in pascals (Pa)
- volume ( $V$ ) is measured in metres cubed (m<sup>3</sup>)

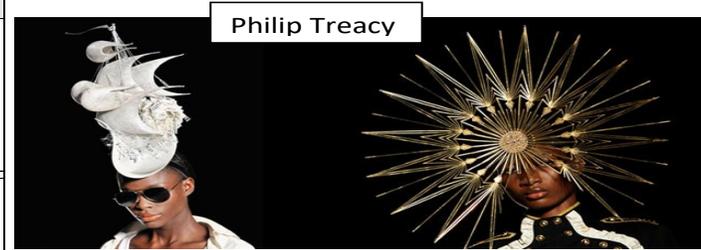
All information resourced from BBC bitesize and savemyexams



# Year 10 Art Knowledge Organiser Learning Cycle 2

## LO2 Year 10: ART HAS VALUE, IN UNEQUAL MEASURES *knowledge organiser*

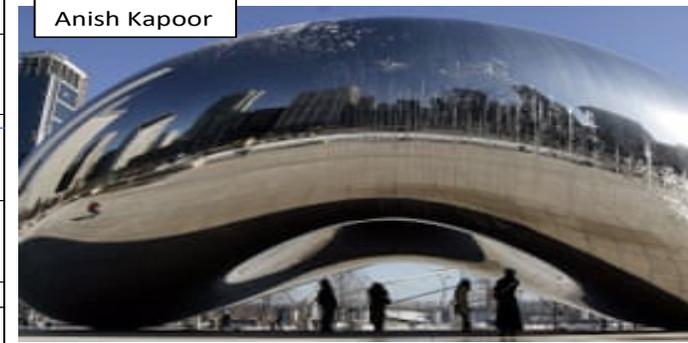
Key Terms	Definitions
Textiles	A textile is a flexible material consisting of a network of natural or artificial fibres (yarn or thread). Textiles are formed by weaving, knitting, crocheting, knotting, tatting, felting, or braiding. Textile design involves creating the surface decoration or woven quality of a fabric.
Graphics	Graphics are visual elements often used to point readers and viewers to particular information. They are also used to supplement text in an effort to aid readers in their understanding of a particular concept or make the concept more clear or interesting
Fashion	Fashion is the design and construction of clothing. This can be inspired by culture, necessity, inventions, history and status.
Contemporary Crafts	Those made of ceramics, fibre, glass, metal, or wood. These can be functional, sculptural, or conceptual. This can adorn the body.
Architecture	Architecture is the art and science of the design of structures or buildings such as houses, places of worship, and office buildings.
Design Brief	A design brief is a document for a design project developed by a person or team in consultation with the client. They outline the deliverables and scope of the project including any products or works, timing and budget.
Contextualisation	The message, meaning or story behind the idea.
Resource Materials	Images from newspapers, magazines, internet or photographs that are collected to develop ideas from.



Philip Treacy



Kirsty Whitlock



Anish Kapoor



Shepard Fairey

**What will I learn?** 2

You will be introduced to the creative industries which is the employment side of the arts. You will select one design brief to complete and through the exploration of artist, craftspeople and designers you will experiment with materials to create a final outcome. This will provide you with experience for further education al courses.



# Year 10 History Learning Cycle 2

## 1 Impact on Plains Indians, c1862-76

**Cattle industry:** Cattle and buffalo competed for the same grass. This put pressure on the buffalo. Cattle also crossed Indian lands, leading to tension.

**Impact of reservations:** They undermined the Indians' traditional way of life and meant that Indians could not hunt. They became dependent on food supplies from the gov



## 2 Little Crow's War, 1862

**Cause:** Crops failed and Indians faced starvation.

**Events:** Little Crow and others attacked the agency. They stole food and killed several US soldiers.

**Consequences:** By October most Santee had surrendered or been captured. They were then moved to a smaller reservation, Crow Creek. Its barren landscape caused many deaths that winter.

## 3 The Battle of the Little Bighorn, 1876

**Causes:** The US Army was ordered to attack any Sioux Indians who had not returned to their reservations.

**Events:** There was no effective communication between the 3 columns of soldiers. General Custer disobeyed orders and arrived a day early by cutting across the mountains.

He then attacked despite warnings from his scouts (because he wanted glory). The Indians outnumbered them 2000 to 200 and had repeating rifles (better weapons).

## 4 Continued settlement and growth

**The Exoduster Movement, 1879:** 43,000 black migrants settled in Kansas due to a lack of equality in the southern states (after the Civil War slavery was abolished).

**The Oklahoma Land Rush, 1893:** Land that was previously seen as too dry for farming became available. Due to an economic depression, 100,000 people dashed to claim the land.



## 5 Lawlessness

Tensions in the West grew at this time

**Billy the Kid:** Billy's gang caused chaos in New Mexico in 1878.

**Wyatt Earp:** Became Deputy Sheriff in Tombstone in 1880. Earp and his brothers killed 2 McLaurys and 1 Clanton (ranchers in the area) at the OK Corral in 1886. This shows that law officers often committed crime themselves



## 6 The End of the Indians' Way of Life

**The Ghost Dance:** In 1890 the Indians were desperate due to lack of food. In response to a vision, many of them started a Ghost Dance. This worried the Indian agents and white settlers.

**Wounded Knee Massacre, 1890:** In response to the Ghost Dance, 250 Indians were killed in the last clash between the Sioux Indians and US Army.



# Year 10 Geography Learning Cycle 2

1

## Evidence of Climate Change

Climate change is a large-scale, long-term shift in the planet's weather patterns or average temperatures. Earth has had tropical climates and ice ages many times in its 4.5 billion years.

### Recent Evidence for climate change.

Global temperature	Average global temperatures have increased by more than <b>0.6°C since 1950</b> .
Ice sheets & glaciers	Many of the world's glaciers and ice sheets are melting. E.g. the Arctic sea ice has declined by <b>10% in 30 years</b> .
Sea Level Change	Average global <b>sea level has risen by 10-20cms</b> in the past 100 years. This is due to the additional water from ice and thermal expansion.

2

## Managing Climate Change

### Carbon Capture

This involves new technology designed to reduce climate change.

### Planting Trees

Planting trees increase the amount of carbon is absorbed from atmosphere.

### International Agreements

Countries aim to cut emissions by signing international deals and by setting targets.

### Renewable Energy

Replacing fossil fuels-based energy with clean/natural sources of energy.



3

## What is an Ecosystem?

An ecosystem is a system in which organisms interact with each other and with their environment.

### Ecosystem's Components

**Abiotic** These are non-living, such as air, water, heat and rock.

**Biotic** These are living, such as plants, insects, and animals.

**Flora** Plant life occurring in a particular region or time.

**Fauna** Animal life of any particular region or time.



### Food Web and Chains

Simple **food chains** are useful in explaining the basic principles behind ecosystems. They show only one species at a particular trophic level. **Food webs** however consists of a network of many food chains interconnected together.

4

## Causes of deforestation



Logging



Agriculture



Mineral Extraction



Tourism



Energy Development



Road Building

5

## Impacts of deforestation

### Economic development

- + Mining, farming and logging creates employment and tax income for government.
- + Products such as palm oil provide valuable income for countries.
- The loss of biodiversity will reduce tourism.

### Soil erosion

- Once the land is exposed by deforestation, the soil is more vulnerable to rain.
- With no roots to bind soil together, soil can easily wash away.

### Climate Change

- When rainforests are cut down, the climate becomes drier.
- Trees are carbon 'sinks'. With greater deforestation comes more greenhouse emissions in the atmosphere.
- When trees are burnt, they release more carbon in the atmosphere. This will enhance the greenhouse effect.

6

## Sustainability in the TRF

### Possible strategies include:

- Agro-forestry** - Growing trees and crops at the same time. It prevents soil erosion, and the crops benefit from the nutrients.
- Selective logging** - Trees are only felled when they reach a particular height.
- Education** - Ensuring those people understand the consequences of deforestation
- Afforestation** - If trees are cut down, they are replaced.
- Forest reserves** - Areas protected from exploitation.
- Ecotourism** - tourism that promotes the environments & conservation

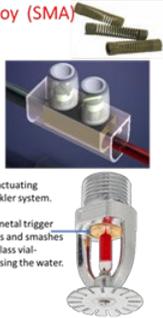
# Year 10 Engineering Knowledge Organiser Learning Cycle 2

1

## Smart materials

### Smart Springs –Shape memory alloy (SMA)

- Made from any alloy of nickel/titanium
- At room temperature the spring is fully extended manually
- By heating up or applying a small electric current the spring will return to its original position and carry a load.
- Possible applications
- Emergency closer in case of fire of:
  - Bin lids
  - Blinds
  - Windows



### Thermochromic Inks

Inks that change colour with temperature



Has your egg been hot enough for long enough?



A 2d temperature gauge



Useful on marketing materials



Interesting gimmicks!



### Photochromic Materials

- Materials that change colour when exposed to light
- Possible Applications:
  - energy-efficient windows that switch from transparent to opaque spontaneously upon exposure to increasing levels of sunlight
  - Sunglasses and visors that respond to changing conditions



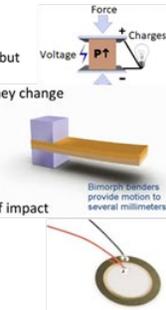
### Piezoelectric Materials

• 2 unique properties

- When deformed, they generate a small but measurable electrical current.
- When an electrical current is applied, they change size
- up to a 4% change in volume

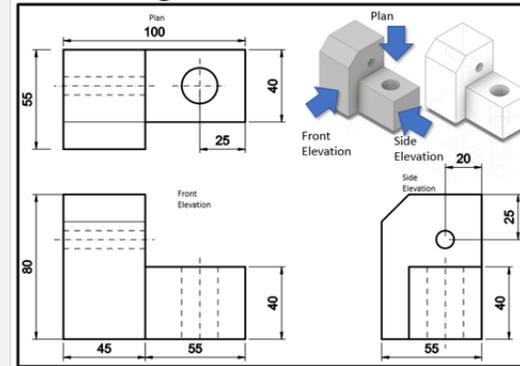
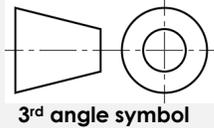
• Applications

- Sensors
- The airbag sensors in cars detect force of impact
- Buzzers
- Low quality speakers



## Orthographic Drawing

1



Traditionally we draw by hand but Computers now do much of the work for us. This is known as CAD- Computer Aided Design. Usually our 3d Modelling programme will help create the orthographic drawing. We still need to make sure the correct views and dimensions are chosen and shown properly (annotation).

### Orthographic drawings usually show 3 views.

A front elevation, a side elevation and a plan view (from above). The example above shows a 3<sup>rd</sup> angle drawing – (this describes how the views are organised on the page. They must all line up correctly.

- The measurements are called dimensions. These measurements go above small lines that measure from one point to the next..... These are called dimension lines.
- To show where the measurement starts and ends there are Limit lines.
- In the middle of symmetrical or cylindrical shapes there are lines that are called centre lines.
- Sometimes we need to 'see through' a part to help describe the shape. The lines used for this are dashed. This is called hidden detail.

3

### KEY TERMS AND DEFINITIONS:

**Internal Callipers:**  
Measure internal sizes and diameters



**External Callipers:**  
Measure external sizes and diameters



**Odd Leg Callipers:**  
Mark a line parallel to an edge.

**Engineers Square:**  
Marking out and checking 90 degrees.



**Drill Bit:**  
Used to make holes in metal and plastics.



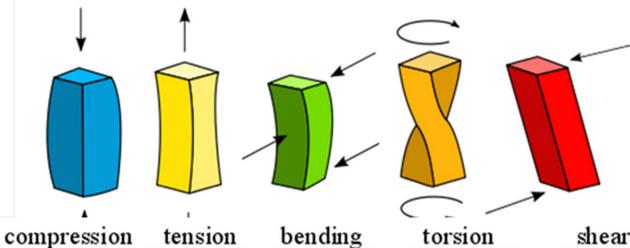
**Centre punch:**  
Creates an indentation to locate drill point



**Tap and Die:**  
Cutting internal and External Threads



## Forces that materials have to be able to withstand

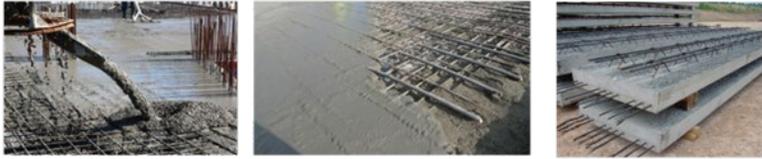


Designers and Engineers select materials and design structures to be able to manage the forces acting on them.

### Forces

4

## Reinforced concrete



**Reinforced concrete (RC)** is a composite material in which concrete's relatively low tensile strength and ductility are counteracted by adding reinforcement that has a higher tensile strength or ductility.

The reinforcement is usually, steel reinforcing bars (rebar) and is usually embedded in the concrete before the concrete sets.

Reinforcing bar layout is usually designed to resist tensile stresses in particular regions of the concrete that might cause unacceptable cracking and/or structural failure.

Modern reinforced concrete can contain varied reinforcing materials made of steel, polymers or alternate composite material sometimes in conjunction with rebar. .

<https://youtu.be/A9dOzmRgYWA> 3 mins BBC

**Composite materials are generated for their combined useful properties**

### Advantages

It can be easily be moulded into any shape, has mechanical strength that is so strong and stiff for its weight that it can out-perform most of the other materials.

Fibreglass is long lasting, it can be coloured, shiny or dull.

It is low maintenance, anti-magnetic, fire resistant, good electrical insulator and weatherproof.

### Disadvantages

it needs to be re-gel coated about every five years and can result in airborne fibres which may be an issue to asthma sufferers. **Impossible to re-cycle- it is bad for the environment !!**

- Initially the most widespread form of reinforcing material
- Available in a variety of forms
- 1. Threads of fibre woven together
- 2. Loose strands
- 3. Non woven matting of the short strands

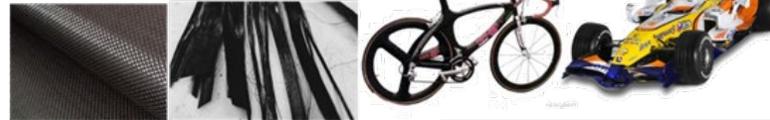


[https://youtu.be/ZotUR\\_GiVK8](https://youtu.be/ZotUR_GiVK8)- wet layup 2 mins

## Carbon Fibre

5

- Consists of thin fibres of carbon, twisted to form a yarn.
  - This is woven to create fabric cloth, which combined with plastic resin produces a strong composite material.
- Properties: High Strength & Low weight.  
Uses: Helicopter Blades, F1 Racing Cars, Cycle Frames.



Quite a common material/process due to strength vs weight properties.

The sheets are laid up over a former or in a mould and then pressure is applied to the layers and resin- this may be done in a vacuum bag or in a pressure chamber called an autoclave

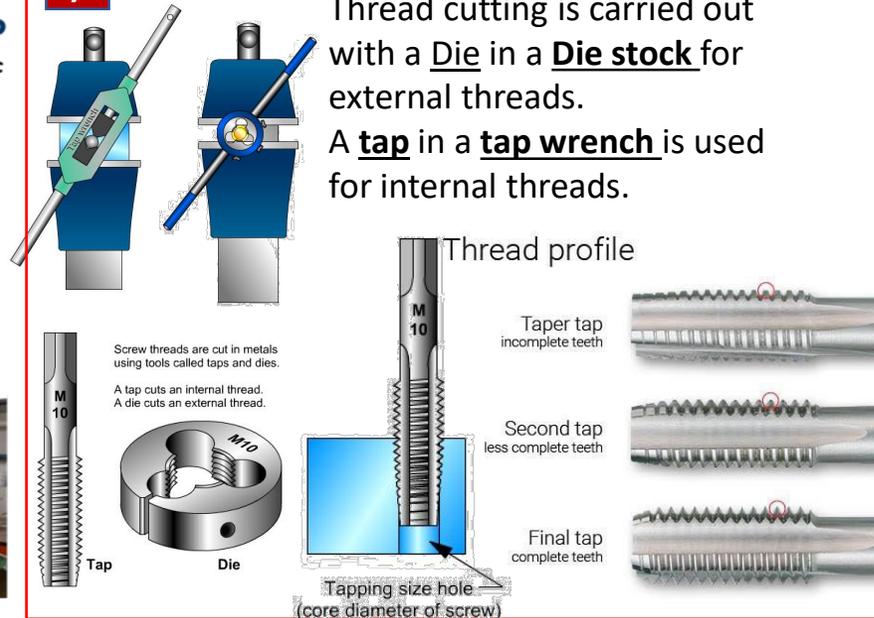
<https://youtu.be/OOZiZm5msBU> 5 mins



7

Thread cutting is carried out with a Die in a Die stock for external threads.

A tap in a tap wrench is used for internal threads.



## KEY WORDS

**Design:** Creating ideas to help solve problems.

**Analysis:** A bit like evaluating. You compare the product with some criteria. This helps make decisions and find out about the most important features of the product.

**Development:** Improving the design based on research and the analysis.

**CAD CAM:** Computer Aided Design- Using software to create artwork and designs. Computer Aided Manufacturing- using machines such as laser cutters and milling machines to make components from computer artwork.

**Manufacturing:** Any making process- including hand tools or machinery. This often includes machining.

**Assembly:** Joining components to make products, either in real life or virtually. Assembly can also include other assemblies (sub assemblies)

**Threading.** The spiral shape that runs around a cylinder or inside a round hole . Threads are a key part of nuts and bolts but are also included or cut into components to make a temporary joint that can be undone when required.

# Year 10 Design Technology Knowledge Organiser Learning Cycle 2

## 1 Casting- allows components to be repeated and consistent in size and shape.

- Casting is carried out to create components that require further finishing OR that are finished.
- This will depend on how the component is cast, the material and the surface finish required.
- Casting of ceramics and metals has been used for many thousands of years through Europe, Asia and Africa.
- The mould material can be basic sand, stone or clay. For a more durable mould a metal alloy is used.
- More recently plastic casting has been carried out using flexible rubber/silicon moulds. These can be used with a range of polymers including epoxy, polyester and silicon.



## 2 Low temperature metal casting

This method of casting creates a flat component- it is carried out by using layers of MDF to clamp the mould cavity closed. Careful design thinking allows additional details and inserts to be included.

A tight seal between all parts of the mould is required to prevent liquid metal from escaping.

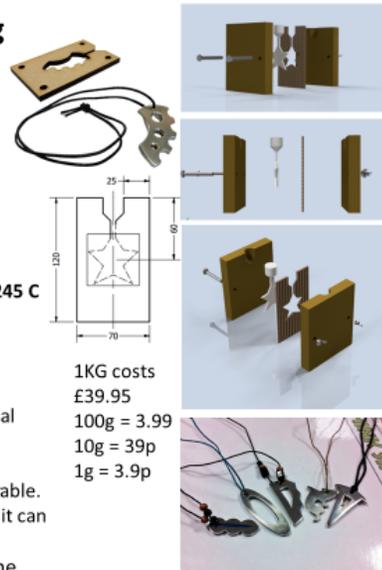
**This lead free pewter ingot will turn to liquid at 245 C**  
Pewter is an alloy of other metals.

98% Tin.  
7.5% Antimony  
1.5% Copper

The properties of each metal contribute to the final alloy.

Tin is too brittle on its own but it is bright and durable. Antimony helps the metal 'run' as a liquid so that it can be cast.

Copper adds durability and some hardness to the metal so that the product lasts longer.

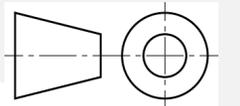
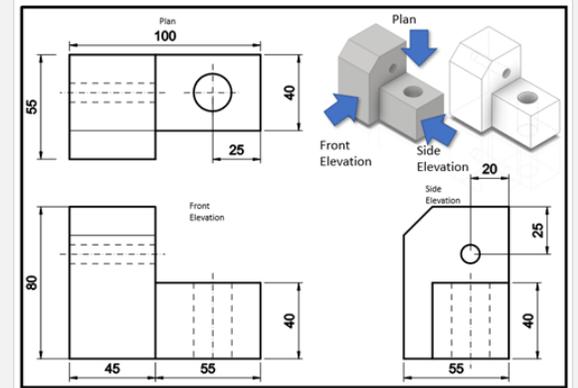


## 3 Orthographic Drawing

**Orthographic drawings usually show 3 views.**

A front elevation, a side elevation and a plan view (from above). The example above shows a 3<sup>rd</sup> angle drawing – (this describes how the views are organised on the page. They must all line up correctly.

- The measurements are called dimensions. These measurements go above small lines that measure from one point to the next.... These are called dimension lines.
- To show where the measurement starts and ends there are Limit lines.
- In the middle of symmetrical or cylindrical shapes there are lines that are called centre lines.
- Sometimes we need to 'see through' a part to help describe the shape. The lines used for this are dashed. This is called hidden detail.



### Line Types

- **Object Lines** (thick)
- **Hidden Lines** (thin, dashed)
- **Center Lines** (thin, dashed)
- **Phantom Lines** (thin, dashed)
- **Dimension Lines** (thin)
- **Extension Lines** (thin)
- **Leader Lines** (thin)
- **Cutting Plane Line** (thick, dashed)
- **Sections - Hatching** (thick, hatched)
- **Break Lines** (thin, wavy)

Traditionally we draw by hand but Computers now do much of the work for us. This is known as CAD- Computer Aided Design.

Usually our 3d Modelling programme will help create the orthographic drawing. We still need to make sure the correct views and dimensions are chosen and shown properly (annotation).

### KEY TERMS AND DEFINITIONS:

**Casting:** pouring a liquid into a mould and allowing it to set into a solid component

**Production:** Making products or components. Scales are described as one off, batch, mass and continuous production.

**Mould:** A hollow form that liquid is poured into- can often be used more than once to make identical products.

**Durable:** A material that can resist forces and resist breaking down in use.

# Year 10 Design Technology Knowledge Organiser Learning Cycle 2

Materials categories- Materials can be organised into categories and then divided into sub categories.

4

**Thermo forming polymers**  
**Clear Acrylic (Perspex)**  
 • It was first used to make aircraft canopies. It is ten times more impact resistant than glass.  
 • It has excellent transparency and can be bent and polished.  
 • It is easily scratched and can be snapped and cracked easily.  
 • It has quite a low glass transition temperature



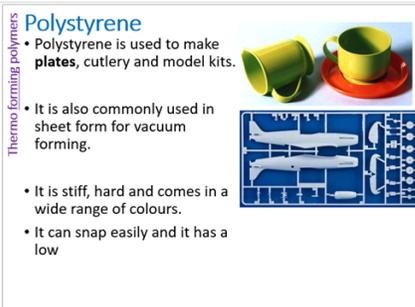
**Thermo forming polymers**  
**Polyethylene Terapthelate -PET**  
 Polyethylene terephthalate is one of the most widely used polymers.  
 It is a very durable material that has a good level of transparency and excellent tensile strength.  
 It is commonly used in drinks bottles and in clothing because it is so strong.



**Thermo forming polymers**  
**Polycarbonate- PC**  
 • Polycarbonate is a very tough material and can withstand hard use- knocks and impacts.  
 • It is used where toughness and durability are needed in combination with transparency.  
 • It is much tougher than acrylic but more easily scratched and more expensive



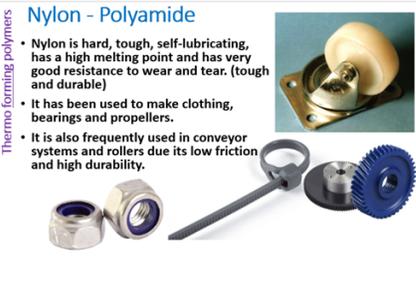
**Thermo forming polymers**  
**Polystyrene**  
 Polystyrene is used to make plates, cutlery and model kits.  
 It is also commonly used in sheet form for vacuum forming.  
 • It is stiff, hard and comes in a wide range of colours.  
 • It can snap easily and it has a low



**Thermo forming polymers**  
**Expanded polystyrene**  
 • This is used for disposable food packaging, disposable cups, heat insulation and protective packaging for electrical equipment.  
 • It is often used as protective packaging but this is now being replaced with card and paper options



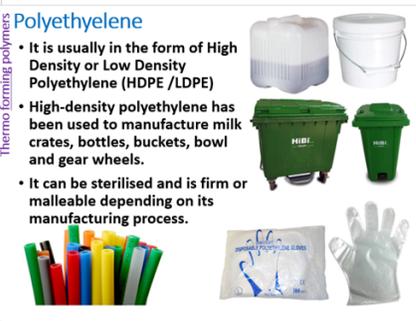
**Thermo forming polymers**  
**Nylon - Polyamide**  
 • Nylon is hard, tough, self-lubricating, has a high melting point and has very good resistance to wear and tear. (tough and durable)  
 • It has been used to make clothing, bearings and propellers.  
 • It is also frequently used in conveyor systems and rollers due its low friction and high durability.



**Thermo forming polymers**  
**PVC -Polyvinylchloride**  
 • The rigid type is used to make pipes, guttering and roofing. It is very lightweight and is resistant to acids and alkalis.  
 • The plasticised type is used for suitcases, hoses, pipes, electrical wiring and floor coverings.  
 • It is a durable and tough polymer but it scratches and marks easily. It is not hard.



**Thermo forming polymers**  
**Polyethyelen**  
 • It is usually in the form of High Density or Low Density Polyethylene (HDPE /LDPE)  
 • High-density polyethylene has been used to manufacture milk crates, bottles, buckets, bowl and gear wheels.  
 • It can be sterilised and is firm or malleable depending on its manufacturing process.



**Thermo forming polymers**  
**Polypropylene**  
 • Polypropylene is an extremely durable and tough material.  
 • It is very difficult to break with excellent tensile strength.  
 • It can be very flexible and can be bent thousands of times without breaking.  
 • It can be translucent but not completely transparent.  
 • It has very little friction.



5

Aesthetics	Environment	Function
What does the product look like? What shape is it? What style and colour is it? Do you like it? Why? <i>"the product has a sleek modern appearance, it would suit a high-tech environment"</i>	Where would it be used? Where would it be stored? Are there any external conditions such as rain or dirt? <i>"the product would be used in the living room, and may get knocked so it has to be strong"</i>	What is the main thing the product has to do? Is it easy and comfortable to use? Is it easy to understand? <i>"the product is comfortable to grip and the handle turns easily"</i>
Cost	Size	materials
How much does it cost? Is it good value for money? Why? Do the materials make it expensive? Is it affordable for target market? <i>"the product costs £50, but is made from hardwood and will last a long time."</i>	what are the main dimensions? Is it the right size for the task? What ergonomic features does it have? <i>"it is 300 x 500 by 500. If it was any bigger it would be difficult to pick up"</i>	What is it made from? Appropriate materials? Why? What are the parts made from? Is it environmentally friendly? <i>"it is made from HDPE so can be wiped clean, and it is easy to recycle."</i>
Customer	Safety	ACCESS FM
Who is the product designed for? What are their requirements? Why would they like your product? How would they use your product ? <i>"the product is designed to fit three-year-old children, so it is brightly coloured and has rounded edges"</i>	How safe is it in normal use? Are there any small parts that could come off or toxic materials? Can it be disposed of safely? <i>"it has a non-toxic finish, so it would be suitable for babies"</i>	Use ACCESS FM to evaluate existing products, write specifications and check your design work. Always provide reasons using connectives

6

**The main categories of metal products are:**  
**Ferrous** and **Non-Ferrous**.  
 Metals which contain Iron are ferrous all other metals are non ferrous.  
**Ferrous** metals –  
**Tool steel**- used to make cutting tools for lathe work and milling cutters- Very high carbon content.  
**Cast iron** – used to make machine parts and manhole covers. Very hard and can be machined to a very even finish.  
**Mild steel**- The most common steel used in vehicle construction,  
**Stainless steel**- kitchens, hospitals.. Where clean finishes are important.  
**Non Ferrous** metals are  
**Aluminium** – vehicles, bikes, saucepans, boats. Lightweight and corrosion resistant.  
**Copper** – ductile and electrical conductor. Used for electrical cables and plumbing pipework. Also decorative.  
**Tin**- brittle on its own. Used as a corrosion resistant coating and as an alloying metal in Bronze and solder..  
**Zinc**- used as a coating for steel (galvanising) and as an alloying material in Brass.  
 When metals are combined they are known as **alloys**. These can be ferrous or non ferrous.  
**Alloys- Brass** (copper and Zinc), - Decorative handles and homeware. Wide use in musical instruments  
**Bronze** ( Copper and Tin), Sculpture, bearings and marine parts ( it is resistant to saltwater corrosion)  
**Stainless steel** (Iron, Chromium, Nickel) – high corrosion resistance and able to be sterilised using chemicals and high temperatures. Bright finish.