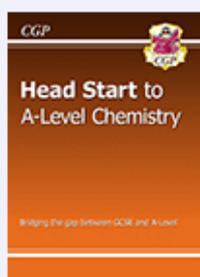
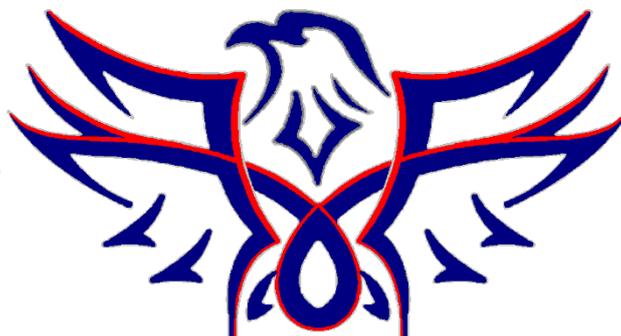


Paget High School



Take a look

Product Details

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- **Key Stage:** Bridging to A-Level
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Preparing for A level Chemistry

You will need a copy of the Head Start guide above and use it to make notes on the learning outcomes below.

Topic areas	Learning outcome	Evidence page no.	Red	Amber	Green
Structure of the atom	Describe the structure of an atom				
	Explain what is meant by an ion and how positive and negative ions are formed				
	Describe the relative mass and charge of each sub-atomic particle				
	Explain why an atom has no charge				
	Explain what the atomic and mass numbers are and where they are found.				
	Using the periodic table give the chemical symbol, atomic number, number of neutrons and electrons of the first 10 elements on the periodic table.				
	Describe in detail what an isotope is and how they differ. State 3 elements on the periodic table that have different isotopes.				
Formation of ions	Define with the aid of chemical formulae, ionisation enthalpy (IE).				
	Give 3 things that affect IE and why.				
	Describe how the periodic table shows trends in IE.				
	Describe how the charge on the ion is linked to the group on the periodic table. (<i>Link to metals and non-metals</i>).				
	Draw a table of all the common molecular ions.				
	Explain how the transition elements can form more than one ion				
	Describe what oxidation numbers tell you (link to roman numerals in chemical formulae).				
	Give the rules for assigning oxidation numbers. Show evidence you have worked on some examples.				
Intermolecular bonding	Describe with the aid of a diagram the intermolecular forces between simple covalent structures				
	Explain how intermolecular forces influence boiling points				
	Use the idea of intermolecular bonds to explain the trend in boiling points in the alkenes (methane, ethane, propane, butane)				
	Explain what is meant by the term electronegativity. Where are the most electronegative elements found?				
	Describe with diagrams, how polar bonds can affect the strength of the intermolecular forces.				
	Describe hydrogen bonding give a diagram and explain why this intermolecular force is so strong.				
Bonding and properties	State what ionic bonding is and between what types of atoms it occurs.				
	Show examples of ionic bonding using dot and cross diagrams.				
	Give the ionic formula of Li^+ and O^{2-}				
	How to giant ionic structures stay in a giant lattice?				
	Describe how bond strength is affected by the charge on the ions.				
	Explain the physical properties of ionic compounds.				
	Describe with diagrams, covalent bonding				
	Describe what dative bonding is and how it is represented.				
	Explain the properties of small covalent molecules and how lone pairs affect their physical properties.				
	Explain the properties of giant covalent structures. Link to diamond and graphite and describe the influence of bonding on their properties				

Bonding and properties	With the aid of a labelled diagram explain metallic bonding and link this to the properties of metals				
	Describe the trends in structure and bonding across the periodic table				
	Construct a table to explain the trends across period 3.				
Chemical equations	Write a set of rules of balancing equations, including ionic equations.				
	List the different state symbols				
	Complete the task on balancing equations on p19				
Inorganic chemistry	Describe the trend in reactivity and boiling points of the group 2 elements.				
	Describe the trend in reactivity and general properties of the group 7 elements.				
	What is displacement reaction? Give ionic equations for the displacement reactions of all the halogens.				
	Describe acids and bases in terms of proton donors and proton acceptors. Give examples and include the ionic equation of neutralisation.				
Organic chemistry	Draw the functional groups for alkanes, alkenes, alcohols, aldehydes, ketones and carboxylic acids.				
	Describe what is meant by: general formula, molecular formula, structural formula, skeletal formula and displayed formula.				
	Describe the structure, bonding and properties of the alkanes.				
	Describe the structure, bonding and properties of the alkenes (including testing with bromine water).				
	Describe the process of polymerisation, including the reaction conditions. Use diagrams to represent monomers and the subsequent polymers.				
	Describe the structure, bonding and properties of the alcohols. Include examples of primary, secondary and tertiary alcohols.				
Chemical reactions	Define the following reaction types: Addition, combustion, condensation, cracking, dehydration, displacement, disproportionation, electrolysis, elimination, endothermic, exothermic, hydrogenation, neutralisation, oxidation, precipitation, radical reactions, redox, reduction, reversible, substitution, thermal decomposition.				
Rates of reaction	What is rate of reaction?				
	State what is measure when determining rate of reaction and give 4 methods of measuring rate.				
	Describe how the trend in a graph can indicate reaction rate.				
	Link reaction rate to the gradient of a graph (can you calculate a gradients and work out the units?).				
	Review how rate is calculated using 1/time and has units of s^{-1}				
	Describe how to measure the rate of reaction for the reactions stated in the questions on page 31.				
	Explain what collision theory is. Why doesn't every collision result in a reaction?				
	What is activation energy and how does it link to rate of reaction? Use a diagram to explain your ideas.				
	List the 4 factors that affect rate of reaction and describe how they affect the rate.				
	Describe how catalysts affect rate, why are they so useful and why are they described as specific to a reaction?				

Equilibria	What is a reversible reaction? How does this affect product yield?				
	What is a chemical equilibrium? What is a dynamic equilibrium?				
	What information do we get from the position of the equilibrium?				
	Describe in detail how changing the reaction conditions affect the position of the equilibrium.				
	How does equilibrium affect yield and how do you decide on the best conditions to use? (consider temperature, pressure, concentration and catalyst) Apply these principles to a chosen reaction.				
Calculations	What is the mole, what does it measure and what are its units				
	What is Avogadro's constant, how does it link to the Mole?				
	State the formulae for calculation the number of moles in a substance (include all units)				
	What is molar mass and what are its units – how does this link to the mole?				
	Answer the questions on page 37 – YOU NEED TO BE ABLE TO DO THIS TYPE OF CALCULATION.				
	What are empirical and molecular formulae? How are they linked?				
	State the rules of how to calculate empirical formulae. Answer the questions on page 38 – YOU NEED TO BE ABLE TO DO THIS TYPE OF CALCULATION.				
	Work through the calculations of percentage composition. State the calculation and method used. Show all working out – this must be logical and easy to follow. Page 39 – YOU NEED TO BE ABLE TO DO THIS TYPE OF CALCULATION.				
State the calculation for atom economy. Why is it important to have a high atom economy? Show evidence that you have worked through some examples.					
Enthalpy	Describe what is meant by an endothermic and exothermic reaction. Link this to bond breaking and making processes.				
	Show both endothermic and exothermic reactions using energy level diagrams. Describe why an endothermic reaction is $\Delta H+$ and an exothermic reaction is $\Delta H-$				
	What is bond energy? Why is it different for different types of bond?				
	What are the units of bond energy?				
	How is bond energy calculated? How can we tell if the reaction is an endothermic or exothermic?				
	Answer the questions on page 42 – YOU NEED TO BE ABLE TO DO THIS TYPE OF CALCULATION.				