WESTCLIFF HIGH SCHOOL FOR BOYS

A Level Summer Preparatory Work

2025

ART

Please use the PowerPoint shared to use as inspiration to complete your journal.

Key Skills to develop and refine	To develop and refine your observation drawing skills by looking more closely at things around you that you see every day, and to explore skills in creating drawings from imagination.
1.	Create a visual art journal which reflects aspects of your own life and personality in a small A5 sketchbook or altered book. Use a combination of drawings, paintings, and text/words to illustrate the suggested themes using a range of materials, techniques, and processes.
2.	To begin with you will need a sketchbook. You would have made or been given one in the taster session, but if you are using a ready-made sketchbook, try to use one that is no bigger than A5 in size to create your journal as this is a good size. Check out YouTube for ideas linked to handmade artist sketchbooks if you are feeling creative.
3.	We would like you to explore at least 10 of the themes in the PowerPoint, however you can explore more if you wish. Each double page will have a theme (we have given you 30 to start with) which should take you up to at least the Summer term. You can draw from direct observation, use your own photos, or find images on the internet as inspiration. Look at the slides below with artists who use sketchbooks and journals.

Biology

Key Skills to develop and refine	• To gain an understanding of biological theory in a number of key fields • To appreciate how our understanding of biology has changed over time with the contribution of new research • How a greater understanding of biology provides benefits to mankind and the environment
1. Visit the Natural History Museum online	The Natural History Museum website contains many articles and videos detailing the story of human evolution. The information provided ranges from material on Neanderthals to the recent discovery of fossil evidence. (https://www.nhm.ac.uk/discover/human-evolution.html)
2. Read a book	Genome by Matt Ridley. This is an excellent book with each chapter describing a newly discovered gene from each of the 23 pairs of human chromosomes.
3. Watch a lecture	Prof. Steve Jones: 'Nature or Nurture?' on YouTube. Prof. Steve Jones is a scientist, Royal Society Fellow and world-leading expert in genetics. He won the Royal Society Michael Faraday Prize for his numerous, wide ranging contributions to the public understanding of science in areas such as human evolution and variation and genetic manipulation. In this lecture on YouTube, he uses many interesting examples to answer one of the biggest questions in science: nature or nurture? (https://www.youtube.com/watch?v=1ksP34GYwbY)
4. Watch a lecture	Prof. Dame Sue Black is a Scottish forensic anthropologist, anatomist and academic who was awarded an OBE in 2001 for her work in war crimes investigations in Kosovo. She has been an innovator in developing techniques and building databases to confirm or disconfirm someone's identity. This lecture details how Forensic anthropology works to unveil the identity of a person from sparse evidence, be it the perpetrator or the victim in a crime. (https://www.youtube.com/watch?v=9Jrd5kJ-vTU)
5. Watch a TEDTalks	Neuroscientist Professor Jim Fallon talks about brain scans and genetic analysis that may uncover the rotten wiring in the nature (and nurture) of murderers. He also shares a fascinating family history that makes his work very personal. (Exploring the mind of a killer | Jim Fallon (youtube.com))
6. Complete a biology-related FutureLearn course	FutureLearn is a government-funded Open University project that connects learners to short university courses hosted online, some of which can be sampled for free. The course we have provided a link to allows you to explore the impact of biochemistry on bioenergy and health, discovering why graduates are in demand. (https://www.futurelearn.com/courses/biochemistry)
Compulsory task	You need to complete 4 of the 6 options listed above and write a 400-word commentary on each. In September, you will requested to submit your work by your teacher.

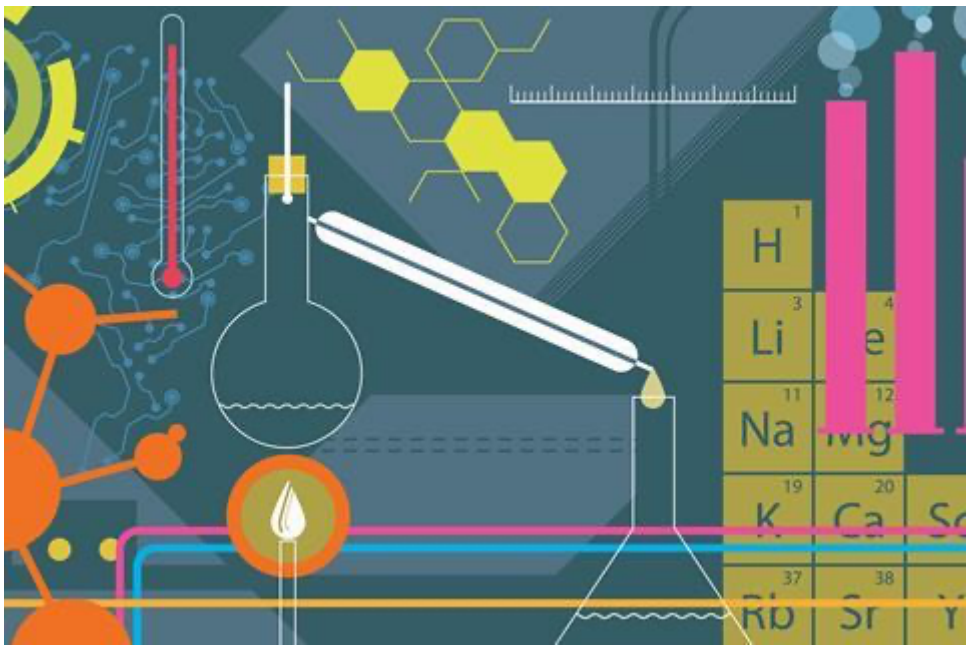
Westcliff High School for Boys

A-LEVEL CHEMISTRY

A Level Induction

Summer Work

Foundation Topics from GCSE



Student Name: _____

Westcliff High School for Boys

Chemistry Department

Summer Work

I would like to start by welcoming you to Westcliff High School for Boys and am delighted that you are considering undertaking the next steps in your education with us.
The work contained in this booklet consists of GCSE material with a high degree of competency assumed at the start of any A Level Chemistry course. Many of you joining the Sixth Form will have not done any Chemistry for several months, nor been examined, formally at least, in the subject.

We ask all students who wish to study the Chemistry A Level course at WHSB to complete the exercises contained in this booklet and familiarise themselves with the content over the summer months. Mark schemes will be provided shortly before the start of the Autumn Term, and we will ask to see evidence of your work in the first few lessons in September. There will be a baseline test that examines GCSE knowledge at the start of the course, topics included in this summer work will be relevant to your preparations. Your score in the baseline test will be used to judge your suitability for the course in the Phase 1 indicator report that is issued to your parents.

As you transition from GCSE to A Level, you will find that there is a big jump in the pace, level of work and in the expectations of you as a student. You may have to re-assess the methods in which you work and in how you study and how you organise your notes as you develop better skills in working independently. As outlined in the Sixth Form Handbook, students should devote four hours of independent study per subject studied, this is good advice indeed. Your timetable will provide you with free periods and I urge you to make good use of them.

A common query from students is about resources in preparing for the Edexcel Chemistry (2015) course.
The following table is a list of resources that are useful, you will note that we will provide you a variety of textbooks at the start of the course. We will also provide you with course booklets for each topic throughout.

Resource	ISBN number	Issued to students
Edexcel A Level Chemistry Student Book 1	**978-1447991168**	**Yes**
Edexcel A Level Chemistry Student Book 2	**978-1-447-991175**	**Yes**
Calculations in AS / A Level Chemistry	**978-0582411272**	**Yes**
Edexcel Student Guide – Practical Chemistry	978-1-4718-8567-9	No
Alternate version *Edexcel A Level Chemistry Student Book 1 (Hodder)*	978-1471807466	No
Alternate version *Edexcel A Level Chemistry Student Book 2 (Hodder)*	978-1471807497	No
Revise Edexcel AS/A Level Chemistry Revision Workbook: For the 2015 Qualifications	978-1447989943	No
*Head Start to A-Level Chemistry (with Online Edition) (CGP A-Level Chemistry)**	978-1782942801	No

**This book might be useful in transitioning from GCSE to A-level. However be wary of CGP guides, they are not a substitute for the textbook merely an enhancement. Textbooks contain more information for a reason.*

Do ensure to take the necessary time to relax during the Summer Holidays, however you will benefit greatly by completing this work to make a good start in September.
I wish you a restful and hopefully enjoyable summer and look forward to welcoming you in the new academic year.

Mr D Wightman
Head of Chemistry

Table of Contents

FORMULA LITERACY (GCSE) - INTRODUCTION

It is vital as a chemistry student that you know the formulas of common substances. Here is a list of substances whose formulas you should know at all times.

Elements				Compounds	
Al	aluminium	Mg	magnesium	NH_3	ammoni**a**
Ar	argon	Hg	mercury	$CaCO_3$	calcium carbonate
Br_2	bromine	Mg	magnesium	CO	carbon monoxide
Ca	calcium	Ne	neon	CO_2	carbon dioxide
C	carbon	Ni	nickel	$CuSO_4$	copper sulfate
Cl_2	chlorine	N_2	nitrogen	HCl	hydrochloric acid
Cr	chromium	O_2	oxygen	CH_4	methane
Co	cobalt	P_4	phosphorus	HNO_3	nitric acid
Cu	copper	Pt	platinum	NO	nitrogen monoxide
F_2	fluorine	K	potassium	NO_2	nitrogen dioxide
Au	gold	Si	silicon	NaCl	sodium chloride
He	helium	Ag	silver	NaOH	sodium hydroxide
H_2	hydrogen	Na	sodium	SO_2	sulfur dioxide
I_2	iodine	S_8	sulfur	H_2SO_4	sulfuric acid
Fe	iron	Sn	tin	H_2O	water
Pb	lead	Ti	titanium		
Li	lithium	Zn	zinc		

You also need to be able to work out the formula of ionic compounds. To do this you need to know the charges on ions. Many of these can be worked out from the position in the Periodic Table or from the number in roman numerals after a name (e.g. iron (III) sulfate contains Fe^{3+} ions; iron (II) sulfate contains Fe^{2+} ions).

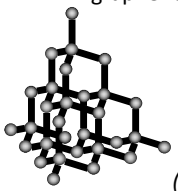
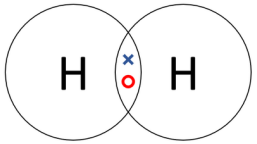
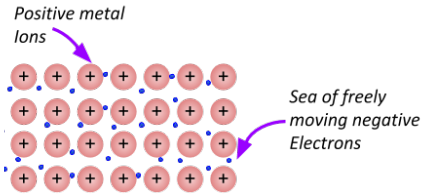
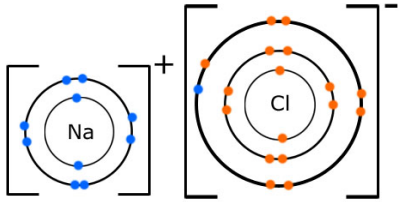
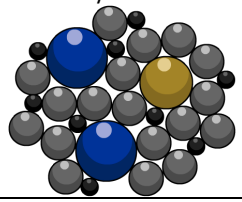
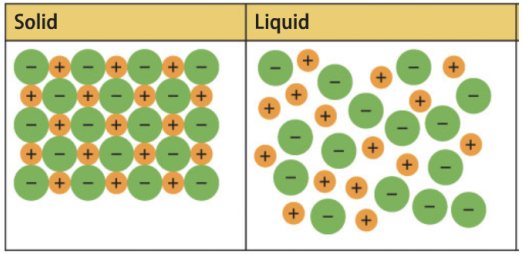
+1	H^+ hydrogen ions NH_4^+ ammon**ium** ions Group 1 ions (e.g. Na^+ sodium ions)
+2	Group 2 ions (e.g. Ca^{2+} calcium ions)
+3	Group 3 ions (e.g. Al^{3+} aluminium ions)

–1	NO_3^- nitrate ions OH^- hydroxide ions Group 7 ions (e.g. Br^- bromide ions)
–2	CO_3^{2-} carbonate ions SO_4^{2-} sulfate ions
–3	PO_4^{3-} phosphate ions

The formula is then worked out by balancing the number of + and – charges. For example:

sodium oxide	contains Na^+ and O^{2-} ions	need ions in ratio: $2Na^+ : 1O^{2-}$	formula = Na_2O
aluminium bromide	contains Al^{3+} and Br^- ions	need ions in ratio: $1Al^{3+} : 3Br^-$	formula = $AlBr_3$
calcium hydroxide	contains Ca^{2+} and OH^- ions	need ions in ratio: $1Ca^{2+} : 2OH^-$	formula = $Ca(OH)_2$
magnesium nitrate	contains Mg^{2+} and NO_3^- ions	need ions in ratio: $1Mg^{2+} : 2NO_3^-$	formula = $Mg(NO_3)_2$
iron(III) sulfate	contains Fe^{3+} and SO_4^{2-} ions	need ions in ratio: $2Fe^{3+} : 3SO_4^{2-}$	formula = $Fe_2(SO_4)_3$

ATOMIC STRUCTURE FORMULAE AND BONDING

Bonding	Covalent		Metallic	Ionic
Definition	Sharing a pair of electrons (1) Between two positive nuclei (1)		Layers of positive ions (1) Surrounding by a sea of delocalised electrons (1)	Electrostatic attraction (1) between oppositely charged ions (1)
How to spot it *(look at Periodic Table)*	Commonly non-metal elements only		Metallic elements only	Commonly non-metal and metallic elements Metals form positive ions (cations) Non-metals form negative ions (anions)
Structure type	Giant/ lattice (limitless)	Simple (molecular) covalent (restricted to a number of atoms)	Giant/ lattice (limitless) *Alloys are a mixture of metals combined*	Giant/ lattice (limitless)
Examples of structure and/ or bonding	Diamond, Silica (SiO_2), graphite, graphene  *(diamond)*	H_2, H_2O, CO_2, O_2, N_2 halogens (Cl_2, F_2), Fullerenes 	 The cations do not move. *At least 3 rows of ions drawn in the diagram.*	 This is an empirical formula for NaCl *In reality, more than one ionic bond is formed*
Physical properties	High melting and boiling point *(due to lots of strong covalent bonds)* Hard and strong Insulator **(although graphite conducts)** **Graphite: conducts as there is a spare electron per Carbon atom <u>between</u> layers forming delocalised electrons, and can act as a lubricant (layers slide due to weak forces between layers)** **Graphite is also *soft***	**Low boiling points** *(intermolecular forces <u>between molecules</u> are easily overcome)* Insulator (no free electrons) Typically a gas at room temperature. Some solid examples include: iodine, buckminsterfullerene, cylindrical fullerenes	High melting and boiling points *(due to strong attraction between positive ions and sea of negative electrons)* Conducts – **delocalised electrons** are free to move <u>through the whole structure</u> Malleable and ductile – layers of similar size ions can slide over one another **Alloys are stronger** due to distortion in the lattice prevents layers from sliding: 	High melting and boiling points *(due to lots of strong ionic bonds in all directions around ions)* Brittle (as like-like charges repel) Does not conduct when solid (ions are fixed) Conducts **only** when molten or aqueous as **ions** are then free to move 
Words/ phrases you **can say** ✓	Covalent bond, Giant structure/ lattice, Bonds are strong, atom Giant covalent structure	Covalent bond(s) **Intermolecular forces** are weak **molecule**	Metallic bond(s), positive ions, layers, electrostatic attraction Giant metallic structure	Ionic bond(s), electrostatic attraction Giant ionic structure, ions, cation, anion, Strong bonds
Words/ phrases you **cannot say (loss of marks)** ✗	**Intermolecular force** Covalent bonds are weak Ionic, ions, **molecule**, simple Has a giant covalent *bond*	Covalent bonds break and are weak when melting, intermolecular forces are strong	**Intermolecular forces**, covalent, ionic, negative ions/ anions, atoms, **molecule**, bonds are weak	**Intermolecular forces**, atoms, covalent, metallic bonds, ionic bonds are weak, **molecule**, simple. Delocalised electrons. Has a giant ionic *bond*

1 This question is about the structure of atoms.

a Name the three particles that are found inside atoms.

.....

b Which of these particles are found inside the nucleus of the atom.

.....

c Which of these particles is neutral? .....

d Which of these particles has a negative electric charge? .....

e Which of these particles has a positive electric charge? .....

2 This question is about $^{27}_{13}Al$ atoms.

a How many protons, neutrons and electrons are in this atom?

protons = ... neutrons = ... electrons = ...

b What is it that makes this an atom of aluminium? .....

.....

3 Geiger and Marsden carried out an experiment where they fired alpha particles at a thin piece of gold. A small number of alpha particles were deflected or bounced back. This experiment led to Rutherford developing a new model of the atom.

a Why do most of the alpha particles pass straight through the gold atoms? .....

.....

.....

b Why do some of the alpha particles deflect or bounce back? .....

.....

.....

c Give two key differences between Rutherford's model of the atom and the Thomson's plum pudding model that it replaced.

1.....

2.....

4 **a** Define the term atomic number. .....

b Define the term mass number. .....

1 a) Complete the following table about protons, neutrons and electrons.

	neutron	proton	electron
relative charge			
relative mass			

b) Define the term **mass number**. .....

.....

c) Define the term **atomic number**. .....

.....

2 Complete the following table about some atoms and ions. The first row has been done for you.

Particle	Atom or ion	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons	Electron structure
$^{19}_{9}F^{-}$	ion	9	19	9	10	10	2,8
$^{40}_{18}Ar$							
$^{27}_{13}Al^{3+}$							
				16	18	18	
				19	20	18	
				15	16	15	

3 The element indium consists of two isotopes. 4.3% of the atoms are $^{113}_{49}In$ and 95.7% of the atoms are $^{115}_{49}In$.

a) What makes both of these atoms of the element indium? .....

.....

b) What are isotopes? .....

.....

c) Calculate the relative atomic mass of indium. Give your answer to 4 significant figures.

.....

.....

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.....

.....

.....

4 The diameter of an indium atom is 310 pm.

a) What is the diameter of an indium atom in metres? Give your answer in standard form.

.....

b) How many indium atoms would fit in a line 20 cm long? Give your answer to 3 significant figures.

.....

.....

.....

.....

.....

.....

5 This question is about the Periodic Table

a) Name each of the following groups.

Group 1 .....

Group 7 .....

Group 0 .....

b) Which group would the following elements be in?

element with electron structure 2,8,6 .....

element with electron structure 2,8,8 .....

element with electron structure 2,8,18,3 .....

6 Balance each of the following equations.

a) $K + O_2 \rightarrow K_2O$

b) $CaCO_3 + HCl \rightarrow CaCl_2 + H_2O + CO_2$

c) $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$

Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can find PNE numbers in ions			Can use standard form		
Good SPG			Knows what determines an element			Can convert units		
Knows mass and charge of PNE			Knows what isotopes are			Can name common PT groups		
Can define atomic & mass numbers			Find A_r from isotope data			Determine group from electron structure		
Can find PNE numbers in atoms			Can use sig figs			Balance equations		

Ionic Bonding and Formulae

PART 1 – Ionic Bonding

a	What is the definition of an ionic bond?	
b	What type of elements do ionic bonds normally occur between?	
c	What is the difference between an atom and an ion?	
d	Magnesium chloride contains magnesium ions (Mg^{2+}) and chloride ions (Cl^-). Describe, **in terms of electrons**, what happens when a magnesium atom reacts with chlorine atoms to produce magnesium chloride.	
e	Draw diagrams to show how the magnesium atom becomes a magnesium ion and how the chlorine atom becomes a chloride ion. Show all electron shells. (Easiest option if completing online is to do on paper and upload and insert a picture into the document)	
f	Hence, what is the formula for magnesium chloride?	
g	Ionic formulae are said to be empirical formula, what is the definition of empirical formula?	

H	What is the electron configuration for a nitrogen atom **and** a nitrogen ion?	
I	The nitrogen ion is said to be **isoelectronic** to Neon, what does this mean?	
j	What is wrong in the following sentence? Chlorine reacts with potassium bromine to become potassium chloride and bromide	

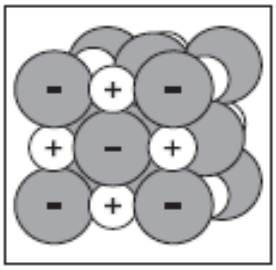
PART 2 – Ionic Formulae

	Name	formula
1	sodium ion	
2	chloride ion	
3	sulfate ion	
4	cobalt(II) ion	
5	potassium oxide	
6	calcium hydroxide	
7	iron(III) oxide	
8	aluminium bromide	
9	magnesium nitrate	
10	lithium carbonate	

Ionic Bonding and Structure

PART 1 – Ionic Structure and properties

The numbers act as a guide to inform you of the number of key points you should be making in your answer

a	Describe the structure of ionic compounds (3)		
b	Why do ionic compounds have high melting points? (3) *Type/ Strength/ Energy*		
c	Do ionic substances conduct electricity when a they are a solid/ (s)? *Add an explanation as to whether they do or don't.* (2)		
d	Do ionic substances conduct electricity when they are a liquid/ molten/ (l)? *Add an explanation as to whether they do or don't.* (2)		
e	Do ionic substances conduct electricity when they are dissolved/ aqueous/ (aq)? *Add an explanation as to whether they do or don't.* (2)		
f	What is wrong with this sentence: *Ionic compounds conduct electricity when molten as electrons are free to move* (1)		
g	Ionic substances are said to be brittle, explain why. (2)		

h	Ionic compounds tend to be soluble, explain why. (2)	

PART 2 – Ionic Formulae

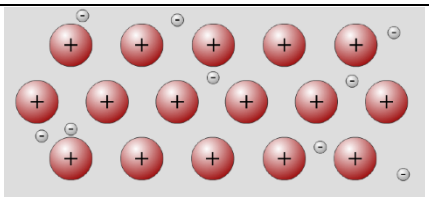
a	Ionic formulae are often represented as an empirical formula. What is an empirical formula? (2)	
b	What is wrong with the following equation: $Mg + HCl = MgCl + H_2$ Give the correction below and explain your answer with reasons that relate to groups on the Periodic table and their charges associated.	

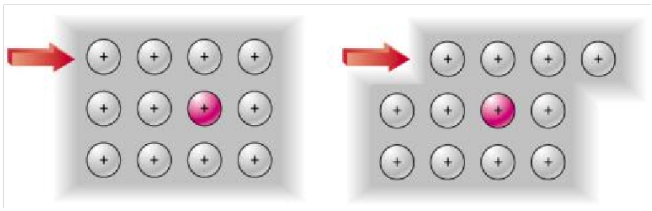
METALLIC BONDING AND STRUCTURE

PART 1 – THE SOURCE OF METALS

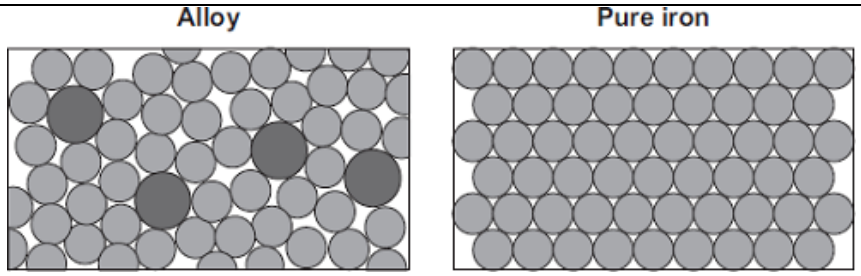
a	What are ores?	
b	Some metals are obtained by removing oxygen from the metal oxide. What name do we give to this chemical reaction?	
c	Name **one** metal which must be extracted from its melted ore by electrolysis rather than by using carbon.	

PART 2 – PROPERTIES AND STRUCTURE OF METALS

a	Describe the structure of metals and what is metallic bonding?	
b	Why do metals conduct electricity?	
C	Why do metals have high melting points?	
d	Explain why the melting point of Sodium Na ($89^{O}C$) is lower than the melting point of Magnesium ($650^{o}C$)	
e	Explain why metals are good conductors of electricity and suggest why this conductivity increases across the periodic table from sodium to magnesium to aluminium. *Hint: it is to do with their cation charge and electrons released*	

f	Why are metals soft and malleable?	
g	Metals form cations, what is a cation?	

PART 3 – ALLOYS

a	What is an alloy?	
b	Why are alloys harder than pure metals?	
c	What happens if too much carbon is added?	

PART 4 – FORMULAE (PowerPoint slides – Metallic Formulae)

What is wrong with the formula of sodium in this equation and what is the correction?:

$$Na_2 + 2H_2O \rightarrow 2NaOH + H_2$$

Answer:	

COVALENT BONDING - DRAWING MOLECULES 1

When non-metals combine with other non-metals, the atoms share electrons to form a molecule. The atoms are held together by these shared electrons which are known as covalent bonds.

Molecule = a non-metal particles made up of atoms joined by covalent bonds **Covalent bond** = 2 shared electrons

How many covalent bonds? **(Refer to the Periodic Table or use the table below)**

Atoms	Number of electrons in outer shell	Number of extra electrons needed to fill the outer shell	Number of covalent bonds formed
Group 7 (e.g. F, Cl, Br, I)	7	1	1
Group 6 (e.g. O, S)	6	2	2
Group 5 (e.g. N, P)	5	3	3
Group 4 (e.g. C, Si)	4	4	4
H	1	1	1

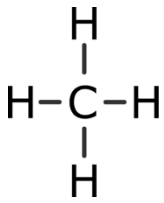
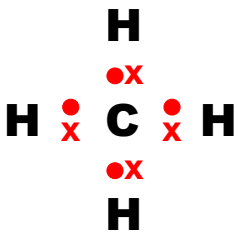
TASK - Drawing stick diagrams & dot-cross diagrams

BBC link to covalent bonding: https://www.bbc.co.uk/bitesize/guides/z373h39/revision/2

Stick diagrams – these show each covalent bond as a stick.

Dot-cross diagrams – these show the outer shell electrons only

1 Draw a stick diagram
2 Re-draw the stick diagram without the sticks
3 Replace the stick with a **X●** which represents the two electrons in the bond (**X** represents electrons from one atom, and ● represents the electron from the other atom). (Show outermost electrons only)
4 Add in any other outer shell electrons from each atom (electrons are always in pairs)
5 CHECK that there are 8 electrons around each atom (except H where there should be 2 electrons)

Stick diagram	Molecule	Dot-cross diagram
e.g. 	CH_4	Show outer most electrons only 

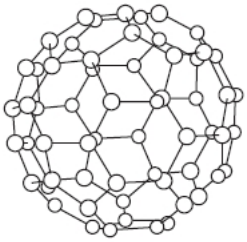
	Stick diagram	Molecule	Dot-cross diagram
a		NH_3	
b		O_2	
c		HCl	
d		Br_2	
e		PH_3	
f		CO_2	

	Stick diagram	Molecule	Dot-cross diagram
g		SiH_4	
h		H_2O	
i		N_2	
j		C_2H_4	
k		C_2H_2	

SIMPLE MOLECULAR STRUCTURES

Properties of simple covalent molecules

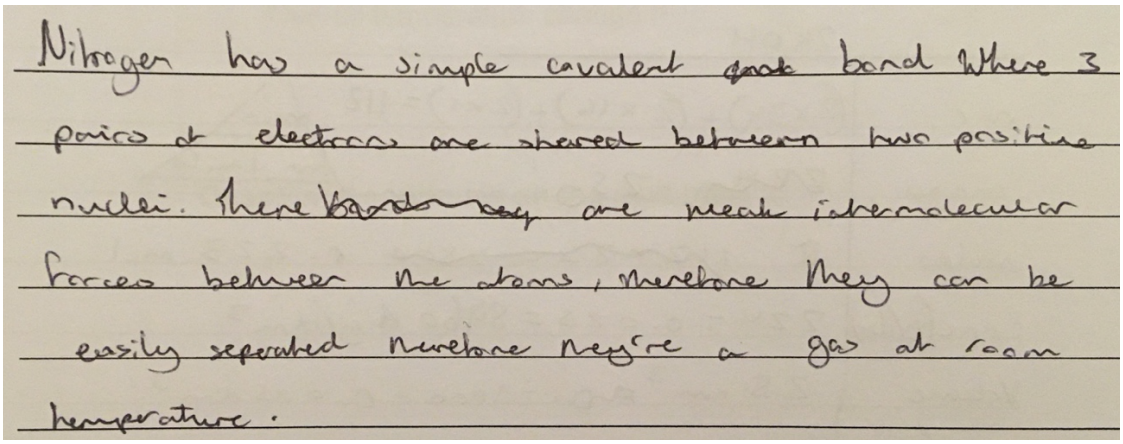
The numbers act as a guide to inform you of the number of key points you should be making in your answer

	Question	Answer
a	Explain why carbon dioxide has a low boiling point. (2)	
b	Fullerene has a simple molecular structure. Explain why it has a low melting point. (2)  fullerene molecule	
c	Explain whether pure water conducts electricity (2)	
d	Give 5 examples of simple molecules (5)	
e	Identify the chemicals from the list that **are not** molecules CH_4 , O_2 , Ne, Cl_2 , C, SiO_2 , CO_2 , C_4H_{10}	

f

Correcting a student answer 1

Read the following student answer for the question "explain why nitrogen is a gas at room temperature"



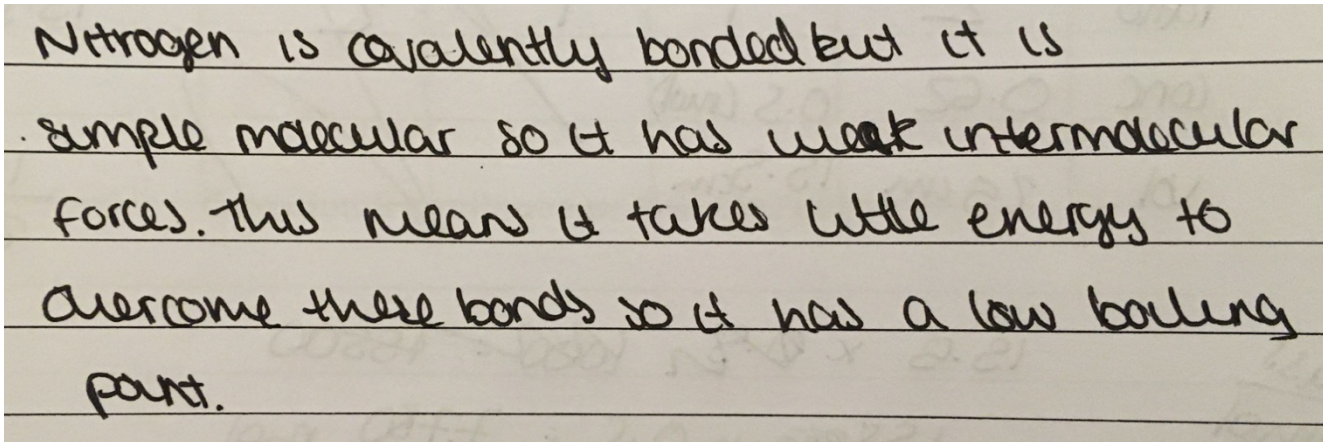
Identify the student errors and write an improvement

Answer:

g

Correcting a student answer 2

Read the following student answer for the question "explain why nitrogen is a gas at room temperature"



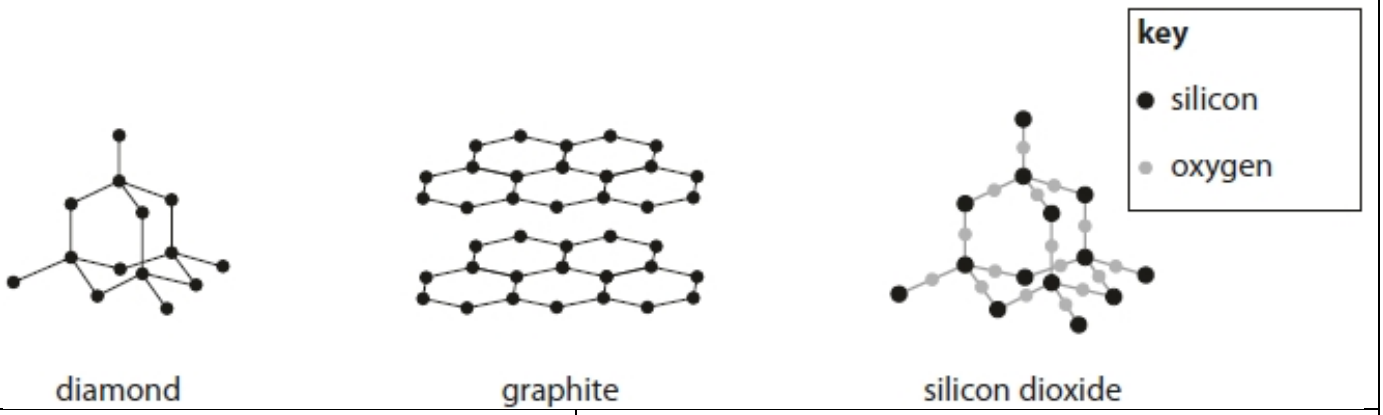
Identify the student errors and write an improvement
(there is only one major error)

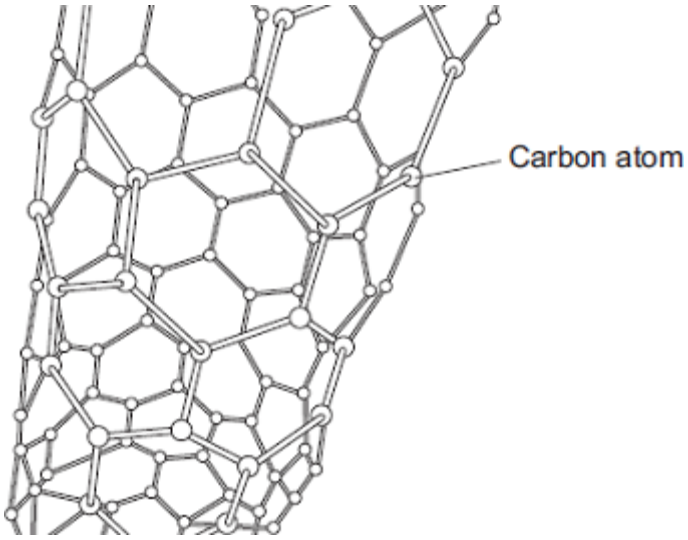
Answer:

GIANT COVALENT STRUCTURES

PART 1 – Covalent Bonding and Structure

The numbers act as a guide to inform you of the number of key points you should be making in your answer

a	What is covalent bonding? (2)	
b	Diamond, graphite and silicon dioxide all have giant covalent structures. The diagram shows the structures of these three substances.  	
b (i)	Explain why silicon dioxide has a high melting point. (3) *Refer to the type of bonding/ Strength of bonds/ Energy required to break bonds*	
b (ii)	Explain why graphite conducts electricity. (2)	
b (iii)	State why diamond is hard but graphite is soft. Diamond: (2), Graphite: (2) (2 comments relating to each)	
b (iv)	How many bonds does each Carbon make in diamond? (1)	
b (v)	Diamond and Graphite are allotropes, what is an allotrope? (1)	

c	Aeroplanes contain many miles of electrical wiring made from copper. This adds to the mass of the aeroplane. It has been suggested that the electrical wiring made from copper could be replaced by carbon nanotubes which are less dense than copper. The diagram shows the structure of a carbon nanotube: Please note: do not call GIANT STRUCTURES molecules, however Fullerenes and Nanotubes form **large molecules**	
c (i)	What does the term 'nano' tell you about the carbon nanotubes? (1)	
c (ii)	Like graphite, each carbon atom in the carbon nanotube is joined to three other carbon atoms. Explain why the carbon nanotube can conduct electricity. (2)	

WRITING EQUATIONS

- An equation is balanced when there are the same number of atoms of each type on both sides of the equation.
- An equation can only be balanced by putting numbers in front of formulas – you cannot change the formula itself.
- Equations can be written with state symbols: (s) = solid, (l) = liquid, (g) = gas, (aq) = aqueous (dissolved in water).

How to balance an equation:

a) Write the formulae correctly – Use the Periodic Table to help you and learn the polyatomic ions off by heart:

Sulfate = SO_4^{2-} Carbonate = CO_3^{2-} Nitrate = NO_3^- Hydroxide = OH^- Ammonium = NH_4^+

b) Learn other important formulae and rules:

H_2 N_2 F_2 O_2 I_2 Cl_2 B_2

Transition metals usually are +2 or (the roman numeral tells you of the charge, e.g (II) = +2)

Silver, (Ag) however is always +1

Lead, (Pb) is usually a +2

Ammonia = NH_3

Common acids: Nitric: HNO_3 Sulfuric: H_2SO_4 Hydrochloric: HCl

c) Once the formulae is correct, calculate how many atoms of each type are on each side of the equation.
If the numbers are the same then the equation is balanced, you may have to revisit again to check.

d) If the numbers are not the same, then big numbers are put in front of the substance).
You cannot change the formulae (this would make a different substance).
Hint – start with unbalanced elements that only appear in one substance on each side of the equation.

e) Keep doing this until the equation is balanced.

Questions

1) Calcium + Oxygen → Calcium oxide

2) Sodium Oxide + water → sodium hydroxide

3) Aluminium + Oxygen → Aluminium oxide

4) Sodium + Chlorine → Sodium chloride

5) Sodium carbonate → Sodium Oxide + Carbon dioxide

6) Potassium + Oxygen → Potassium Oxide

7) Butene (C_4H_8) + Oxygen → Carbon dioxide + Water

8) Iron (III) oxide + Hydrochloric acid → Iron (III) chloride + Water

9) Fluorine + Potassium bromide → Potassium fluoride + Bromine

10) Pentane (C_5H_{12}) + Oxygen → Carbon dioxide + Water

11) Ammonia + Oxygen → Nitrogen monoxide + Water

12) Nitric acid → Nitrogen dioxide + Water + Oxygen

12) Potassium iodide + silver nitrate → Silver iodide + Potassium nitrate

13) Ammonia + Hydrochloric acid → Ammonium chloride

WRITING IONIC EQUATIONS

Warm up - writing equations and balancing

1) Sodium + Water → Sodium hydroxide + Hydrogen

2) Potassium carbonate + Sulfuric acid → Potassium sulfate + Water + Carbon dioxide

3) Aluminium + Chlorine → Aluminium chloride

How to balance an ionic equation:

a) The technique of how to write an ionic formula needs to be known along with the polyatomic ion charges (shown below):
Sulfate = SO_4^{2-} Carbonate = CO_3^{2-} Nitrate = NO_3^- Hydroxide = OH^- Ammonium = NH_4^+

b) Remember, when hydrogen, nitrogen etc are "on their own", they exist in pairs (diatomic molecules)
e.g. H_2 N_2 F_2 O_2 I_2 Cl_2 Br_2

c) The state symbols need to be known, for simplicity, the state symbols will be provided.

d) The equations written previously are called "full balanced chemical equations" – i.e they use symbols.

An **ionic** equation is a simplified version of a **full** equation other removing **spectator ions** – we will see what this is in a moment.

a. Determine the "charges" present in the formulae by using the Periodic Table – do not give elements that are on their own a charge (such as sodium or hydrogen)
b. Split up all chemicals that are **ionic** *(for GCSE this is compound consisting of a non-metal and a metal)* **and** have the state symbol "aqueous", (aq). .i.e. water H_2O, is covalent, **do not** split it up.
c. **Keep polyatomic ions together** e.g. $CuSO_4$ becomes Cu^{2+} and SO_4^{2-}
d. Remove **spectator ions**

Example 1:

$$CuSO_4\,(aq) + 2NaOH\,(aq) \rightarrow Cu(OH)_2\,(s) + Na_2SO_4\,(aq)$$

$$Cu^{2+}_{(aq)} + \mathbf{SO_4^{2-}_{(aq)}} + \mathbf{2Na^+_{(aq)}} + 2OH^-_{(aq)} \rightarrow Cu(OH)_{2\,(s)} + \mathbf{2Na^+_{(aq)}} + \mathbf{SO_4^{2-}_{(aq)}}$$

Sulfate ions and sodium ions are the same on either side of the equation and thus cancel out.

$$Cu^{2+}_{(aq)} + 2OH^-_{(aq)} \rightarrow Cu(OH)_{2\,(s)}$$

Example 2: *notice that water is not split up, because it is covalent.*

$NaOH\ (aq) + HCl\ (aq) \rightarrow NaCl\ (aq) + H_2O\ (l)$

$\mathbf{Na^+_{(aq)}} + OH^-_{(aq)} + H^+_{(aq)} + \mathbf{Cl^-_{(aq)}} \rightarrow \mathbf{Na^+}_{(aq)} + \mathbf{Cl^-_{(aq)}} + H_2O_{(l)}$

Remove spectator ions: $\cancel{Na^+} + OH^- + H^+ + \cancel{Cl^-} \rightarrow \cancel{Na^+}\ \cancel{Cl^-} + H_2O$

$OH^-\ (aq) + H^+\ (aq) \rightarrow H_2O\ (l)$

1) **$2HCl\ (aq) + Mg(OH)_2\ (aq) \rightarrow MgCl_2\ (aq) + H_2O\ (l)$**

Step 1: Write down all the ions found in the substances

*(be careful of formulae, chlor**ide** ions should be represented as $2Cl^-$ **not** Cl_2^-)*

Step 2: Remove spectator ions

Step 3: Re-write equation, include the original state symbols and balance!

2) **$H_2SO_4\ (aq) + Pb(NO_3)_2\ (aq) \rightarrow PbSO_4\ (aq) + 2HNO_3\ (aq)$**

3) **$Ca(OH)_2\ (aq) + 2HNO_3\ (aq) \rightarrow Ca(NO_3)_2\ (aq) + 2H_2O\ (l)$**

4) **$Ca(NO_3)_2\ (aq) + H_2SO_4\ (aq) \rightarrow CaSO_4\ (s) + 2HNO_3\ (aq)$**

5) **$2Na\ (s) + 2HCl\ (aq) \rightarrow 2NaCl\ (aq) + H_2\ (g)$**

REDOX REACTIONS

Reduction and oxidation usually happen together. Reactions where both **red**uction and **ox**idation take place are called **redox** reactions.

There are two definitions of reduction and oxidation.

	Oxidation	Reduction
In terms of oxygen	adding oxygen	taking oxygen away
In terms of electrons	loss of electrons	gain of electrons

O xidation
I s
L oss

R eduction
I s
G ain

} of electrons

Al gains oxygen
OXIDATION

$2Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

REDUCTION
Fe_2O_3 loses oxygen

Al loses electrons to become Al^{3+}
OXIDATION

$2Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

REDUCTION
Fe^{3+} gains electrons to become Fe

Half equations and ionic equations

We can write two half equations for each redox reaction; one for the reduction process and one for the oxidation process.

Each Al atom each loses 3 electrons to form the Al^{3+} ions in Al_2O_3	$Al - 3e^- \rightarrow Al^{3+}$	oxidation as Al atoms lose electrons
Each Fe^{3+} ion in Fe_2O_3 gains 3 electrons to form the Fe atoms	$Fe^{3+} + 3e^- \rightarrow Fe$	reduction as Fe^{3+} ions gain electrons

We can combine the two half equations to make an overall ionic equation.

In this equation, two Al atoms react with the two Fe^{3+} ions in Fe_2O_3 to make two Al^{3+} ions in Al_2O_3 and two Fe atoms	$2Al - 6e^- + 2Fe^{3+} + 6e^- \rightarrow 2Al^{3+} + 2Fe$
the electrons cancel out giving	$2Al + 2Fe^{3+} \rightarrow 2Al^{3+} + 2Fe$
we can cancel down to remove the 2s	$Al + Fe^{3+} \rightarrow Al^{3+} + Fe$

This overall ionic equation leaves out any ions that do not change. It just shows what happens to anything that changes. In this example, the oxide ions start as O^{2-} and end as O^{2-} and so do not change. As they do not change, we can leave them out of equation.

	Question	Space for working
1	$Cu + 2\,AgNO_3 \rightarrow Cu(NO_3)_2 + 2\,Ag$	
	half equation	
	half equation	
	ionic equation	
2	$Mg + ZnO \rightarrow MgO + Zn$	
	half equation	
	half equation	
	ionic equation	
3	$Fe + CuSO_4 \rightarrow Cu + FeSO_4$	
	half equation	
	half equation	
	ionic equation	
4	$Pb + 2\,AgNO_3 \rightarrow Pb(NO_3)_2 + 2\,Ag$	
	half equation	
	half equation	
	ionic equation	
5	$Al + 3\,AgNO_3 \rightarrow Al(NO_3)_3 + 3\,Ag$	
	half equation	
	half equation	
	ionic equation	
6	$2\,Al + 3\,ZnSO_4 \rightarrow Al_2(SO_4)_3 + 3\,Zn$	
	half equation	
	half equation	
	ionic equation	

GCSE REVISION 6

Formulae, equations, particles, structure & bonding

1 Write the formula of the following ionic compounds.

a) sodium sulfate ..... c) ammonium bromide .....

b) iron(III) oxide ..... d) aluminium nitrate .....

2 Write balanced equations for the following equations.

a) $Na + O_2 \rightarrow Na_2O$ .....

b) magnesium + nitric acid → magnesium nitrate + hydrogen

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3 Complete the following table about some atoms and ions. The first row has been done for you.

Particle	Atom or ion	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons	Electron structure
$^{19}_{9}F^-$	ion	9	19	9	10	10	2,8
$^{27}_{13}Al^{3+}$							
	atom			19	20		
				16	18	18	

4 What is the structure type of each of the following substances. Tick the correct box.

name	aluminium oxide	potassium	sulfur dioxide	graphite	buckminster -fullerene	helium	calcium bromide	sucrose
formula	Al_2O_3	K	SO_2	C	C_{60}	He	$CaBr_2$	$C_{12}H_{22}O_{11}$
giant covalent								
ionic								
metallic								
molecular								
monatomic								

5 Oxygen is a molecular substance containing O_2 molecules. Explain why oxygen has a very low boiling point (–183°C).

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6 Diamond and graphite are both forms of carbon. They both have very high melting points but only graphite conducts electricity. Explain these properties by discussing the structure and bonding in each substance.

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7 Carbon dioxide (CO_2) and silicon dioxide (SiO_2) are both oxides of Group 4 elements. Carbon dioxide has a very low boiling point (–78°C) while silicon dioxide has a very high melting point (1600°C). Explain this difference by discussing structure and bonding in each substance.

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8 Aluminium metal is extracted from aluminium oxide by electrolysis. The aluminium oxide must be molten to conduct and melts at 2072°C. Explain, by discussing structure and bonding, why aluminium oxide must be molten to conduct and why it has a high melting point.

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Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can find PNE numbers in atoms			Why giant covalent have high mpt		
Good SPG			Can find PNE numbers in ions			Why giant covalent conduct or not		
Write formulae			Identify structure type from formula			Why ionic have high mpt		
Write balanced equations			Why molecular substance has low mpt			Why ionic conduct or not		

1 Give the formula of each of the following ions.

ion	sodium	oxide	magnesium	nitrate	carbonate
formula					

ion	hydroxide	bromide	sulfide	aluminium	ammonium
formula					

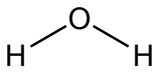
2 What is the structure type of each of the following substances? Tick the correct box. Also give the correct formula

name	sodium sulfate	potassium	carbon dioxide	iodine	helium	diamond	buckminster -fullerene	aluminium oxide
formula								
giant covalent								
ionic								
metallic								
molecular								
monatomic								

3 Complete the following table about some atoms and ions. The first row has been done for you.

Particle	Atom or ion	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons	Electron structure
$^{27}_{13}Al$							
$^{34}_{16}S^{2-}$							
				17	20	17	
				12	12	10	

4 Water is a molecular substance containing H_2O molecules. Explain why water has a low boiling point 100°C).



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5 Calcium oxide has a very high melting point (2572°C), does not conduct electricity as solid but does when molten. Explain these properties.

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6 Steel is an alloy of iron. Steel is harder than pure iron, which is soft. Explain what an alloy is, why pure iron is soft and why steel is harder.

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7 a How much greater is the surface area to volume ratio of a cube with 2 cm sides compared to one with 10 cm sides? Show full working.

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b Explain why nanoparticles of gold have different properties to bulk gold.

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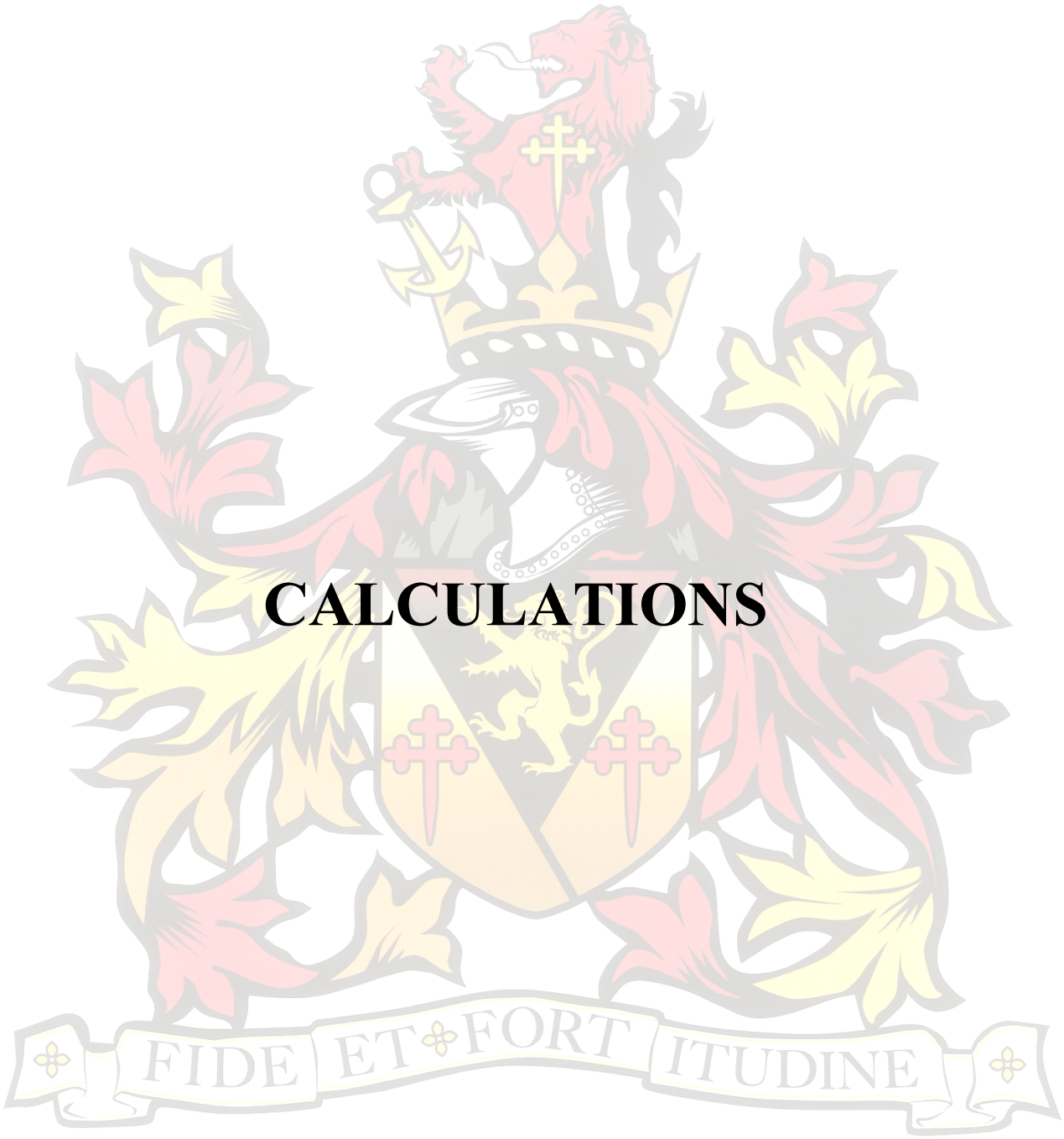
Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can find PNE numbers in ions			Know what an alloy is		
Good SPG			Can find PNE numbers in atoms			Why alloys are softer than pure metals		
Knows formula and charge of ions			Why molecular substance has low mpt			Calculate surface area : volume ratio		
Identify structure type from formula			Why ionicr substance has high mpt			Explain different nanoparticle properties		
Write formulae			Explain conductivity of substances					



CALCULATIONS

1 **a** What is the maximum mass of potassium fluoride that can be formed when 1.56 g of potassium reacts with fluorine?

$$2K + F_2 \rightarrow 2KF$$

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b In an experiment, a student reacted 1.56 g of potassium with fluorine and made 1.48 g of potassium fluoride. Calculate the percentage yield.

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c Give two reasons why the percentage yield is less than 100%.

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2 Calculate the percentage yield in a reaction where 1.0 kg of iron is made from 1.6 kg of iron(III) oxide.

$$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$$

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1 a How many moles of magnesium bromide are formed when 3.0 moles of magnesium reacts with 2.0 moles of bromine? $Mg + Br_2 \rightarrow MgBr_2$

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b How many moles of ammonia are formed when 4.0 moles of nitrogen reacts with 9.0 moles of hydrogen? $N_2 + 3H_2 \rightarrow 2NH_3$

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c How many moles of iron oxide are formed when 12.0 moles of iron reacts with 6.0 moles of oxygen? $4Fe + 3O_2 \rightarrow 2Fe_2O_3$

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2 4.8 g of magnesium is reacted with 4.5 g of steam. Work out which is the limiting reagent and then calculate the mass of magnesium oxide formed.

$$Mg + H_2O \rightarrow MgO + H_2$$

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3 2.0 g of calcium is reacted with 0.32 g of oxygen. Work out which is the limiting reagent and then calculate the mass of calcium oxide formed.

$$2Ca + O_2 \rightarrow 2CaO$$

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The volume of one mole of any gas at room temperature and pressure is 24 dm^3

1 What is the volume of 0.50 moles of hydrogen gas (H_2) at room temperature and pressure?

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2 How many moles in 1.8 dm^3 of helium gas (He) at room temperature and pressure?

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3 What is the volume of 7.0 g of nitrogen gas (N_2) at room temperature and pressure?

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4 What volume of oxygen gas reacts with 100 cm^3 of butane gas, with both gases measured at the same temperature and pressure?

$$2C_4H_{10}(g) + 13O_2(g) \rightarrow 8CO_2(g) + 10H_2O(l)$$

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5 What volume of hydrogen gas, measured at room temperature and pressure, is formed when 6.9 g of sodium reacts with water?

$$2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$$

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1 In a titration, 25.0 cm^3 of 0.200 mol/dm^3 sodium hydroxide solution reacted with 28.5 cm^3 of sulfuric acid. Find the concentration of the sulfuric acid in mol/dm^3.

$$2NaOH(aq) + H_2SO_4(aq) \rightarrow Na_2SO_4(aq) + 2H_2O(l)$$

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2 In a titration, 25.0 cm^3 of 0.040 mol/dm^3 barium hydroxide solution reacted with 21.6 cm^3 of hydrochloric acid. Find the concentration of the hydrochloric acid in mol/dm^3 and g/dm^3.

$$Ba(OH)_2(aq) + 2HCl(aq) \rightarrow BaCl_2(aq) + 2H_2O(l)$$

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A student carried out a titration to find the concentration of a solution of calcium hydroxide. In each titration, the student used 25.0 cm^3 of the calcium hydroxide solution and titrated it against 0.0100 mol/dm^3 hydrochloric acid solution.

$$Ca(OH)_2(aq) + 2HCl(aq) \rightarrow CaCl_2(aq) + 2H_2O(l)$$

The student's results are shown in the table.

titration	1	2	3
start reading / cm^3	0.00	23.15	0.10
end reading / cm^3	23.15	47.05	23.90
volume added / cm^3			

a Find the mean titre to the appropriate number of significant figures and give the uncertainty in this measurement.

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b Find the concentration of the calcium hydroxide in mol/dm^3 and g/dm^3. Give your answers to 3 significant figures.

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c Outline the key steps in carrying out this titration.

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1 Give the formula of the following ionic substances.

a) potassium oxide .....

b) aluminium bromide .....

c) iron(III) sulfide .....

d) magnesium hydroxide .....

e) ammonium iodide .....

f) calcium nitrate .....

2 Calculate the relative formula mass of the following substances.

a) chlorine, Cl_2 .....

b) ammonium sulfate, $(NH_4)_2SO_4$ .....

3 a) What mass of sodium reacts with 95 g of titanium chloride? $TiCl_4 + 4Na \rightarrow Ti + 4NaCl$

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b) Calculate the percentage atom economy to make titanium in this reaction.

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4 Ammonia is made by reaction of nitrogen with hydrogen. $N_2 + 3H_2 \rightarrow 2NH_3$

a) Calculate the maximum mass of ammonia that could be formed from reaction of 12 g of hydrogen reacting with nitrogen.

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b) In this reaction, only 15 g of ammonia was formed. Calculate the percentage yield.

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c) Suggest two reasons why the yield was less than 100%.

1 .....

2 .....

5 In an experiment, 4.0 g of calcium was reacted with 4.0 g of chlorine. One of the chemicals was in excess. Determine which is the limiting reagent and then calculate the mass of calcium chloride formed.

$$Ca + Cl_2 \rightarrow CaCl_2$$

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6 25.0 cm^3 of a solution of calcium hydroxide was titrated against a solution of 0.100 mol/dm^3 hydrochloric acid. 26.3 cm^3 of the hydrochloric acid was needed to neutralise the calcium hydroxide.

a) Describe how the titration is done.

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b) Calculate the concentration of the calcium hydroxide in mol/dm^3. The equation for the reaction is shown.

$$2HCl + Ca(OH)_2 \rightarrow CaCl_2 + 2H_2O$$

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c) Calculate the concentration of the calcium hydroxide in g/dm^3.

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Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can work out mass from moles			Work out moles for solutions		
Shows suitable working			Can work out % atom economy			Convert mol/dm^3 to g/dm^3		
Can write ionic formulae			Can work out % yield			Does not round too much		
Can work out M_r			Understands why yield < 100%			Can use sig figs		
Work out moles from mass			Understands limiting reagents			Gives units		
Use equation to find reacting moles			Can describe how to do a titration					

1 Give the formula of the following ionic substances.

a) aluminium chloride .....

b) potassium sulfide .....

c) sodium sulfate .....

d) calcium nitrate .....

e) magnesium hydroxide .....

f) iron(II) oxide .....

2 Calculate the relative formula mass of the following substances.

a) fluorine, F_2 .....

b) iron(III) nitrate, $Fe(NO_3)_3$ .....

3 Calcium oxide is made from the thermal decomposition of calcium carbonate: $CaCO_3 \rightarrow CaO + CO_2$

a) Calculate the maximum mass of calcium oxide that could be formed from heating 500 g of calcium carbonate.

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b) In a reaction, 250 g of calcium oxide was formed from heating 500 g of calcium carbonate. Calculate the percentage yield for this reaction.

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c) Suggest two reasons why the yield was less than 100%.

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d) Calculate the atom economy to make calcium oxide from calcium carbonate by this reaction.

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4 What mass of oxygen reacts with 270 g of aluminium? $4Al + 3O_2 \rightarrow 2Al_2O_3$

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5 Calculate the volume of the following gases at room temperature and pressure.

a) 3 moles of oxygen, O_2 .....

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b) 22 g of carbon dioxide, CO_2 .....

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6 What volume of hydrogen gas is needed to react with 10 dm^3 of nitrogen to make ammonia, with the volume of all gases measured at the same temperature and pressure?

$$N_2 + 3H_2 \rightarrow 2NH_3$$

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7 5.6 g of iron (Fe) reacts with 24 g of bromine (Br_2) to make a compound containing iron and bromine only. Calculate the moles of iron and bromine and use this to determine the balanced equation for the reaction.

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8 25.0 cm^3 of a solution of citric acid, which is represented by H_3T in the equation, reacted with 26.4 cm^3 of 0.100 mol dm^{-3} sodium hydroxide solution in a titration.

$$H_3T + 3NaOH \rightarrow Na_3T + 3H_2O$$

a) Calculate the concentration of the citric acid in mol/dm^3. Give your answer to 3 significant figures.

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c) Calculate the concentration of the citric acid in g/dm^3. The relative formula mass of citric acid is 226. Give your answer to 3 significant figures.

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Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can work out mass from moles			Deduce molar reacting ratio from mass		
Shows suitable working			Can work out % atom economy			Work out moles for solutions		
Can write ionic formulae			Can work out % yield			Convert mol/dm^3 to g/dm^3		
Can work out M_r			Understands why yield < 100%			Does not round too much		
Work out moles from mass			Work out gas volume from mass or mol			Can use sig figs		
Use equation to find reacting moles			Understands reacting gas volumes			Gives units		

GCSE REVISION 13
Calculations 3

1 Give the formula of the following ionic substances.

a) copper(II) oxide ..... c) aluminium nitrate .....

b) calcium hydroxide ..... d) lithium carbonate .....

2 Calculate the relative formula mass of the following substances.

a) nitrogen, N_2 .....

b) calcium nitrate, $Ca(NO_3)_2$ .....

3 What mass of hydrogen reacts with 140 g of nitrogen to make ammonia? $N_2 + 3H_2 \rightarrow 2NH_3$

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4 Calcium hydroxide is made by reaction of calcium oxide with water: $CaO + H_2O \rightarrow Ca(OH)_2$

a) Calculate the maximum mass of calcium hydroxide that could be formed from 1.12 kg of calcium oxide.

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b) In a reaction, 1440 g of calcium hydroxide was formed from reaction of 1.12 kg of calcium oxide with water. Calculate the percentage yield for this reaction.

.....

.....

c) Suggest one reason why the yield was less than 100%. .....

.....

5 Calculate the atom economy to make titanium in this reaction: $TiCl_4 + 2Mg \rightarrow Ti + 2MgCl_2$

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6 What volume of oxygen gas is needed to react with 4 dm^3 of propane with complete combustion, with the volume of all gases measured at the same temperature and pressure? $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

.....

7 Calculate the volume of the following gases at room temperature and pressure.

a) 2.5 moles of carbon dioxide, CO_2 .....

b) 10 g of argon, Ar .....

.....

8 5.1 g of the vanadium (a transition metal, symbol = V) reacts with 4.0 g of oxygen (O_2) to make an oxide of vanadium. Calculate the moles of vanadium and oxygen and use this to determine the balanced equation for the reaction.

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9 25.0 cm^3 of a solution of sodium hydroxide was neutralised by 23.6 cm^3 of 0.400 mol dm^{-3} sulfuric acid in a titration.

$$H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$$

a) Calculate the concentration of the sodium hydroxide in mol/dm^3. Give your answer to 3 significant figures.

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b) Calculate the concentration of the sodium hydroxide in g/dm^3. Give your answer to 3 significant figures.

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Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can work out mass from moles			Deduce molar reacting ratio from mass		
Shows suitable working			Can work out % atom economy			Work out moles for solutions		
Can write ionic formulae			Can work out % yield			Convert mol/dm^3 to g/dm^3		
Can work out M_r			Understands why yield < 100%			Does not round too much		
Work out moles from mass			Work out gas volume from mass or mol			Can use sig figs		
Use equation to find reacting moles			Understands reacting gas volumes			Gives units		

GCSE REVISION 18
Calculations 4

1) a) How many moles in 33.0 kg of ammonium sulfate $(NH_4)_2SO_4$. .....

.....

b) What is the mass of 0.040 moles of oxygen, O_2? .....

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2) a) What maximum mass of methanol that can be made when 12 g of hydrogen reacts with an excess of carbon monoxide? $CO + 2H_2 \rightarrow CH_3OH$

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b) In a reaction, 60 g of methanol was formed from 12 g of hydrogen. Calculate the percentage yield.

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3) Calculate the percentage atom economy to make iron from iron(III) oxide by reaction with carbon monoxide. $Fe_2O_3 + 3CO \rightarrow 2Fe + 2CO_2$

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4) What volume of hydrogen gas is formed, measured at room temperature and pressure, when 0.65 g of zinc reacts with sulfuric acid? $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

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5) What volume of carbon dioxide gas is formed when 100 cm^3 of propane gas burns (both gases are at room temperature and pressure)? $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

.....

6) 0.595 g of tin (Sn) reacts with 0.71 g of chlorine (Cl_2) to form tin chloride. Find the simplest molar ratio in which tin reacts with chlorine and use it to find the formula of the tin chloride. Finally, write a balanced equation for the reaction.

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7) Lead reacts with chlorine to form lead(II) chloride. When 6.21 g of lead reacts with 2.84 g of chlorine, which is the limiting reagent and what mass of lead(II) chloride is formed?

$Pb + Cl_2 \rightarrow PbCl_2$

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8) Find the concentration of oxalic acid ($H_2C_2O_4$) in mol/dm^3 and g/dm^3 given that 25.0 cm^3 of this solution reacts with 22.8 cm^3 0.100 mol/dm^3 sodium hydroxide solution in a titration.

$H_2C_2O_4 + 2NaOH \rightarrow Na_2C_2O_4 + 2H_2O$

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Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can work out % atom economy			Understands limiting reagents		
Shows suitable working			Can work out % yield			Work out moles for solutions		
Can work out M_r			Understands why yield < 100%			Convert mol/dm^3 to g/dm^3		
Work out moles from mass			Work out gas volume from mass or mol			Does not round too much		
Can work out mass from moles			Understands reacting gas volumes			Gives units		
Use equation to find reacting moles			Deduce molar reacting ratio from mass					

GCSE REVISION 27
More calculations

1 Calculate the relative formula mass of the following substances.

a) bromine, Br_2 .....

b) iron(III) sulfate, $Fe_2(SO_4)_3$ .....

c) sodium nitrate .....

2 Sodium carbonate can be made from sodium chloride: $2NaCl + CaCO_3 \rightarrow CaCl_2 + Na_2CO_3$

a) Calculate the mass of sodium carbonate that can be made by reacting 585 g of sodium chloride with excess calcium carbonate.

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b) Calculate the percentage atom economy to make sodium carbonate in this reaction.

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3 Calcium sulphate can be made from calcium sulfide: $CaS + 2O_2 \rightarrow CaSO_4$

Calculate the mass of oxygen needed to react with 3.6 kg of calcium sulfide.

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4 What volume of oxygen gas reacts with 100 cm^3 of ethane (C_2H_6) with the volume of all gases measured at the same temperature and pressure.

$$2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$$

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5 Calculate the volume of 88 g of carbon dioxide (CO_2) gas at room temperature and pressure.

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6 In a reaction, 11.2 g of iron reacts with 4.8 g of oxygen. Find the molar ratio in which the iron and oxygen react and use this to deduce the formula of the iron oxide formed.

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7 25.0 cm^3 of a solution of nitric acid was titrated against a solution of 0.0200 mol/dm^3 barium hydroxide. 28.2 cm^3 of the barium hydroxide was needed to neutralise the acid. Calculate the concentration of the nitric acid in mol/dm^3. The equation for the reaction is shown. Give your answer to 3 significant figures.

$$2HNO_3 + Ba(OH)_2 \rightarrow Ba(NO_3)_2 + 2H_2O$$

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8 In an experiment, 11.5 g of sodium was reacted with 3.2 g of oxygen. One of the chemicals was in excess. Determine which is the limiting reagent and then calculate the mass of sodium oxide formed.

$$4Na + O_2 \rightarrow 2Na_2O$$

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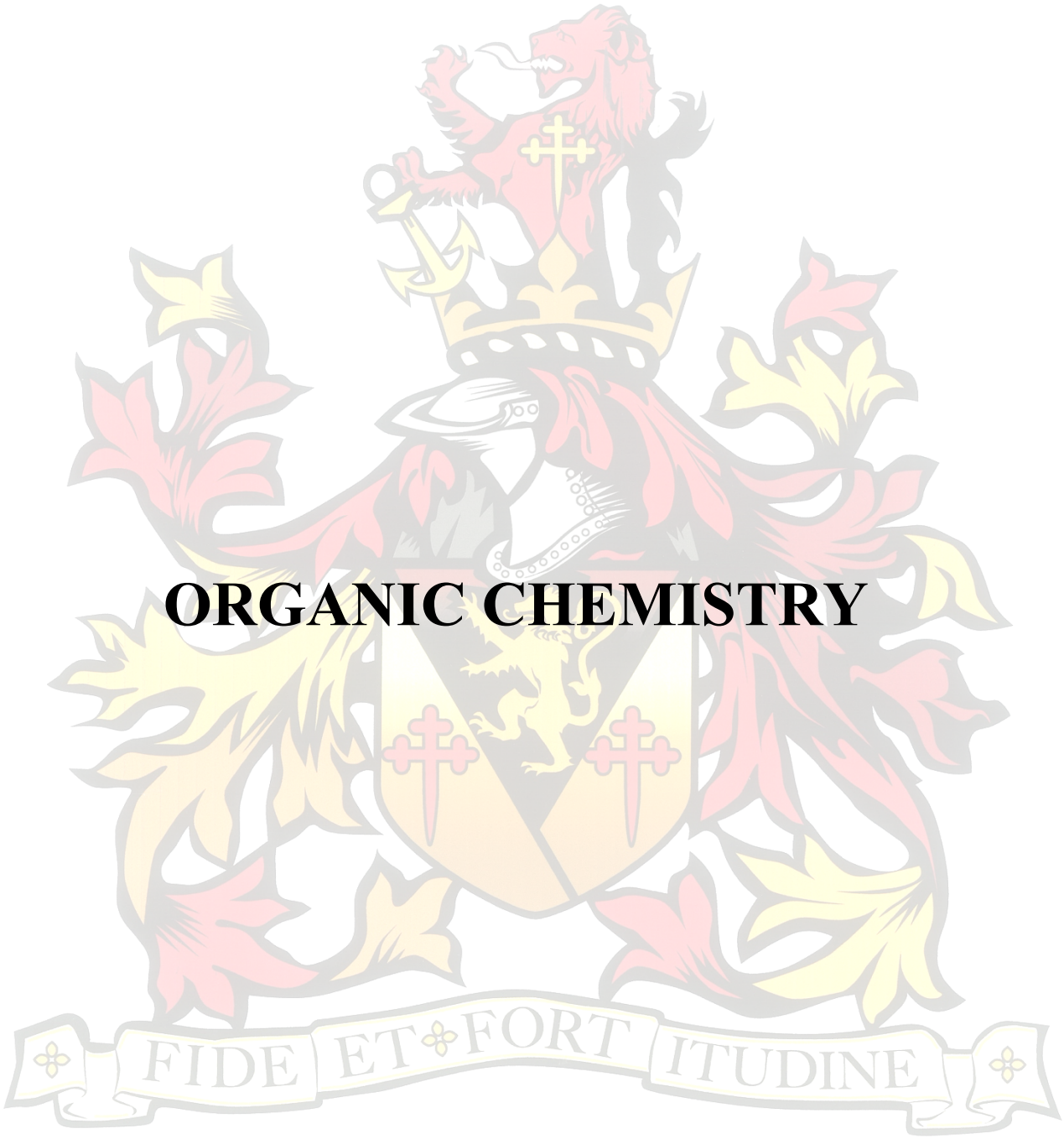
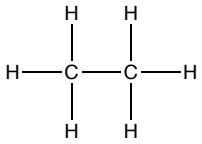
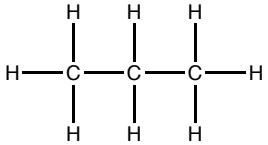
Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can work out mass from moles			Determine formula from reacting ratios		
Shows suitable working			Can work out % atom economy			Solution calculations		
Can write ionic formulae			Convert units			Understands limiting reagents		
Can work out M_r			Understands reacting gas volumes			Does not round too much		
Work out moles from mass			Can work out gas volumes			Can use sig figs		
Use equation to find reacting moles			Can determine reacting ratios			Gives units		



ORGANIC CHEMISTRY

1 Complete this table with the names and structures of some alkanes.

Displayed formula			
Name		butane	

2 Define the following terms.

a hydrocarbon .....

.....

b saturated .....

.....

3 Hexane is an alkane containing 6 carbon atoms. Give its molecular formula. .....

4 Complete the table (using a ✓ in the relevant boxes) to compare two alkanes.

	most flammable	highest boiling point	most viscous	burns with cleanest flame
pentane (C_5H_{12})				
octane (C_8H_{18})				

5 **a** Write a balanced equation for the complete combustion of pentane (C_5H_{12}).

.....

b Write a balanced equation for the incomplete combustion of pentane (C_5H_{12}) to form carbon monoxide.

.....

1 Draw the displayed structure of each of the following molecules in the boxes.

methanol	butane
propene	ethyl ethanoate

2 Hexane is an alkane. Hexene is an alkene. They both contain six carbon atoms.

a) What is the molecular formula of hexane? .....

b) Alkanes are saturated hydrocarbons. Explain these terms.

hydrocarbon .....

saturated .....

c) Describe a test what you could use to distinguish hexane from hexene. Give the result for each compound.

test .....

hexane result .....

hexene result .....

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3 a) Ethanoic acid is a weak acid. Draw it structure.

b) What are weak acids? .....

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4 Ethene can be made by cracking of long alkanes. Describe **why** this is done and **<u>one way</u>** in which this is done.

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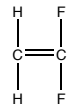
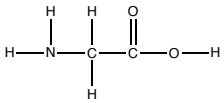
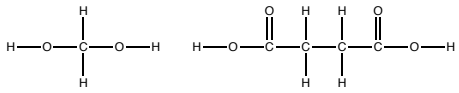
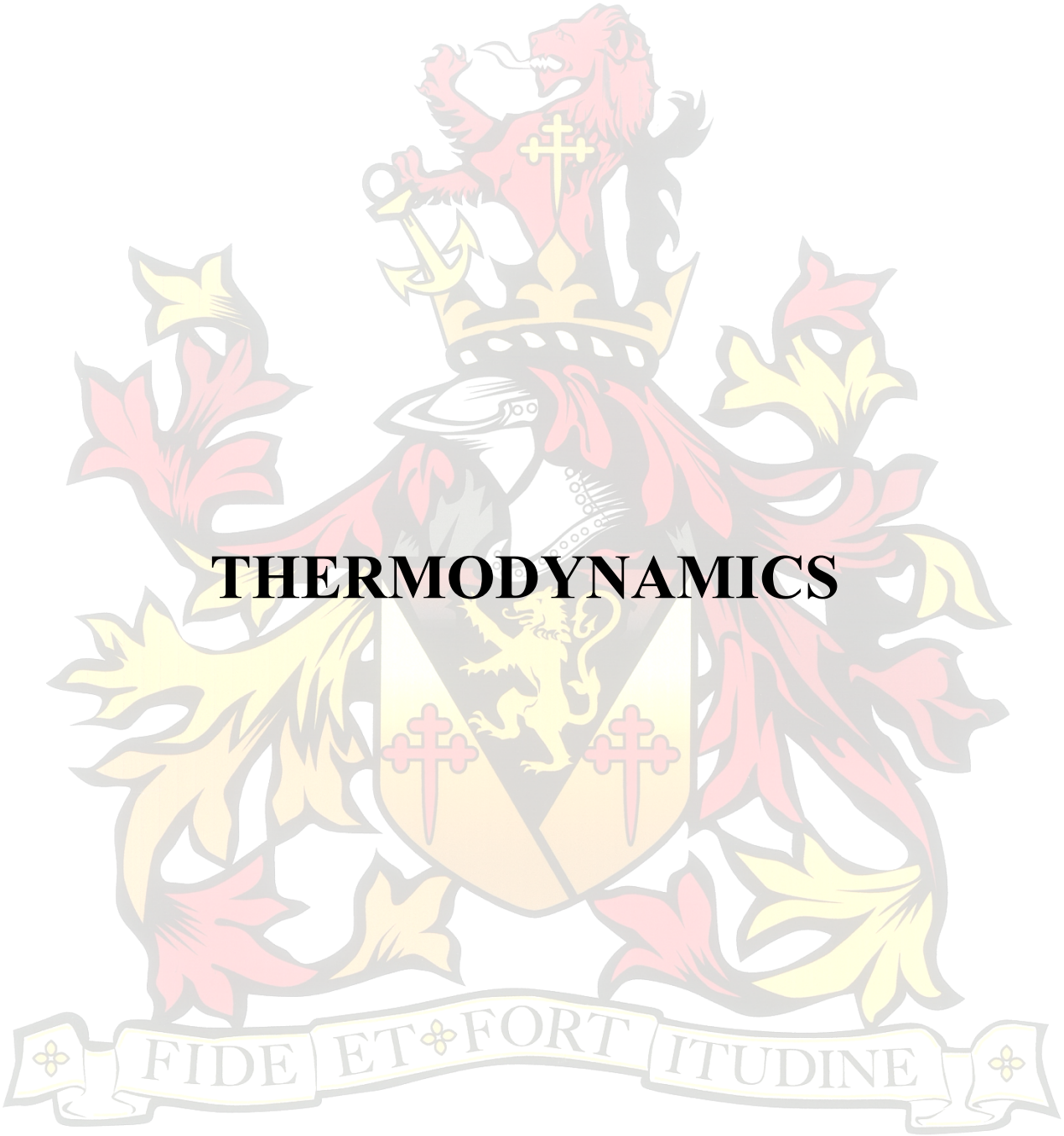
5 Name the monomers that these polymers are made from.

polymer	starch	proteins	poly(ethene)	DNA
monomer				

6 Draw the structure of the polymers formed from these monomers:, and state whether they are addition or condensation polymers.

monomer structure(s)	polymer structure	polymer type
		
		
		

Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Test for C=C with $Br_2(aq)$			Draw addition polymers		
Good SPG			Understands strong and weak acids			Draw condensation polymers		
Can draw organic molecules			Knows how cracking is done			Identify addition/condensation polymers		
Knows organic definitions			Knows why cracking is done					
Write molecular formula of alkanes			Identify monomers for natural polymers					



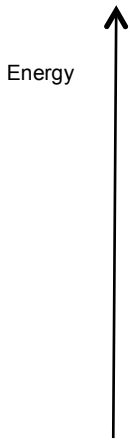
THERMODYNAMICS

ENERGY CHANGES (A)

1 Tick to show if the following are exothermic or endothermic reactions.

	exothermic	**endothermic**
energy change is positive		
products have more chemical energy than reactants		
$CuCO_3 \rightarrow CuO + CO_2$		
$H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$		
$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$		
$HNO_3 + NaHCO_3 \rightarrow NaNO_3 + H_2O + CO_2$		

2 a Sketch an energy level diagram for this exothermic reaction: $CuSO_4 + Zn \rightarrow ZnSO_4 + Cu$



b Draw a labelled arrow on your energy diagram to show the overall energy change.

c Draw a labelled arrow on your energy diagram to show the activation change.

d Write an ionic equation for this reaction. .....

e Write two half equations for this reaction.

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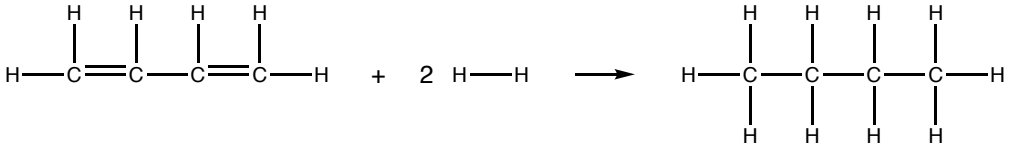
1 **a** Calculate the energy change in the following reaction using the bond energies given.
[C–C = 348, C-H = 412, C=C = 612, H–H = 436 kJ/mol]



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b Explain whether this reaction is exothermic or endothermic by discussing bond breaking and making.

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c Complete the energy profile for this reaction. Draw arrows to show the overall energy chance (label "OEC") and the activation energy (label "AE")

2 Tick the correct box to show whether each of the following relates to an exothermic or an endothermic reaction.

	exothermic	endothermic
energy change is +72 kJ		
products have more energy than reactants		
neutralisation of hydrochloric acid by sodium hydroxide		
thermal decomposition of copper carbonate		

3 Fuel cells have a number of advantages over non-rechargeable and rechargeable cells. The hydrogen fuel cell is the most common fuel cell.

a Give one advantage and one disadvantage of hydrogen fuel cells compared to rechargeable cells.

advantage .....

disadvantage .....

b Give the half equations for the reactions that take place at the electrodes in hydrogen fuel cells.

anode ..... cathode .....

4 A simple cell can be made by placing two different metals (as electrodes) in a salt solution (as electrolyte). A student made some cells in this way and measured the voltage (potential difference) in each case. The table shows which electrode was connected to which terminal of the voltmeter.

positive electrode	negative electrode	voltage (V)
nickel	iron	+0.19
iron	zinc	+0.32
iron	cobalt	+0.16

a What is an electrolyte? .....

.....

b Place the four metals in order of reactivity, with the most reactive first.

most .... least

c What would the voltage be if a cell was made using cobalt and nickel, with cobalt connected to the negative terminal of the voltmeter. .....

d To create the cell the greatest voltage with a positive voltage when connected to a voltmeter:

i) which two metals would you use? .....

ii) what would the voltage be? .....

iii) which metal would be the positive electrode? .....

Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Can draw energy profiles			Use voltage to order metal reactivity		
Shows suitable working			Can label activation / energy change			Work out voltage in cells		
Calculate energy change using bonds			Pros and cons of fuel cells			Use voltage data to solve problems		
Deduce if exo/endothermic			Fuel cell electrode equations					
Explain if exo/endothermic using bonds			Knows what an electrolyte is					

The Periodic Table of Elements

1	2											3	4	5	6	7	0 (8) (18)
							1.0 H hydrogen 1										4.0 He helium 2
(1)	(2)											(13)	(14)	(15)	(16)	(17)	
6.9 Li lithium 3	9.0 Be beryllium 4											10.8 B boron 5	12.0 C carbon 6	14.0 N nitrogen 7	16.0 O oxygen 8	19.0 F fluorine 9	20.2 Ne neon 10
23.0 Na sodium 11	24.3 Mg magnesium 12	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	27.0 Al aluminium 13	28.1 Si silicon 14	31.0 P phosphorus 15	32.1 S sulfur 16	35.5 Cl chlorine 17	39.9 Ar argon 18
39.1 K potassium 19	40.1 Ca calcium 20	45.0 Sc scandium 21	47.9 Ti titanium 22	50.9 V vanadium 23	52.0 Cr chromium 24	54.9 Mn manganese 25	55.8 Fe iron 26	58.9 Co cobalt 27	58.7 Ni nickel 28	63.5 Cu copper 29	65.4 Zn zinc 30	69.7 Ga gallium 31	72.6 Ge germanium 32	74.9 As arsenic 33	79.0 Se selenium 34	79.9 Br bromine 35	83.8 Kr krypton 36
85.5 Rb rubidium 37	87.6 Sr strontium 38	88.9 Y yttrium 39	91.2 Zr zirconium 40	92.9 Nb niobium 41	95.9 Mo molybdenum 42	[98] Tc technetium 43	101.1 Ru ruthenium 44	102.9 Rh rhodium 45	106.4 Pd palladium 46	107.9 Ag silver 47	112.4 Cd cadmium 48	114.8 In indium 49	118.7 Sn tin 50	121.8 Sb antimony 51	127.6 Te tellurium 52	126.9 I iodine 53	131.3 Xe xenon 54
132.9 Cs caesium 55	137.3 Ba barium 56	138.9 La* lanthanum 57	178.5 Hf hafnium 72	180.9 Ta tantalum 73	183.8 W tungsten 74	186.2 Re rhenium 75	190.2 Os osmium 76	192.2 Ir iridium 77	195.1 Pt platinum 78	197.0 Au gold 79	200.6 Hg mercury 80	204.4 Tl thallium 81	207.2 Pb lead 82	209.0 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[261] Rf rutherfordium 104	[262] Db dubnium 105	[266] Sg seaborgium 106	[264] Bh bohrium 107	[277] Hs hassium 108	[268] Mt meitnerium 109	[271] Ds darmstadtium 110	[272] Rg roentgenium 111							

Key

relative atomic mass
atomic symbol
name
atomic (proton) number

Elements with atomic numbers 112-116 have been reported but not fully authenticated

140 Ce cerium 58	141 Pr praseodymium 59	144 Nd neodymium 60	[147] Pm promethium 61	150 Sm samarium 62	152 Eu europium 63	157 Gd gadolinium 64	159 Tb terbium 65	163 Dy dysprosium 66	165 Ho holmium 67	167 Er erbium 68	169 Tm thulium 69	173 Yb ytterbium 70	175 Lu lutetium 71
232 Th thorium 90	[231] Pa protactinium 91	238 U uranium 92	[237] Np neptunium 93	[242] Pu plutonium 94	[243] Am americium 95	[247] Cm curium 96	[245] Bk berkelium 97	[251] Cf californium 98	[254] Es einsteinium 99	[253] Fm fermium 100	[256] Md mendelevium 101	[254] No nobelium 102	[257] Lr lawrencium 103

* Lanthanide series

* Actinide series

Computer Science

Key Skills to develop and refine	• An ability to spot and correct a range of Syntax and Logic Errors in Python code • To create algorithms in Python that can solve simple problems including some common mathematical solutions. • Know your core GCSE Algorithms and be able to write them in Python, in particular Linear Search, Bubble Sort, Insertion Sort and Binary Search. • Be confident with decimal to binary conversions and aware of more complex representation of negative numbers and decimal numbers. • Have a broader knowledge of the social implications of Computer Science on wider society. • Have an awareness of how Computers have developed over the last 100 years.
1. Visit a Museum with Computers exhibits	There are a lot of options here, the most obvious being the National Science Museum in London. They have exhibits of some of Babbage's original designs for mechanical computers, a large section dedicated to the development of electronic communication and a good range of early computers. https://www.sciencemuseum.org.uk/ The next big option is Bletchley Park, famous for the code breaking work during the second world war and development of the first general purpose electronic computer. The park is a wonderful history and mathematics trip but if you go towards the back of the site there is a second museum 'The National Museum of Computing' with many of the earliest computers and a fun exhibit of old, working games consoles. https://bletchleypark.org.uk/ If you are in the Cambridge area, hidden away at the back of an industrial site is another hidden gem of a museum, 'Centre for Computing History.' This is a large single floor museum with lots of different computers ranging from some early examples of super computers to modern day machines with a lot of machines from in-between. I particularly like the numerous examples of machines that ran programs stored on rolls of paper punched with holes representing ASCII. http://www.computinghistory.org.uk/
2. Play a game	The best way to work on your basic binary conversion is to practice lots of calculations. Luckily, there is a surprisingly addictive game for this, the Cisco Binary Game. Sometimes called the Tetris of Network Engineers the game was originally developed to help trainee network engineers practice their 8-bit binary conversions as used when representing IPv4 addressed. The game is great fun. https://learningnetwork.cisco.com/s/binary-game (it is easy to google the link) Another game I enjoy is Terminus by MIT, this game lets you practice navigating a file space using only a command line interface. http://web.mit.edu/mprat/Public/web/Terminus/Web/main.html (for a shorter link try https://fuzy.uk/AMnYKt)
3. YouTube can be productive	There are many excellent resources for revising Computer Science on YouTube but the most consistent and best suited to the British education system are those produced by Craig and Dave. If there was any topics, you were unsure of from GCSE you should review the relevant video for the GCSE J277 spec. If you are looking forward, then the A-Level H446 Videos are excellent. I would recommend

	them for the key algorithms and as a first introduction to Floating Point numbers and 2's Compliment, but all the videos are useful. https://www.youtube.com/channel/UC0HzEBLlJxlrwBAHJ5S9JQg (Craig and Dave) (for a shorter link try https://fuzy.uk/Aa3wdt)
4. Read a book	This is very much down to personal preference I would recommend the Asimov robots series of books, though written many decades ago the concepts of robots and artificial intelligence and how they will impact on society are increasingly relevant to today.
5. Complete some coding tasks (main recommended task)	In preparation for the programming work, you will undertake in year 12 we have set a few warm-up coding challenges for you to try over the summer. We are very aware that different schools have taught very different levels of coding at GCSE so if your coding experience has been limited or if you are new to the Python programming language, please use these assignments to help you improve. Our coding work is done in an online environment called juicemind, you will first need to create an account in juicemind, please use a name that is recognisable to us. Once you have created your account, log in to it and then click the link below to join the class on juicemind. https://Juicemind.com Join the course using the following link. fuzy.uk/AEE7q9 You will then see several assignments in the juicemind class for you to work on, most of them should be quick to complete. There are input/output tests in juicemind (click on the tick icon to see them and then run them). Unfortunately, juicemind have been making a lot of changes recently so some tests might fail even though the code works as expected. Use your personal judgement and keep moving through the tasks. Consider the tests as an approximate rather than exact check. When you complete an assignment, or if you need help, please submit your assignment. I will provide feedback inside juicemind over the summer (although due to holidays, I will only look a few times, so please do not expect rapid feedback, the first two weeks and the last week of the holiday are when I shall be checking for feedback requests). The assignments are ordered from the simplest to the slightly more challenging, so work your way through them in order. We will spend the first week or two of term on coding and individual help will be given in those lessons and at lunchtime sessions. Other activities previous students have used can be found at the following https://codingbat.com/python https://projecteuler.net/
6. Watch a film / documentary	There are few realistic Computer Science movies but for those who enjoy a historical thriller the imitation game is an excellent and relatively accurate telling of the development of the Bombe at Bletchley Park, perhaps combine it with a visit to the park? The film is currently available on Netflix and Amazon Prime. There are several 'history of the development of the Internet' videos on YouTube you might want to try, a reasonable one can be found below but the internet is your oyster.

	For a BBC documentary on YouTube. https://www.youtube.com/watch?v=T3h1fiOC4AM
7. Personal Projects	One common feature we often see in A* A-level students is tendency to have several personal side coding projects. This ranges from single big projects that they have worked on for years to a range of small challenges. Your final year project will take the form of code that you develop independently so this would be good practice. The options are almost limitless, I have seen everything from working through various sorting algorithms to making a full virtual reality engine. If you have a task in mind working on it for fun will require you to solve a variety of problems and develop your coding skills. You do not need to limit yourself to Python either, why not try making a 3d game using Unity and C#?
Compulsory task	The only thing we require you to do is to do some coding. I would strongly recommend the other activities, but coding is the main required task. I expect everyone to try and access the repl.it course but if there are issues with joining the course, please contact Mr Steel via email to try and resolve them. Alternative evidence of coding will be accepted if you cannot access the course.

A Level Economics

Key Skills to develop and refine	• An understanding of economic concepts and theories through a critical consideration of current economic issues, problems and institutions that affect everyday life • How to apply economic concepts and theories in a range of contexts and to appreciate their value and limitations in explaining real-world phenomena • How to analyse, explain and evaluate the strengths and weaknesses of the market economy and the role of government within it • How to participate effectively in society as a citizen, producer, and consumer • How to develop your skills in written, visual, and symbolic communication and analysis using statistics and basic economic models • How to think analytically about the choices facing any organisation or individual.
1. Visit the Bank of England Museum and explore their website	The 'Old Lady' was founded in 1694 and is one of the oldest central banks in the world. The museum is open to the public and just a short walk away from Bank tube station. Exhibits focus on money (a small part of your course), inflation, monetary policy (significant parts of both A level and IB courses) and financial markets regulation (A level only). In addition, the Bank of England has an excellent site explaining everything from the role of central banks to inflation targeting. https://www.bankofengland.co.uk/education
2. Keep an Independent Study Folder	This is something you will need to do as part of your study of A Level Economics. Typical content would include a copy of the specification which can be found at: Edexcel AS and A level Economics A 2015 | Pearson qualifications Other content should include a brief note on articles you have read. BBC News has a lot of Economics content, which provides invaluable application points for A Level Economics. Here's an example: Trump signs order confirming parts of UK-US tariff deal - BBC News Exam papers may be printed with questions attempted and annotated using mark schemes and Examiner Reports.
3. Read a book	Tim Harford's 'The Undercover Economist' is an excellent introductory text available in all good bookshops and, most likely, your local library. Also recommended, is Kate Raworth's 'Doughnut Economics'. Dambisa Moyo's Dead Aid is also an excellent choice.
4. Watch a film / documentary	The Big Short was a big budget release exploring the explosion of the US subprime mortgage market and the subsequent global financial crisis. Inside Job, narrated by Matt Damon, takes a documentary-style approach to the same topic. Both illustrate the issues surrounding government intervention, market failure, and the problem of asymmetric information. There are other excellent documentaries, many available to watch for free on YouTube. http://topdocumentaryfilms.com/category/economics/
5. Listen to Radio 4	If you want to be amongst the best-informed Economists, you will make a habit of listening to R4 daily either live or downloaded from BBC Sounds. The Department recommends you listen to PM each weekday evening at 5. https://www.bbc.co.uk/sounds/brand/b006qskw
Compulsory Task	The Independent Study Folder is an essential part of your learning process and therefore should be started before lessons commence.

English Literature Summer Work

Key Skills to develop and refine	• Evaluating accepted concepts in literature • Analysing texts in various forms • Knowing the literary timeline and having a consciousness of literary movements • Exploring how texts across time connect
Read the texts	**As a MINIMUM:** • Read *Othello*: https://www.sparknotes.com/nofear/shakespeare/othello/ • Type Othello into YouTube and watch at least 5 clips of various scenes and debates around the text. Make notes. • Read *The Great Gatsby:* https://www.gutenberg.org/files/64317/64317-h/64317-h.htm **You could also** • Read *The Handmaid's Tale* & Watch the series • Read *The Feminine Gospels* • Read *Cat on a Hot Tin Roof* & watch the film • Select some of our texts from the KS5 Reading List:
Familiarise yourself with some basic literary criticism	READ: *An Introduction to Critical Theory* by Terry Eagleton: https://www.amazon.co.uk/Literary-Theory-Introduction-Terry-Eagleton/dp/0631201882 WATCH: *An Introduction to Literary Theory* by Paul H Fry https://www.youtube.com/watch?v=4YY4CTSQ8nY&list=PLD00D35CBC75941BD LISTEN: *Read Learn Live* Podcast on Spotify/Apple Podcasts/Android
Watch informative documentaries	Search for the following videos to introduce yourself to topics studied in A Level Literature: *Shakespeare Uncovered*: BBC4 *Sincerely F Scott Fitzgerald:* https://www.youtube.com/watch?v=cCfUsaX5F10 *Othello: A Nadir Nadhi Documentary*: https://ett.org.uk/watch-and-listen/othello-a-nadir-nahdi-documentary/
Improve your writing of essays	Consider either drafting for practice, or even entering essay competitions such as: https://www.mindsunderground.com/oxbridge-competitions/overview

FRENCH

Key Skills to develop and refine	- Revision of grammar - The ability to read longer texts - Greater awareness of French culture and society - Exploring your own interests such as music, sport, history, politics through research - French for pleasure through music, film and television
1. The regions of France	Find out about the different regions in France. This site has a short promotional video for each area including the overseas territories - which one would you prefer to visit? There is a wealth of information, and we hope you will be inspired to delve deeper into some of the aspects of the regions that you find most interesting. The website https://regions-france.org/ has an interactive map, and you could learn more about some of the areas which interest you.
2. **Literature**	Read some **literature e.g.** Le Petit Prince or try some literary extracts. If you prefer poetry, try reading some French classics e.g. this site has 10 famous poems in French with translations and context/background about the poet.
3. **The Arts**	For artists, musicians and future architects, why not find out about the **cultural heritage** of France and the French-speaking world? Research famous artists, monument, paintings, galleries, delve deeper into music, find the lyrics to the songs that appeal to you, or go on virtual tours of buildings you may discover. Did you know you can do virtual tours of the Louvre? Try a French playlist on Spotify and start to discover more artists.
4. **Politics and current affairs**	If you are interested in **politics** and **current affairs**, find out about French political parties and politicians. You can follow them all on social media. A good place to start online are the official sites of the Elysee and the French Government: https://www.elysee.fr/toutes-les-actualites https://www.info.gouv.fr/ You might also like to consult these sites for political news: https://www.franceinfo.fr/politique/ or https://www.bfmtv.com/politique/
5. **Verbs and tenses**	Brush up on **verbs** and **tenses**. By the start of your A Level, you should be absolutely confident with the present, perfect, imperfect, pluperfect, near future, simple future and the conditional. The grammar booklet will show you where your strengths are and where you might need to improve a little. Lawless French can help with explanations, and if you would like further practice, try Languages Online.
Compulsory task	Complete the booklet.

Westcliff High School for Boys

Sixth Form French

Course and summer preparation guide

Courses beginning 2016 onwards
(This version updated June 2025)

Contents

Introduction

Welcome to A Level French at WHSB! We are thrilled that you are thinking about studying this rewarding subject at A Level. We are fortunate to have an experienced team of teachers, and we are always joined every year by a French Assistant.

This booklet contains information about:

- the structure of the examination at A-level, in summary and in detail
- the work you will be doing
- suggested background knowledge with bibliography and other sources of information
- some further ideas for success
- some preliminary work you can do before September of the Lower Sixth

General outline of the course and the examination

1 This is a two-year course – there is no possibility of "dropping" the course at the end of the first year.

2 There is no public examination offering an AS qualification at the end of year 12.

3 At the end of year 12 there will be an internal exam which will have the format of A-level exam. This will help us to determine your UCAS predicted grade.

The Exam:

The A-level examination consists of 3 units each involving separate examinations. We will be following the specification of Eduqas. There is *no* coursework element. All examinations are written on the day or are oral. However, the preparation for your oral examination is considered as a kind of coursework (Non Examination Assessment, though it is assessed through an exam!), so it is important to follow the rules and guidance.

The three modules are outlined below in brief.

- **Unit 1 – Oral**
- **Unit 2 – Listening, Reading and Translation**
- **Unit 3 – Essay Writing on literature and film**

A more detailed breakdown follows:

The A- level examination

Unit	Outline	Time	Weighting (%)
Unit 1	**Oral** **(April-May of Year 13 by visiting examiner: recorded examination)** • ***Task 1:*** *presentation of independent research topic relating to French speaking part of the world (2 min.) + discussion of presentation in depth with examiner (9 mins)* Notes permitted, but only in English and given to examiner at the end of discussion. Presentation must NOT relate to content taught during the course. • *Task 2: Examiner-led discussion of stimulus card about one of the topics covered over the two years (5 min prep. time + 5-6 min. discussion.* At the end of Task 1 you will be given a stimulus card. You will be given 5 min to think about the card and make notes if you wish in English or French on a separate piece of paper. Notes are given to the examiner at the end.	21-23 mins (incl. 5 min prep. time)	30
Unit 2	**Listening, Reading, Writing** Listening questions *Reading questions* *Translation French-English* ***and*** *English - French*	2½ hours	50
Unit 3	**Essay Writing** Two closed-book essays. Essay 1: based on a literary (written) work), 300 words. Essay 2: based on a film or another literary (written) work, 300 words Access to dictionaries or copies of the literary work is not permitted. There will be a choice of two titles to choose from for each essay, students choose one of the two for each title.	2 hours	20

General Topic Areas

Like GCSE, the vocabulary you will be expected to know is taught and learned through the study of topic areas. These reflect higher levels of knowledge, language and thinking than those required at GCSE level. You will see that there are new skills included here such as the study of literature and historical topics.

Areas of interest	Social issues and trends	Political, intellectual and artistic culture
Themes Sub-themes	**Being a young person in French-speaking society** • Families and citizenship *Changing family structures; the changing nature of marriage and partnership; being a good citizen* • Youth trends and personal identity *Trends in fashion; how young people respond to modern technology; relationships with others and peer pressure* • Education and employment opportunities *The education system and student issues; work and travel opportunities and the changing work scene*	**Understanding the French-speaking world** • Regional culture and heritage in France, French-speaking countries and communities *Festivals; customs and traditions; historical sites; museums and galleries* • Media, art, film and music in the French-speaking world *Trends in media and art; film and music in the lives of young people*
Themes Sub-themes	**Diversity and difference** • Migration and integration *Reasons for migration; factors which make migration/integration easy/difficult* • Cultural identity and marginalisation *Reasons for marginalisation; ways to eliminate marginalisation* • Cultural enrichment and celebrating difference *The positive aspects of a diverse society* • Discrimination and diversity *Life for those who are discriminated against*	**France 1940-1950: The Occupation and post-war years** • June 1940–May 1945 *Life in occupied France; the French Resistance* • The cultural dimension in occupied France *The political context of theatre and cinema productions* • 1945-1950 *Rebuilding and restructuring society in post-war years*

Literature and Film

Alongside the topics above, you will be studying two written works or a written work and a film. The current list of set text texts and films is available to view in the Specification on the Eduqas website, and we currently choose to study *Le Silence de la Mer* and *Au Revoir les Enfants*. We have made these choices as both complement your study of France 1940-1950.

Le Silence de la Mer was written as a piece of resistance literature by Jean Bruller under the *nom de plume* Vercors. The novella tells the story of a French woman and her uncle who are forced to host a German officer in their home during the Nazi occupation of France during WW2. *Au Revoir les Enfants*, meanwhile, is an autobiographical tale of a young boy at a Catholic boarding school in Nazi occupied France, and his friendship with a Jewish boy who is being hidden from the Germans by the School's headmaster.

By studying literature and film, you gain a deeper insight into your historical topic, your language skills improve, and you add an important skill to your repertoire which is particularly valued by universities.

Further notes on the units of the course

In all units, it is **essential** that you have done wider background reading in addition to the topic material covered in class. This will give you great advantage in the examinations. Wider reading enables you to augment your vocabulary, and to develop a feel for French style. You should endeavour to do some reading in French every day.

A wide range of reading material is available to you and therefore there is no problem in locating suitable texts to cater for every interest. Quality websites on the internet, such as those for broadsheet newspapers like *Le Figaro and Le Monde* are very useful.

It is strongly recommended that you visit one of the French-speaking countries during the course, at least once. This will undoubtedly enhance your competence and confidence in spoken and written French.

You will be working from October with the French Assistant on your topics and on conversation in general. These are essential periods that form a **compulsory and integral part of your course and timetable**. You must always attend (registers are completed by the assistant) and you must give your apologies in advance in the event of any planned absence for good reason.

Classwork during the year

You should always aim for a high degree of accuracy and always learn vocabulary and grammar regularly and systematically, e.g. nouns *always* with genders.

Grammar

Whilst the above-mentioned units reflect the vocabulary which you will have to know, the mastery of grammar is a skill which is can be used in all contexts. There is a full list of the grammatical structures which you need to master in the specification.

Oral and written work during the course

Oral work

During the course, you will have a weekly period with the languages assistant, starting in early October until the end of May. The course and the examination lays great emphasis on oral competence and fluency.

Oral work in French in class may take the form of

- giving short answers to questions on a text
- explaining terms
- discussions
- seminars
- questioning each other
- critique
- group work
- preparing and giving a point of view which may not be your own, etc.
- interpreting exercises
- presenting your chosen topic

Throughout the Lower Sixth and Upper Sixth you will work on your presentation and practising discussing your chosen topic as well practising discussion arising from 'stimulus cards'. You will receive to such cards, with a text and/or image. You should use this as a stimulus for *objective observations* on what is presented, *discussing your opinion or speculating* on what is before you, and *commenting on wider issues* associated with the material. You have to have opinions!

You should willingly try and communicate in French in general in order to practise as much as possible with a view to developing fluency.

Written work

Written work in French and English in class and at home may include

- short answers to questions on a text
- grammar and syntax exercises
- summaries
- tabulated information (advantages/disadvantages, arguments for and against, in bullet-point form), etc
- short accounts
- letters
- translation from French
- translation into French
- essays on topics

The material at this level will naturally be more complex and many more answers will involve *deriving* conclusions from what you hear or read, as opposed to simple factual recall.

How to approach written work

When you are given any piece of written work to do which involves writing prose in French, you should **before** you start:

1. review the topic just covered in your textbook
2. revise the essential vocabulary that has appeared as part of the topic
3. examine the title carefully and the requirements of the task
4. make a plan of points to cover, if none has been given as part of the task
5. re-read the relevant texts in the textbook or on hand-outs, noting useful phrases and expressions
6. consider implications, reasons, opinions, balancing views where appropriate
7. revise any points of grammar that you think may be necessary, and briefly review your last piece of written work to establish where you may have had difficulty in expressing yourself before, be it tenses, word order, etc.

During the writing you should

8. use drafting as a matter of course
9. try and use new vocabulary
10. generally think before you put pen to paper
11. check all work through before handing in by the deadline given – sometimes it is beneficial to revisit the work a day later and 'proof read'.

On **return** of the piece of work you should

12. carefully read all comments, not just the score
13. carefully examine all errors of content
14. carefully examine all errors of grammar and syntax
15. write a corrected version (sometimes corrections will be sufficient)
16. write at the end of the piece of work any targets for yourself which arise from the work, such as use of vocabulary, revision of or finding out about grammatical structures/rules of syntax
17. ask about any issue of which you are unsure
18. compare the comments and score with the previous piece of work to establish whether you are making progress
19. retain the piece of work in your exercise book for future reference.

How to approach literature and film

This will be a major step up for most pupils.
It is essential that new vocabulary is looked up and that the passages/scenes intended for reading/viewing and discussion in class are prepared in advance in order that you might get most out of this part of the course.

Short questions, then essays follow, beginning with summaries and then themes. You should make use of new vocabulary in essays and oral work.

It is essential to master the facts, consider the interpretation, engage in discussion and revisit parts covered so that the work is thoroughly known and so that you are fully prepared for examination questions. Refer to the above advice on essays.

Wider and background reading

- The library clearly contains books, reference and for loan, and some computers
- We have a small lending library in W21b/W8.
- The Sixth Form Study Centre contains computers

The internet represents an excellent resource for quick reading. Reading and listening to news items, as often as possible in French is invaluable, as you will absorb vocabulary and expressions useful for your development in the subject. Of greatest use are current affairs because you will already know something about the subject before you tackle a French text. This will help you with understanding. Also useful are articles which exist in both French and English. This will help you identify vocabulary and idioms very quickly.

The site http://www.tv5monde.com/ allows you to watch news from France and French-speaking countries.

You should download BRUT or a similar news app, and you should consult this daily. If you are on Instagram, follow the channels of HugoDecrypte.

All French newspapers and TV channels have websites on which you can watch videos such as news summaries.

The library does contain a small collection of literature including some modern short stories. These are also enjoyable texts offering a range of benefits and tie in quite nicely with topics studied.

Candidates at A Level French are expected to have a working knowledge of French society and culture, and you must keep up to date.

The French Institute

http://www.institut-francais.org.uk/

Founded in 1910, the *Institut français du Royaume-Uni* comprises a language centre, a cinema (*Ciné Lumière*), a multi-media library (*La Médiathèque*), a children's library (*Bibliothèque Quentin Blake*) and a café-restaurant, and welcomes 200,000 people each year. At the heart of the *Institut français'* mission is the teaching of the French language. The *Institut* also collaborates with schools in the UK on educational cooperation programmes to promote French language learning and organise teacher training, so that French can remain the UK's top choice for foreign language study.

GCSE and A Level students might like to visit the multimedia library, *La Médiathèque*, a distinctive Grade II listed venue, which is a window on contemporary France and which holds the largest free-access collection of French material in the UK, covering all aspects of French culture and society. Visitors can access about 50,000 items ranging from novels, comic books to feature films and magazines. Its digital platform, *Culturethèque* allows audiences across the UK to access an extensive digital library with over 25 000 documents, completely **free of charge.**

Dictionaries – paper and online

French-English/English-French bilingual dictionary

The *Collins-Robert* is the recommended dictionary. You will need a copy at home.

Monolingual

A monolingual dictionary can be useful, but you do not need to buy one.

Online French-English/English-French

www.wordreference.com - good, but *do* read the forums
www.linguee.fr – good, but make sure the examples you see are used on *French* websites.
https://larousse.fr/ - excellent.

Online sources

Keeping up to date and making your French learning exciting is much easier than it used to be. Here are a few sites, but please do your own research and come and share ideas with the MFL team.

https://parlons-francais.tv5monde.com/webdocumentaires-pour-apprendre-le-francais/p-1-lg0-Accueil.htm has a host of free videos and accompanying exercises. The games are good fun too!

This is more limited than the site above, but it's all free too:
http://www.bbc.co.uk/languages/french/

https://bescherelle.com/dict%C3%A9es-audio is a really useful resource for praticising that written accuracy. Try one of the 30 second dictations, then mark your work yourself.

https://www.francaisfacile.com/ - awful design, but good for grammar practice.

The Eduqas website is a good starting point. Go to
https://www.eduqas.co.uk/qualifications/french/as-a-level/ and click on the digital resources.

Bookworms should head to https://bibliothequenumerique.tv5monde.com/ There are over 400 free digital books here.

https://www.france.tv/france-5/ Entirely free, this is the website of France's "brainiest" TV channel: France 5. It does require that you do a bit of searching, but the network offers a wide array of programmes, debates and documentaries that discuss subjects as wide as social issues, politics, health, cooking, arts or history.

Activities for the summer

- Buy a good large dictionary
- Do background and listening, reading, watching as outlined above
- Read social media, newspapers and magazines in French
- Listen to French radio
- Watch French TV and films – *Lupin, Dix Pour Cent, Au Service de la France* are suggestions
- Acquaint yourself with some general knowledge about the French-speaking countries as suggested below.
- Complete some of the Learning Pack and / or the grammar booklet which are going to be on the school website, and bring them with you in September. Do not worry if you find these tricky, or if you just don't know the answers. The grammar exercises will show us your strengths and areas for development.

You have some time to spend getting ready for the A-level course and we look forward to hearing about how you have been preparing over the summer. We do not expect you to have studied every day for weeks and weeks, but we will be disappointed and unimpressed if someone turns up to the first lesson and says they have done nothing to prepare for A-level French. Here are some suggestions, but they are not exhaustive and merely serve as a starting point to give you ideas and reference materials. You should choose something that interests you, but please don't neglect grammar and verbs in particular.

Read some literature. There is a short story linked here http://gutenberg.net.au/ebooks03/0300771h.html . You might also enjoy some poetry – if you google Prévert, you will find many accessible poems.

Research the regions of France and French-speaking countries. Research the geography, important cities, traditions and typical foods of one particular region. There is a huge amount on YouTube!

Start to develop your understanding of French and Francophone news and current affairs. https://www.1jour1actu.com/ is a brilliant starting point for lots of current affairs and cultural knowledge. https://www.tv5monde.com also has many videos and education resources from the French-speaking world. Listen to podcasts (e.g. News in Slow French), and watch YouTube news.

For artists, musicians and future architects, why not find out about the cultural heritage of France and the French-speaking world? Research famous artists, paintings, galleries, delve deeper into music, find the lyrics to the songs that appeal to you, or go on virtual tours of buildings you may discover. *Monet, Haussmann, Ravel, Debussy, Stromae, Angèle...*

Brush up on verbs and tenses using www.conjuguemos.com or www.languagesonline.org.uk – (https://www.languagesonline.org.uk/Hotpotatoes/frenchindex.html#Grammar).

Watch a French series on Netflix or Channel 4 (*Walter Presents*) and find out more about the cast, crew, locations, its popularity in the French-speaking world and, if it is based on real life events, how true to the facts the writers and producers decided to make it.

Tips for success

- Enjoy your study and take an active interest; the students who do best in French are those who love it and live it.
- Organise your work properly; we will use large format exercise books, but you will need a folder organised by topic at home for extra materials.
- Hand in work on time – give it proper priority
- Research and investigate thoroughly
- Balance the demands of the various parts of the course
- Keep up to date with new vocabulary and grammar (keep it recorded!)
- Ask for extra help if you need it
- Share ideas and problems
- Keep to all deadlines
- Participate and be pro-active
- Attend every lesson punctually and with the right materials
- Use people – your teachers, the librarian and the assistant and others you may know outside school – as a resource.

Bonne Chance!

M. Rayment, Mme Williams et M. Chanut
The WHSB Sixth Form French Team

A Level Summer Preparation Booklet

This booklet is designed to help you prepare for A Level French. The minimum you should do over the summer is 2 multiple choice and 2 gap-fill exercises.

The answers are provided at the end.

We would encourage you to try each exercise without looking anything up. Miss out any questions that you are unsure of. Use the answer key to mark in green. Then, you could use a site such as Lawless French to help you to understand your mistakes.

We do not expect you to be an expert on the subjunctive yet, and this appears throughout. However, if the exercises below start to help you to understand this new grammatical mood, that will help you in September.

Bring any work completed with you in September.

A-level grammar exercises (1)

Choisissez le bon mot:

1. L'homme **(qui/que/dont)** j'ai vu était de taille moyenne.
2. Je suis prêt à **(tous/tout/toute)** faire!
3. Si j'étais à ta place, je **(parlais/parlerai/parlerais)** à la police.
4. C'est la fille la plus intelligente que je **(connaisse/connais/sache).**
5. Il a refusé **(à/de)** faire le travail.
6. Il me semble que tu **(as/aies/es)** raison.
7. Il semble que les Français **(ont/aient/soient)** gagné.
8. Après **(avoir/être/ayant)** parti, il nous a téléphoné.
9. Avant de **(téléphoné/téléphonant/téléphoner)** il a cherché le numéro.
10. Si elle **(était/avait/a)** su la réponse, elle me l'aurait dit.
11. Quand je **(suis/serai/serais)** à l'université, je ne vivrai plus chez moi.
12. Voilà la femme **(que/qui/dont)** j'ai parlé.
13. Sans **(dire/disant/dit)** un mot, j'ai continué à travailler.
14. Je me suis coupé en **(faire/fait/faisant)** la vaisselle.
15. Ce sont les garçons qu'elle avait **(vus/vu/vue)** l'autre jour.
16. Ils vivent en France **(pendant/il y a/depuis)** dix ans.
17. **(Depuis/pendant/il y a)** dix ans j'allais à l'école primaire.
18. Il faut que nous **(arrivons/arrivions/arriver)** à sept heures pile.
19. Je crois que tu **(aies/es/as)** un gros problème de compréhension.
20. Quel jean préfères-tu? **(Cela/celui/celle)** qui est bleu?
21. J'ai fait tout ce **(que/qui/dont)** j'ai pu pour lutter contre ma maladie.
22. Je n'ai rien **(de/quoi/à)** dire!
23. Elle veut que je **(vienne/viens/venir)** à la fête.
24. Je ne pense pas qu'il me **(connaît/connaisse/connais)**.
25. Elle a travaillé à Paris **(pour/pendant/depuis)** six mois.
26. Les papiers **(que/quoi/dont)** j'ai besoin sont dans le tiroir.
27. Je viens de **(fini/finis/finir)** le déjeuner.
28. Elle s'est **(lavée/lavé/lavés)** les mains.
29. Je **(leur/le/les)** ai dit qu'il aurait dû arriver plus tôt.
30. S'il avait triché, il **(avait/a/aurait)** gagné la partie.
31. Dès qu'elle **(arrivera/arrive/arriverait)** je lui expliquerai la situation.
32. Je doute que tu **(es/sois/puisses)** capable de tout faire.
33. Les enfants ont fait **(tout/toute/tous)** leur possible pour gagner.
34. Il est parti sans **(ils/leur/eux).**
35. Bien que nous **(soyons/ayons/sommes)** riches, nous sommes avares.
36. Il nous a dit **(de/à/pour)** l'attendre à la gare.
37. Je suis trop jeune **(à/pour/de)** conduire une voiture.
38. Le trottoir était couvert **(de/avec/à)** papiers.
39. Je regrette que tu **(es/aies/sois)** arrivé si tard.
40. Le résultat dépend **(sur/de/à)** toi!

A-level grammar exercises (2)

Choisissez le bon mot

1. Après avoir **(calculé/calculer/calculée)** la distance, il est parti.
2. Mes nouvelles affaires ont été **(volés/voler/volées).**
3. Je doute que tu **(puisses/peux/peut)** arriver à l'heure.
4. Dès qu'elle **(arrivera/arrive/arriverait),** on ira au ciné.
5. Je ne pense pas que tu **(sais/saches/sache)** la vérité.
6. **(Il/Ce)** n'est pas important de connaître cette ville.
7. Acheter à un bon prix, **(c'/il)** est important!
8. **(Avant/après)** qu'il ne sorte, je veux lui parler.
9. Il semble que nos voisins **(sont/soient/aient)** partis en vacances.
10. Si tu **(venais/viendras/viens)** au bal, je danserais avec toi.
11. Si tu décides d'y aller, je **(serai/serais/suis)** très content.
12. Quand il était jeune il **(jouer/jouait/a joué)** souvent au tennis.
13. Il **(se promenait/s'est promené)** dans la rue quand il a vu un vieux copain.
14. Penses-tu qu'il **(sait/save/sache)** conduire?
15. Je crois que tu ne **(sais/saches/connais)** pas Paris.
16. Si elle **(était venue/venait/viendrait)** je lui aurais dit bonjour.
17. Les filles **(étaient/sont/ont été)** souvent attaquées aujourd'hui.
18. Il a vécu en France **(pendant/pour/depuis)** 10 ans.
19. Je vais partir en Espagne **(pendant/depuis/pour)** quelques mois.
20. **(Depuis/pendant/il y a)** 2 ans, j'ai pris la décision de rentrer.
21. Je regrette que Marie ne **(est/a/soit)** pas venue.
22. Oh là là! **(Quelle/quel/qu'elle)** dommage!
23. Les outils **(que/dont/qui)** tu as besoin sont ici.
24. C'est la maison **(dont/qui/que)** les volets sont clos.
25. Passe-moi les couverts **(qui/que/quels)** sont dans le tiroir.
26. Je voudrais bien que tu **(vienne/viens/viennes)** ce soir.
27. Mince alors! Mon stylo! Je ne peux pas **(la/lui/le)** trouver!
28. Si elle **(avait su/savait/avait connu)** la solution, elle l'aurait dit.
29. Je n'ai **(aucun/aucune)** idée.
30. **(Personne/rien/on)** n'a dit si je suis venu l'autre jour.
31. Les Anglais **(seront/sont/ont été)** battus le weekend prochain.
32. Avant de **(parti/partie/partir)** elle fera ses bagages.
33. Nous **(venions/sommes venus/venons)** de voir que tu es là.
34. Je **(suis venu/viens/viendrai)** te voir lundi dernier.
35. **(Lequel/laquelle/quel)** de ces garçons préfères-tu?
36. Je préfère **(celle/celui/cela)** à droite.
37. Il faut que nous **(allions/aillions/allons)** à la gare.
38. Il a **(éteindu/éteint/éteigné)** toutes les lumières.
39. Il est très pauvre – il gagne **(peu/un peu)** d'argent.
40. Et voilà. **(Tout/tous/toutes)** les questions sont finies.

A-level grammar exercises (3)

Choisissez le bon mot

1. Si Pierre **(venait/est venu/viendrait)** ce soir, il verrait sa mère.
2. Je crois que tu ne **(sais/sache/save)** pas la solution
3. Tu as vu les CDs et la trousse que j'ai **(acheté/achetés/achetées)?**
4. Il faut que nous **(sommes arrivés/arrivons/arrivions)** avant six heures.
5. J'ai complété **(tous/tout/toutes)** les devoirs qu'il m'a **(donnés/donné).**
6. Elle a essayé **(à/de)** de me persuader que j'avais tort.
7. Je viens de **(fini/finis/finir)** ma dissertation d'histoire.
8. C'est la voiture **(dont/que/duquel)** je rêve depuis des années.
9. Je ne pense pas qu'elle **(est/soit/ait)** capable de battre le record.
10. Dès qu'il **(aura fini/a fini/finira)** nous partirons.
11. Si je **(réussis/réussira/réussissais)** au concours je pourrai trouver un poste.
12. Bien qu'il **(connaît/connaisse/ait connu)** le patron depuis 5 ans, il n'a aucune chance d'avoir ce travail.
13. J'ai vécu en France **(depuis/pour/pendant)** 10 ans.
14. S'il était arrivé à l'heure il **(avait pu/pourrait/aurait pu)** gagner le match.
15. C'est le meilleur joueur que je **(ai vu/aie vu/vois).**
16. **(Depuis/pendant/il y a)** 5 ans, je fumais dix cigarettes par jour.
17. Il est important que tu **(fasses/fais/faisais)** de l'exercice matin et soir.
18. Je me suis plaint **(parce que/pour/à cause de)** ta mauvaise conduite.
19. Est-il nécessaire **(à/pour/de)** surveiller les enfants?
20. Je me demande **(qu'est-ce que/ce que/quoi)** il faut faire.
21. Tu es une **(malle/mal/mauvaise)** influence sur moi.
22. Le travail? **Il (y/en/le)** parle tout le temps.
23. Elle a eu **(plus en plus/plus et plus/de plus en plus)** de problèmes.
24. Il parle le français **(mieux/meilleur/plus bien)** que moi.
25. Tu aimes les jupes? **(Lequel/quelle/laquelle)** préfères-tu?
26. Monsieur et Madame Leblanc ont vu **(ses/leurs/nos)** enfants en ville.
27. Si nous **(avions trouvé/avons trouvé/trouvions)** la lettre nous aurions payé la facture.
28. Dès qu'il **(vient/est venu/viendra)** on prendra le dîner ensemble.
29. J'ai parlé à l'homme **(qui/dont/que)** j'ai vu dans le bureau.
30. Hier le voleur **(a été interpellé/était interpellé/a interpellé)** par la police.
31. Je lis ce livre **(depuis/pendant/il y a)** cinq minutes.
32. J'adore cet album **(qui/ce que/que)** j'ai acheté.
33. Les chaises que j'ai **(achetée/achetées/acheté)** sont belles.
34. Je ne comprends pas **(ce qu'/ce qui/qu')** il a fait.
35. J'ai tout ce **(que/qui/dont)** j'ai besoin.
36. Il faut que je **(fais/fasse/faille)** plus d'effort.
37. **(Aucun/personne/rien)** n'est venu à ma fête.
38. Je n'aime pas trop mon **(nouvel/nouveau/nouvelle)** emploi.
39. Je ne pense pas que tu **(as/avais/aies)** raison.
40. Ces exercices sont très **(importantes/important/importants).**

A-level grammar exercises (4)

Choisissez le bon mot

1. **(Il/Ce)** est important **(de/à)** savoir les verbes irréguliers en français.
2. Je ne comprends pas **(qu'est-ce que/ce que/ce dont)** tu as fait.
3. Il l'a fait sans **(penser/pensant/pensée)** aux conséquences.
4. Je pense que les résultats **(soient/sont/ont)** décevants.
5. J'admire la façon **(dont/que/de laquelle)** tu travailles.
6. Avant de **(parti/partir/départ)** je vais vérifier mes bagages.
7. Après **(avoir/être/s'être)** lavé, il s'est rasé.
8. **(Il y a/pendant/depuis)** 10 ans, je fumais régulièrement.
9. Il **(venait/vient/est venu)** de se rendre compte que le bus est en retard.
10. Si Marie **(avait décidé/a décidé/décidait)** de passer l'examen, elle devrait écrire à l'Académie.
11. J'espère **(de/à/∅)** aller à l'université l'année prochaine.
12. Il s'est cassé le bras en **(jouer/jouant/joué)** au rugby.
13. Il m'a obligé **(à/de)** considérer une autre solution.
14. Il est possible que tu **(saches/sais/sache)** la réponse.
15. Je sais **(ce dont/ce que/dont)** tu as besoin.
16. Je ne comprends pas **(ce que/ce qui/qui)** s'est passé hier soir.
17. Si Pierre était venu il **(chanterait/avait chanté/aurait chanté)** pour nous.
18. Je regrette que **tu (n'aies pas/n'a pas/ne sois pas)** arrivé à l'heure.
19. Elle **(s'est lavé/s'est lavée/s'a lavée)** les mains.
20. Elle a refusé **(de/à/∅)** de reconnaître la vérité.
21. J'adore les pantalons. Je préfère **(celle/cela/celui)** qui est marron.
22. **(Cet/cette/ce)** homme manque d'intelligence.
23. Je ne vois **(pas/aucune/rien)** raison de te croire.
24. Il ne fait **(jamais rien/rien jamais/pas jamais rien).**
25. Quand elle **(a fini/aura fini/finirait)** ses devoirs, elle sortira.
26. S'il **(fait/fera/a fait)** beau, nous irons en Vendée.
27. Il **(a fumé/avait fumé/fume)** depuis 10 ans.
28. J'ai vécu en France **(depuis/pendant/pour)** 5 ans.
29. Que tu **le (veuilles/veux/voulais)** ou non, je vais alerter la police.
30. C'est la meilleure chose que tu **(peux/puis/puisses)** faire.
31. Je ne crois pas qu'il **(fait/a fait/fasse)** des progrès.
32. Il m'a **demandé (de/à)** lui envoyer une lettre.
33. Je n'ai **rien (à dire/dire/pour dire).**
34. Il est trop jeune **(à/pour/de)** travailler dans une usine.
35. Le plancher est **couvert (avec/du/de)** boue.
36. Il est parti sans **(disant/dire/dit)** un mot.
37. Avant de me **(parler/parle/parlé),** il y a eu un moment de silence.
38. Quand j'étais petit je **(regarde/ai regardé/regardait)** beaucoup de télé.
39. Quand je **(serai/suis)** plus âgé je travaillerai comme prof.
40. Je n'ai **(aucun/pas/aucune)** idée.

A-level grammar exercises (5)

1. C’est la femme la plus _____ que je connaisse. (heureux)
2. J’ai rencontré un _____ homme l’autre jour. (vieux)
3. Ce sont les pires vacances que j’aie jamais _____. (passer)
4. Cela fait cinq ans que je _____ (fumer).
5. Je viens de _____ une fiche. (remplir)
6. Ma mère a _____ d’aller en ville. (décider)
7. Passe-moi le verre, je _____ de soif! (mourir)
8. Qu’est-ce que vous _____. (dire)
9. Les deux filles sont _____ à cinq heures. (arriver)
10. Bien qu’il _____ pauvre, il est généreux. (être)
11. Il _____ ses devoirs quand son frère est entré. (faire)
12. Si j’étais riche je _____ un voyage en Australie. (faire)
13. Quand nous _____ en France, nous vivrons dans le midi. (aller)
14. Pendant cinq ans nous _____ en Espagne. (vivre)
15. C’est le _____ avion de Dassault. (nouveau)
16. Les nouvelles fleurs sont très _____. (beau)
17. Il faut que nous _____ en ville. (aller)
18. Ces garçons sont trop _____. (paresseux)
19. Les élèves _____ bien les questions. (comprendre)
20. Nous _____ le français depuis six ans. (apprendre)
21. L’année prochaine j’_____ dix-sept ans. (avoir)
22. Je _____ parler français si j’allais en cours. (pouvoir)
23. L’année _____ je suis parti à l’étranger. (dernier)
24. Les filles ont _____ la matinée chez elles. (passer)
25. Quand j’étais jeune je _____ trop de bonbons. (manger)
26. Sais-tu _____ sont les nouveaux produits? (quel)
27. Que _____-vous en ce moment? (faire)
28. Les prix _____ très élevés récemment. (devenir)
29. Après être _____, les filles ont fait des courses. (sortir)
30. Il est parti sans _____ un mot. (dire)
31. Il a demandé l’addition avant de _____ son repas. (terminer)
32. Les copains _____ souvent au ciné. (aller)
33. Ces dames sont vraiment _____. (vieux)
34. Nous _____ toujours le bus pour aller au collège. (prendre)
35. A quelle heure tu _____ à travailler d’habitude? (commencer)
36. Elle _____ son petit déjeuner quand on a sonné. (finir)
37. Nous _____ nos affaires avant d’aller au lit. (ranger)
38. J’ai _____ la lumière dans la cuisine. (éteindre)
39. Deux vieilles personnes sont _____. (mourir)
40. Les ordinateurs que j’ai _____ étaient chers. (voir)
41. C’est une très _____ amie. (cher)
42. Quel _____ avion! (beau)
43. Ils _____ la cuisine tous les jours. (nettoyer)
44. C’est la matière que je _____. (préférer)
45. Il faut que j’_____ chez le dentiste. (aller)
46. Après avoir _____ au foot, elle est rentrée. (jouer)
47. Il est parti avant de _____ au revoir. (dire)
48. Il s’est cassé le bras en _____ au rugby. (jouer)
49. J’ai vu mes amis _____. (partir)
50. J’ai de _____ questions à poser. (nombreux)

A-level grammar exercises (6)

1. Amélie est très _____ de son frère. (fier)
2. Marie Antoinette est _____ en 1793. (mourir)
3. Les deux filles sont très _____. (généreux)
4. Si elle gagnait la loterie, elle _____ une maison. (acheter)
5. Nous _____ la musique depuis 10 minutes. (écouter)
6. Antoine est un _____ ami. (vieux)
7. Elle est _____ riche en travaillant dur. (devenir)
8. S'il fait beau, je _____ du cheval à la campagne. (faire)
9. Bien qu'il _____ dix ans, il parle bien deux langues. (avoir)
10. Ils ont lancé trois _____ produits assez chers. (nouveau)
11. Les voleurs ont été _____ hier soir. (arrêter)
12. C'est la nouvelle robe que j'ai _____. (acheter)
13. Ces nouvelles questions sont très _____. (important)
14. Marie Curie est _____ en 1867. (naître)
15. Quand nous _____ 18 ans, nous pourrons voter. (avoir)
16. Sais-tu _____ seront les conséquences principales? (quel)
17. Marie-Claire est _____ en faisant du ski. (tomber)
18. Je commencerai mon _____ emploi demain. (nouveau)
19. Il l'a dit sans vraiment le _____. (croire)
20. Après être _____, ils sont montés en voiture. (partir)
21. Si je _____ réussir, je réviserais davantage. (vouloir)
22. Il faut que nous _____ avant dix heures. (arriver)
23. Les petites souris sont _____. (mignon)
24. Les ordinateurs portables _____ moins chers. (devenir)
25. Nous avons _____ longtemps en Espagne. (vivre)
26. Vous _____ bien la situation. (comprendre)
27. Si elle _____ la conséquence, elle ne l'aurait pas fait. (savoir)
28. Catherine, es-tu _____ à minuit? (rentrer)
29. Les tables ont été vite _____. (ranger)
30. Ces belles peintures sont très _____. (ancien)
31. Je veux que tu _____ les exercices. (faire)
32. Quelle robe est-ce que tu as _____ ? (choisir)
33. C'est une belle voiture _____. (neuf)
34. Il a de beaux cheveux _____. (marron)
35. Avant de _____, il a réfléchi un instant. (parler)
36. Il a _____ la porte très doucement. (ouvrir)
37. Quand j'étais tout petit je _____ des bandes dessinées. (lire)
38. Il a passé dix minutes à _____. (parler)
39. Elle a écouté la musique en _____ une lettre. (écrire)
40. L'année _____ j'irai à New York en vacances. (prochain)
41. D'habitude ils _____ au collège en bus. (venir)
42. Les garçons se sont _____ à sept heures. (lever)
43. Je ne _____ pas la viande si j'étais végétarien. (manger)
44. Nous _____ à Leeds depuis cinq ans. (vivre)
45. Je me suis _____ auprès du directeur. (plaindre)
46. Ils _____ bien Paris. (connaître)
47. Je viens de _____ que tu es anglais. (réaliser)
48. En ce moment ils _____ réagir vite. (devoir)
49. Ce sont de très _____ idées que tu as proposées. (bon)
50. Il faut que nous _____ tout pour réussir. (faire)

A-level grammar exercises (7)

1. Il faut _____ le plus vite possible. (revenir)
2. Le lendemain j'ai _____ le bus pour aller au collège. (prendre)
3. Il a fait la recette sans _____ le livre. (regarder)
4. Nous avons _____ très vite. (courir)
5. Ce sont des hommes tout à fait _____. (normal)
6. J'adore cette fille. Elle est vraiment _____. (joli)
7. Ce sont de vieux chiens _____. (noir)
8. Quand j'habitais à Lyon il y _____ toujours beaucoup de circulation. (avoir)
9. Il est parti sans me _____ au revoir. (dire)
10. Il s'est coupé en _____ la vaisselle. (faire)
11. Les garçons sont _____ à la maison. (rester)
12. Tout le monde _____ toujours content. (être)
13. Après avoir _____ en France, il est parti pour l'Espagne. (vivre)
14. Il vient de _____ une cigarette. (fumer)
15. Les filles se sont _____ avant de sortir. (coiffer)
16. Si je _____ la réponse, je te le dirais. (savoir)
17. Elles sont complètement _____. (paresseux)
18. Je ne _____ pas comment il s'appelle. (savoir)
19. Bien que tu _____ dix-huit ans, tu n'es pas sérieux. (avoir)
20. Qu'est-ce que vous _____, le vin ou la bière ? (préférer)
21. Les filles, je les ai _____ il y a cinq minutes. (voir)
22. Les vieilles chaussures ont été _____ dans le salon. (trouver)
23. Il y a dix ans je _____ en Italie. (vivre)
24. Il _____ très beau quand nous sommes arrivés. (faire)
25. Ce sont mes copines _____. (favori)
26. Le plancher était _____ de boue. (couvrir)
27. Je _____ du vin quand tu m'as vu. (boire)
28. J'ai mangé une tarte _____. (délicieux)
29. Le lion avait de longues dents _____. (blanc)
30. Les filles sont très _____. (travailleur)
31. Je n'ai rien _____. (comprendre)
32. Tu as _____ le dernier livre de JK Rowling ? (lire)
33. Pierre et Marie sont _____ ensemble. (sortir)
34. Je _____ les garçons depuis longtemps. (connaître)
35. Qu'est-ce que tu _____ de faire ? (venir)
36. Réfléchis avant de _____. (parler)
37. Il a les cheveux _____. (brun foncé)
38. C'est une situation _____. (dangereux)
39. As-tu entendu les _____ nouvelles ? (dernier)
40. Il avait une voix très _____. (naturel)
41. Les centrales nucléaires _____ des déchets. (produire)
42. On peut sauver la planète en _____ la consommation d'énergie. (réduire)
43. On va finir par _____ la couche d'ozone. (détruire)
44. Nos chats sont très _____. (mignon)
45. J'ai commencé à _____. (travailler)
46. Nous _____ vous voir ce soir. (espérer)
47. Depuis dix minutes je te _____ de tout ça. (parler)
48. C'est la _____ chose à faire. (premier)
49. Je ne pense pas que tu _____ répondre à la question. (pouvoir)
50. Les activités _____ sont une source de pollution. (humain)

A-level grammar exercises (8)

1. Hier nous avons _____ arriver le plus tôt possible. (devoir)
2. Samedi j'ai _____ terminer mon travail au collège. (pouvoir)
3. Il a traversé la route sans _____. (regarder)
4. Nous sommes _____ de bonne heure. (arriver)
5. Ce sont des garçons complètement _____. (normal)
6. J'adore ces villes. Elles sont vraiment _____ en plus. (joli)
7. Qui sont les _____ habitants de la maison en face ? (nouveau)
8. Quand je_____ à Lyon mes enfants viendront avec moi. (vivre)
9. Il est parti avant de _____ au revoir. (dire)
10. Il s'est blessé en _____ de la gymnastique. (faire)
11. Les filles sont _____ chez leurs amies. (rester)
12. Tout le monde _____ toujours au même supermarché. (aller)
13. Après avoir _____ trois ans en Italie, il est parti pour l'Espagne. (vivre)
14. Nous venons de _____ en public pour la première fois. (chanter)
15. Le _____ avion n'a pas encore été réparé. (vieux)
16. Si elle _____ la réponse, elle te le dirait. (savoir)
17. Elles sont vraiment _____. (généreux)
18. Je ne _____ pas un mot de ce que tu dis. (croire)
19. Bien que tu _____ un effort, tu fais peu de progrès. (faire)
20. Les deux femmes, je les ai _____ en ville. (remarquer)
21. Les deux voleurs ont été _____ par la police. (arrêter)
22. Il y a dix ans nous _____ un appartement en Italie.(avoir)
23. Avant de _____ il a pris un apéritif. (manger)
24. Ce sont mes copines _____. (favori)
25. Elle a _____ la fenêtre car il faisait chaud. (ouvrir)
26. Je _____ mon repas quand tu m'as vu. (prendre)
27. J'ai mangé des tartes vraiment _____. (délicieux)
28. J'adore de nouvelles activités _____. (mental)
29. Anne et Sophie sont très _____. (travailleur)
30. Je n'ai rien _____ aujourd'hui. (apprendre)
31. Tu as _____ le sac que j'ai acheté ? (voir)
32. David et Amélie sont _____ au Québec. (partir)
33. Après être _____, les garçons ont tout de suite pris le dîner. (rentrer)
34. Qu'est-ce qu'elle _____ de faire ? (venir)
35. Je ne pense pas qu'elle _____ la meilleure élève. (être)
36. Il a trois gros chiens _____. (gentil)
37. Tu crois que c'est une affaire _____ ? (sérieux)
38. Ces _____ jours il n'a pas été en forme ? (dernier)
39. Ils ne _____ pas rentrer ce soir. (pouvoir)
40. Les gaz carboniques _____ à l'atmosphère. (nuire)
41. Il regardait la télé en _____ le dîner. (finir)
42. Qui _____ la réponse exacte ? (savoir)
43. C'est la chose la plus _____. (naturel)
44. J'ai continué à _____. (fumer)
45. Elle a été _____ par la question. (surprendre)
46. Ça fait dix minutes que j' _____ le bus. (attendre)
47. C'est la _____ chose à faire. (dernier)
48. Je ne crois pas que tu _____ répondre à la question. (pouvoir)
49. C'est une recette _____. (italien)
50. Nous avons _____ abandonner le travail. (devoir)

A-level grammar exercises (9)

1. Aurélie est très _____ d'être venue. (heureux)
2. Marie est _____ en 1993. (naître)
3. Les deux garçons sont très _____. (généreux)
4. Si elle gagnait 5000 euros, elle _____ une voiture. (acheter)
5. Nous _____ la télé depuis 10 minutes. (regarder)
6. Annabelle est une _____ amie. (vieux)
7. Elle est _____ à la fête toute seule. (venir)
8. S'il fait beau, elle _____ au Bois de Boulogne. (aller)
9. Bien qu'elle _____ dix ans, elle parle bien deux langues. (avoir)
10. Ils ont acheté une voiture _____. (neuf)
11. Les criminels ont été _____ hier soir. (interpeller)
12. C'est la nouvelle jupe que j'ai _____. (acheter)
13. Ces questions ne sont pas très _____. (intéressant)
14. Marie Curie est _____ suite à un cancer. (mourir)
15. Quand nous aurons 22 ans, nous _____ à travailler. (commencer)
16. Sais-tu _____ seront les derniers résultats? (quel)
17. Amélie est _____ en faisant du cheval. (tomber)
18. Je commencerai mon _____ emploi lundi. (nouveau)
19. Il l'a fait sans vraiment _____. (réfléchir)
20. Après être _____, ils sont montés en voiture. (sortir)
21. Si je _____ faire des progrès, je réviserais davantage. (vouloir)
22. Il faut que vous _____ avant dix heures. (arriver)
23. Les petites filles sont _____. (mignon)
24. Les téléphones portables _____ moins chers. (devenir)
25. Nous avons _____ longtemps en Norvège. (vivre)
26. Tu _____ bien la situation. (comprendre)
27. S'il _____ la conséquence, il ne l'aurait pas fait. (savoir)
28. Catherine, es-tu _____ à minuit? (sortir)
29. Les tables ont été vite _____. (débarrasser)
30. Ces beaux tableaux sont très _____. (ancien)
31. Je veux que tu _____ des progrès. (faire)
32. Quelle jupe est-ce que tu as _____ ? (choisir)
33. C'est un beau pantalon _____. (neuf)
34. Il a de beaux yeux _____. (marron)
35. Après avoir _____, il a réfléchi un instant. (parler)
36. Il a _____ la fenêtre très doucement. (ouvrir)
37. Quand j'étais tout petit je _____ des bandes dessinées. (lire)
38. Il nous _____ le repas. (servir)
39. Elle a écouté son CD en _____ une lettre. (écrire)
40. L'année _____ j'irai à Toulouse en vacances. (prochain)
41. D'habitude ils _____ au collège en bus. (arriver)
42. Les garçons se sont _____ à sept heures. (réveiller)
43. Je ne _____ pas la viande si j'étais végétarien. (consommer)
44. Ils _____ à York depuis cinq ans. (vivre)
45. Il s'est _____ dans le magasin. (plaindre)
46. Nous _____ bien Londres. (connaître)
47. Je viens de _____ que tu portes ta nouvelle jupe. (voir)
48. En ce moment ils _____ finir vite. (vouloir)
49. Ce sont de très _____ idées que tu as proposées. (bon)
50. Il faut qu'ils _____ tout pour réussir. (faire)

A-level grammar exercises (10)

1. Hier je vous _____ un joli cadeau. (offrir)
2. Mon _____ ami Jules vient d'arriver. (vieux)
3. Nous avons _____ les paquets de bonbons. (ouvrir)
4. Après être _____ ils ont mangé tout de suite. (arriver)
5. Il faut que tu _____ sage ce matin. (être)
6. Il a complété son travail sans _____ un mot. (dire)
7. Ce sont des filles très _____. (gentil)
8. Ces nouveaux problèmes sont _____. (mondial)
9. Elle _____ d'arriver à la fête. (venir)
10. Il nous a _____ un bon repas. (servir)
11. Elle a _____ un joli tableau. (peindre)
12. Ces fleurs bleues sont _____. (joli)
13. Il a _____ énormément de problèmes. (avoir)
14. Nous avons _____ les nouvelles équations. (apprendre)
15. Il est important que tu _____ la raison. (savoir)
16. Ces problèmes sont _____ .(crucial)
17. _____ la porte, s'il te plaît. (ouvrir)
18. Greta et Anne sont _____ en ville. (aller)
19. Elles y ont _____ des courses. (faire)
20. Elles se _____ tout le temps. (plaindre)
21. Demain elle _____ un paquet à son frère. (envoyer)
22. Les nouvelles voitures sont _____. (bleu)
23. Il nous a _____ un nouveau livre. (donner)
24. La femme que j'ai _____ était une voisine. (voir)
25. Je ne pense pas que tu _____ raison. (avoir)
26. S'il faisait beau, je _____ à la campagne. (sortir)
27. Quand il _____ plus âgé, il partira à l'étranger. (être)
28. Tu as vu ces _____ trousses vertes ? (nouveau)
29. Quel _____ avion ! (beau)
30. Il faut que tu _____ à la banque. (aller)
31. Je n'ai pas _____ la réponse. (savoir)
32. C'est une question que j'ai souvent _____. (poser)
33. Après avoir _____ les devoirs, elle est sortie. (finir)
34. Il s'est fait mal en _____ du cheval. (tomber)
35. Elle s'est _____ dans la salle de bains. (coiffer)
36. Nous _____ en France depuis cinq ans. (vivre)
37. Elle était _____ de pouvoir venir. (heureux)
38. L'année _____ j'ai passé des vacances en Suisse. (dernier)
39. Ça fait trois ans que je _____. (fumer)
40. J'adore ces _____ fleurs.(joli)
41. Les deux hommes ont été _____ hier soir. (trouver)
42. Si nous _____ les garçons, nous leur parlerions. (connaître)
43. Est-ce qu'elles _____ venir demain? (pouvoir)
44. Il _____ quand il pourra. (venir)
45. Après être _____ elles sont allées au lit. (rentrer)
46. Ce sont des solutions. (génial)
47. Lorsque j'étais jeune je _____ beaucoup de bonbons. (manger)
48. Demain nous _____ à huit heures. (commencer)
49. Nous _____ partir dans trois heures. (préférer)
50. Tous les trous ont été _____. (remplir)

A-level grammar exercises (11)

1. C’est la femme la plus intelligente que je _____. (connaître)
2. J’ai rencontré une _____ amie l’autre jour. (vieux)
3. C’est la pire musique que j’aie jamais _____. (entendre)
4. Cela fait cinq ans que je _____ de la clarinette. (jouer)
5. Qui _____ la bonne réponse. (savoir)
6. Ma mère _____ aller en ville aujourd’hui. (espérer)
7. Passe-moi le pain, je _____ de faim! (mourir)
8. Qu’est-ce que vous _____ en ce moment? (faire)
9. Les deux filles sont _____ malades. (tomber)
10. Bien qu’il _____ soixante ans, il est actif. (avoir)
11. Il _____ la radio quand son frère est entré. (écouter)
12. Si j’étais riche j’ _____ en Inde. (aller)
13. Quand nous _____ en France, nous travaillerons dur. (vivre)
14. Pendant cinq ans il a _____ au Portugal. (vivre)
15. C’est le _____ ami de Jean. (nouveau)
16. Qu’est-ce que tu as _____ faire. (vouloir)
17. Il faut que nous _____ pour le Canada. (partir)
18. Ces filles sont trop _____. (paresseux)
19. C’est une réponse très _____. (complet)
20. Nous _____ le portugais depuis six ans. (apprendre)
21. L’an _____ j’aurai dix-sept ans. (prochain)
22. Je ne vous _____ pas. (comprendre)
23. L’année _____ je suis parti à l’étranger. (dernier)
24. Les filles ont _____ la matinée chez elles. (passer)
25. Quand j’étais jeune je _____ trop de cigarettes. (fumer)
26. _____ sont les nouvelles de ta soeur? (quel)
27. Qu’en _____-vous? (dire)
28. Quel désastre ! Je _____ le pire ! (craindre)
29. Je suis tombé en _____ du ski. (faire)
30. Il est parti sans _____ un mot. (dire)
31. Il a demandé mon avis avant d’ _____ la lettre. (écrire)
32. Mes parents _____ souvent en ville. (aller)
33. Ces tartes aux pommes sont vraiment _____. (délicieux)
34. Nous _____ toujours le vélo pour aller en ville. (prendre)
35. A quelle heure est-ce que la fête _____ demain? (commencer)
36. Elle _____ son petit déjeuner quand on a sonné. (terminer)
37. Hier nous _____ notre travail avant d’aller au lit. (finir)
38. J’ai _____ le garage derrière la maison. (peindre)
39. Deux personnes ont été_____ dans l’accident. (tuer)
40. Les livres que j’ai _____ étaient chers. (lire)
41. Il faut que je _____ le linge. (faire)
42. Quel _____ homme! (beau)
43. Ils _____ le ménage tous les jours. (faire)
44. Elle _____ le problème si elle avait pu le faire. (résoudre)
45. Je veux que tu _____ chez le docteur. (aller)
46. Après avoir _____ au tennis, elle est rentrée. (jouer)
47. _____-tu qu’il soit capable de le faire? (croire)
48. Il s’est tordu la cheville en _____ au foot. (jouer)
49. J’ai entendu mes amis _____. (arriver)
50. Ils ne _____ pas souvent en cours. (venir)

A-level grammar exercises (12)

1. Anne et Nicole sont _____ amoureuses. (tomber)
2. Lorsqu'ils étaient jeunes ils ne _____ pas bien Londres. (connaître)
3. Ces petits pains sont _____. (délicieux)
4. Tu _____ que je peux venir ? (croire)
5. Si je _____, je pourrais aller en Turquie. (vouloir)
6. Avant de _____ son repas, il a pris un autre verre de vin. (terminer)
7. Nous _____ en France depuis cinq ans. (aller)
8. Il me _____ toujours un verre de whisky. (servir)
9. Hier soir j'ai _____ un cadeau à ma petite amie. (offrir)
10. Tom et Alexis sont _____ en ville prendre un verre. (descendre)
11. Ils ne sont pas vraiment _____. (normal)
12. C'est une chose très _____. (important)
13. Il est parti sans _____ un mot. (prononcer)
14. Il viendra au travail quand il _____. (pouvoir)
15. Nous _____ toujours à neuf heures. (commencer)
16. Hier la situation _____ difficile. (devenir)
17. Felicity n'est jamais _____. (jaloux)
18. Est-ce que tu _____ allemand ? (parler)
19. Il m'a demandé de _____ avec lui. (venir)
20. Il y a dix ans nous _____ toujours en France. (vivre)
21. Plus jeunes elles ne _____ jamais danser. (vouloir)
22. Après être _____, elles ont pris une tasse de thé. (arriver)
23. Ce sont les CDs que j'ai _____. (acheter)
24. Il faut que tu _____ à la banque demain. (aller)
25. Eric et Edouard sont _____ à la Tour Eiffel. (monter)
26. Amélie et Catherine sont _____. (content)
27. Je ne _____ pas la question. (comprendre)
28. Ils se sont _____ auprès de la police. (plaindre)
29. Je ne veux pas qu'il _____. (partir)
30. C'est la _____ chose qu'il a demandée. (premier)
31. Les garçons sont très _____. (gentil)
32. Je n'ai pas _____ la réponse. (savoir)
33. J'ai refusé de _____ la vaisselle. (faire)
34. Après avoir _____ le bus, il a hélé un taxi. (prendre)
35. Cette femme est toujours _____. (généreux)
36. Bien qu'il _____ nul en langues, il aime les cours. (être)
37. Tu sais ce qu'ils _____ comme boulot ? (faire)
38. Si j'avais le choix, je _____ en Australie. (vivre)
39. Quand il _____ 20 ans, il partira pour l'Afrique. (avoir)
40. Qu'est-ce que tu _____ l'année prochaine ? (faire)
41. Il _____ un roman quand son copain est entré. (lire)
42. Qui sait la réponse ? David et Paul la _____ . (savoir)
43. Ces souris sont _____. (mignon)
44. Nous _____ de finir les devoirs. (venir)
45. Nous avons _____ beaucoup de chance. (avoir)
46. _____-moi de vos affaires. (parler)
47. Il l'a fait sans vraiment _____ pourquoi. (comprendre)
48. Bonjour ! Tu _____ bien ? (aller)
49. S'il fait beau demain, nous _____ à la plage. (aller)
50. Nous _____ ici depuis cinq ans. (manger)

A-level grammar exercises (13)

1. Nicole et Christine sont _____ dans la cave. (descendre)
2. Elle ne _____ pas bien Toulouse. (connaître)
3. Ces garçons sont _____. (généreux)
4. Tu _____ que je peux partir ? (penser)
5. Si je _____, je pourrai aller en Inde. (vouloir)
6. Avant de _____, il a pris un autre verre de vin. (commander)
7. Nous _____ à Londres depuis cinq ans. (venir)
8. Il m' _____ toujours un verre de whisky. (offrir)
9. Hier soir j'ai _____ une autre bouteille de vodka. (ouvrir)
10. Tom et Alexis sont _____ à cheval. (monter)
11. Ils ne sont pas vraiment _____. (nouveau)
12. C'est une situation très _____. (délicat)
13. Elle est partie sans m'_____ pourquoi. (expliquer)
14. Il ira au travail quand il _____. (vouloir)
15. Aujourd'hui nous _____ un campagne publicitaire. (lancer)
16. La situation est _____ difficile. (devenir)
17. Anne n'est jamais _____. (amoureux)
18. Est-ce que tu _____ en Espagne l'an dernier ? (aller)
19. Il m'a conseillé de _____ attention. (faire)
20. Il y a dix ans nous _____ toujours au rugby. (jouer)
21. Ils ne _____ jamais aller au café. (vouloir)
22. Après être _____ dans le pub, ils ont pris une bière. (entrer)
23. C'est la voiture que j'ai _____. (vendre)
24. Il faut que tu _____ plus gentil. (être)
25. Jean et Edouard sont _____ à la Tour Eiffel. (retourner)
26. Amélie et Catherine sont _____. (tardif)
27. Il ne _____ pas la question. (comprendre)
28. Ils ont _____ les murs du salon. (peindre)
29. Je ne souhaite pas qu'il _____. (sortir)
30. C'est la _____ chose qu'il a demandée. (dernier)
31. Les filles sont très _____. (jaloux)
32. Je n'ai pas _____ en Turquie. (vivre)
33. J'ai refusé de _____ au directeur. (parler)
34. Après être _____ du train, elles ont hélé un taxi. (descendre)
35. Cette dame est toujours _____. (heureux)
36. Bien qu'il _____ fort en maths, il déteste les cours. (être)
37. Tu sais ce qu'ils _____ faire ce soir ? (aller)
38. Si j'avais le choix, je _____ pour l'Australie. (partir)
39. Il s'est cassé le bras en _____ au football. (jouer)
40. Où est-ce que tu _____ l'année prochaine ? (aller)
41. Il _____ un thé quand son copain est entré. (prendre)
42. David et Paul _____ la réponse. (ignorer)
43. Tu _____ qu'il m'aime ? (croire)
44. Ils _____ de finir les devoirs. (venir)
45. Nous avons _____ aller au bal. (vouloir)
46. _____-moi de tes affaires. (parler)
47. Il l'a fait sans vraiment y _____. (croire)
48. En _____ du pain, il s'est cassé une dent. (manger)
49. S'il pleut demain, nous _____ à la maison. (rester)
50. Nous _____ toujours du steak. (choisir)

A-level grammar exercises (14)

1. Anne et Nicole sont _____ à la Tour Eiffel. (monter)
2. Ils ne _____ pas la réponse en ce moment. (savoir)
3. Ces filles sont _____. (heureux)
4. Tu _____ que je suis bête ? (croire)
5. Si je _____, j'irais au Japon. (pouvoir)
6. Avant de _____, il a laissé un pourboire. (partir)
7. On _____ à Toulouse depuis cinq ans. (vivre)
8. Elle _____ la porte du garage il y a deux minutes. (ouvrir)
9. Hier soir j'ai _____ un cadeau à ma mère. (offrir)
10. Tom et Alexis sont _____ en ville. (descendre)
11. Elles ne sont pas vraiment _____. (neuf)
12. C'est une question très _____. (épineux)
13. Il est sorti sans me _____ au revoir. (dire)
14. Elle ira à la fête quand elle _____. (vouloir)
15. Nous _____ à comprendre la situation. (commencer)
16. Le problème est _____ impossible à résoudre. (devenir)
17. Marie-Hélène n'est pas du tout _____. (ambitieux)
18. Est-ce que vous _____ en Italie quand vous étiez jeune? (aller)
19. Il m'a demandé de lui _____ ma voiture. (prêter)
20. Il y a cinq ans nous _____ la mode gothique. (aimer)
21. Elles ne _____ jamais aller au pub. (vouloir)
22. Après être _____ du café, ils sont allés à la gare. (sortir)
23. C'est la première montagne que j'ai _____. (voir)
24. Il faut que tu _____ tes devoirs. (faire)
25. Max et Edouard sont _____ le même jour. (naître)
26. Les deux soeurs sont _____ chez elles. (rester)
27. Nous ne _____ pas les conséquences de nos actes. (comprendre)
28. Je _____ mon père. (plaindre)
29. Je ne veux pas qu'il _____ à la fête. (aller)
30. C'est la _____ question qu'il a posée. (premier)
31. Mes amies sont très _____. (doux)
32. Il n'a jamais _____ en Espagne. (vivre)
33. J'ai accepté de _____ auprès d'un avocat. (se renseigner)
34. Après être _____ du bus, elles ont vu leur mère. (descendre)
35. Cette fille est toujours _____. (pensif)
36. Bien qu'il _____ obstiné, il a accepté ma décision. (être)
37. Tu sais ce qu'elles _____ dire au directeur ? (aller)
38. Si c'était possible, je _____ toutes mes factures. (payer)
39. Il s'est foulé la cheville en _____ du ski . (faire)
40. Qu'est-ce que tu _____ l'année prochaine ? (faire)
41. Il _____ le mur quand son copain est entré. (peindre)
42. David et Paul me _____ bien. (connaître)
43. Tu _____ qu'il va venir ce soir ? (penser)
44. Vous _____ de réaliser la vérité. (venir)
45. Elle a _____ d'aller au bal. (refuser)
46. Allez, les gars, _____-moi la vérité ! (dire)
47. Il l'a fait sans y _____. (réfléchir)
48. En _____ ses copies, elle a écouté de la musique. (corriger)
49. S'il neige, nous _____ du ski. (faire)
50. Ils _____ toujours du saumon. (choisir)

Answer key

1. 1. que 2. tout 3. parlerais 4. connaisse 5. de 6. as 7. aient 8. être 9. Téléphoner 10. avait 11. serai 12. dont 13. dire 14. faisant 15. vus 16.depuis; 17 Il y a 18.arrivions 19. as 20. celui 21. que 22. à 23. vienne 24. connaisse 25. pendant 26. dont 27. Finir 28. lavé 29. leur 30. Aurait 31. arrivera 32. sois 33. tout; 34. eu; 35. soyons 36. de 37. Pour 38. de 39. sois 40. de.

2. 1.calculé 2.volées 3. puisses 4. arrivera 5. Saches 6. il 7. c' 8. avant 9. soient 10. venais 11. serai 12. jouait 13. se promenait 14. sache 15. connais 16. était venue 17. sont 18.pendant 19. pour 20. il y a 21. soit 22. quel 23. dont 24. dont 25. qui 26. viennes 27. le 28. avait su 29. aucune 30. personne 31. seront 32. Partir 33. Venons 34. suis venu 35. lequel 36.celui 37. allions 38. éteint 39. peu 40. toutes

3. 1. venait 2. sais 3. achetés 4. arrivions 5. tous 6. de 7. finir 8. dont 9. soit 10. aura fini 11. réussis 12. connaisse 13. pendant 14. aurait pu 15. ais vu 16. il y a 17. fasses 18. à cause de 19. de 20. ce que 21. mauvaise 22. En 23. de plus en plus 24. mieux 25. laquelle 26. leurs 27. avions trouvé 28. Viendra 29. que 30. a été interpellé 31. depuis 32. que 33. achetées 34. ce qu' 35. dont 36. Fasse 37. personne 38. nouvel 39. aies 40. importants

4. 1. Il..de.. 2. ce que 3. penser 4. Sont 5. Dont 6. Partir 7. s'être 8. il y a 9. vient 10. décidait 11. Ø 12. jouant 13. à 14. saches 15. ce dont 16. ce qui 17. aurait chanté 18. ne sois pas 19.s'est lavé 20. de 21. celui 22. ce 23.aucune 24. jamais rien 25.aura fini 26 fait 27. fume 28.pendant 29. veuilles 30. puisses 31. fasse 32. de 33. à dire 34. pour 35. de 36. dire 37. parler 38.regardais 39. Serai 40. aucune

5. 1. Heureuse 2. Vieil 3. Passées 4. Fume 5. Remplir 6. Décidé 7. Meurs 8. Dites 9. Arrivées 10. soit 11. Faisait 12. Ferais 13. Irons 14. Avons vécu 15. Nouvel 16. Belles 17. Allions 18. paresseux 19. Comprennent 20. Apprenons 21. Aurai 22. Pourrais 23. Dernière 24. Passé 25. mangeais 26. Quels 27. Faites 28. Sont devenus (deviennent) 29. Sorties 30. Dire 31. Terminer 32. vont 33. Vieilles 34. Prenons 35. Commences 36. Finissait 37. Rangeons 38. Eteint 39. Mortes 40. vus 41. Chère 42. Bel 43.Nettoient 44. Préfère 45. Aille 46. Joué 47. Dire 48. Partir 50. Nombreuses

6. 1.fière 2.morte 3.généreuses 4.achèterait 5.écoutons 6. vieil 7. devenue 8. ferai 9. ait 10. nouveaux 11. Arrêtés 12. Achetée 13. Importantes 14. Née 15. Aurons 16.quelles 17. tombée 18. Nouvel 19. Croire 20. Partis 21. Voulais 22. Arrivions 23. Mignonnes 24.deviennent (deviendront) 25. vécu 26. Comprenez 27. avait su 28.rentrée 29. Rangées 30. Anciennes 31.fasses 32.choisie 33. neuve 34. Marron 35. Parler 36. Ouvert 37.lisais 38.parler 39.écrivant 40. Prochaine 41.viennent 42. Levés 43. Mangerais 44. Vivons 45. Plaint 46. connaissent (connaissaient) 47. réaliser 48. Doivent 49. Bonnes 50. Fassions

7. 1. revenir 2. Pris 3. Regarder 4. Couru 5. Normaux 6. Jolie 7. Noirs 8. Avait 9. Dire 10. Faisant 11. restés 12. Est 13. Vécu `14. Fumer 15. Coiffées 16. Savais 17. Paresseuses 18. Sais 19. Aies 20. préférez 21. Vues 22. Trouvées 23. Vivais 24. Faisait 25. Favorites 26. Couvert 27. Buvais 28. délicieuse 29. Blanches 30. Travailleuses 31. Compris 32. Lu 33. Sortis 34. Connais 35. Viens 36. parler 37. Brun foncé 38. dangereuse 39. Dernières 40. Naturelle 41. Produisent 42. Réduisant 43. détruire 44. Mignons 45. Travailler 46. Espérons 47. Parle 48. Première 49. Puisses 50. Humaines

8. 1. dû 2. Pu 3. Regarder 4. Arrivés 5. Normaux 6. Jolies 7. Nouveaux 8. Vivrai 9. Dire 10. Faisant 11. restées 12. Va 13. Vécu 14. Chanter 15. Vieil 16. Savait 17. Généreuses 18. Crois 19. Fasses 20. remarquées 21. Arrêtés 22. Avions 23. Manger 24. Favorites 25. Ouvert 26. prenais 27. Délicieuses 28. Mentales 29. Travailleuses 30. Appris 31. Vu 32. Paris 33. Rentrés 34. Vient 35. soit 36. Gentils 37. Sérieuse 38. Derniers 39. Peuvent 40. Nuisent 41. Finissant 42. Sait 43. naturelle 44. Fumer 45. Surprise 46. Attends 47. Dernière 48. Puisses 49. Italienne 50. dû

9. 1. heureuse 2. Née 3. Généreux 4. Achèterait 5. Regardons 6. Vieille 7. Venue 8. Ira 9. Ait
10. neuve 11. Interpellés 12. Achetée 13. Intéressantes 14. Morte 15. Commencerons 16. Quels
17. tombée 18. Nouvel 19. Réfléchir 20. Sortis 21. Voulais 22. Arriviez 23. Mignonnes
24. deviennent/sont devenus 25. Vécu 26. Comprends 27. Avait su 28. Sortie 29. Débarrassées
30. anciens 31. Fasses 32. Choisie 33. Neuf 34. Marron 35. Parlé 36. Ouvert 37. Lisais
38. a servi 39. Ecrivant 40. Prochaine 41. Arrivent 42. Réveillés 43. Consommerais 44. Vivent
45. plaint 46. Connaissons 47. Voir 48. Veulent 49. Bonnes 50. Fassent

10. 1. ai offert 2. Vieil 3. Ouvert 4. Arrivés 5. Sois 6. Dire 7. Gentilles 8. Mondiaux 9. Vient 10. Servi
11. peint 12. Jolies 13. Eu 14. Appris 15. Saches 16. Cruciaux 17. Ouvre 18. Allées 19. Fait
20. plaignent 21. Enverra 22. Bleues 23. Donné 24. Vue 25. Aies 26. Sortirait 27. Sera
28. nouvelles 29. Bel 30. Ailles 31. Su 32. Posée 33. Fini 34. Tombant 35. Coiffée 36. Vivons
37. heureuse 38. Dernière 39. Fume 40. Jolies 41. Trouvés 42. Connaissions 43. Pourront
44. viendra 45. Rentrées 46. Géniales 47. Mangeais 48. Commencerons 49. Préférons 50. Remplis

11. 1. connaisse 2. Vieille 3. Entendue 4. Joue 5. Sait 6. Espère 7. Meurs 8. Faites 9. Tombées
10. ait 11. Ecoutait 12. Irais 13. Vivrons 14. Vécu 15. Nouvel 16. Voulu 17. Partions 18. Paresseuses
19. complète 20. Apprenons 21. Prochain 22. Comprends 23. Dernière 24. Passé 25. Fumais
26. quelles 27. Dites 28. Crains 29. Faisant 30. Dire 31. Ecrire 32. Vont 33. Délicieuses 34. Prenons
35. commencera 36. Terminait 37. Avons fini 38. Peint 39. Tuées 40. Lus 41. Fasse 42. Bel
43. font 44. Aurait résolu 45. Ailles 46. Joué 47. Crois 48. Jouant 49. Arriver 50. Viennent

12. 1. tombées 2. Connaissaient 3. Délicieux 4. Crois 5. Voulais 6. Terminer 7. Allons 8. Sert 9. Offert
10. descendus 11. Normaux 12. Importante 13. Prononcer 14. Pourra 15. Commençons 16. Est
devenue 17. Jalouse 18. Parles 19. Venir 20. Vivions 21. Voulaient 22. Arrivées 23.achetés
24. ailles 25. Montés 26. Contentes 27. Comprends 28. Plaints 29. Parte 30. Première 31. Gentils
32. su 33. Faire 34. Pris 35. Généreuse 36. Soit 37. Font 38. Dernière 39. Fume 40. Feras 41. lisait
42. Savent 43. Mignonnes 44. Venons 45.eu 46. Parlez 47.comprendre 48. Vas 49.irons 50. Mangeons

13. 1. descendues 2. Connaît 3.Généreux 4.Penses 5. Veux 6. Commander 7. Venons 8. Offre 9. Ouvert
10. montés 11. Nouveaux 12. Délicate 13. Expliquer 14. Voudra 15. Lançons 6.Devenue 17.amoureuse
18. es allé 19. Faire 20. Jouions 21. Veulent 22. Entrés 23. Vendue 24. Sois 25. Retournés 26.tardives
27.comprend 28. Peint 29. Sorte 30. Dernière 31. Jalouses 32. Vécu 33. Parler 34. Descendues
35. heureuse 36. Soit 37. Vont 38. Partirais 39. Jouant 40. Iras 41. Prenait 42. Ignorent 43. Crois
44. viennent 45. Voulu 46. Parle 47. Croire 48. Mangeant 49. Resterons 50. Choisissons

14. 1. montées 2. Savent 3. Heureuses 4. Crois 5. Pouvais 6. Partir 7. Vit 8. A ouvert 9. Offert
10.descendus 11. Neuves 12. Epineuse 13. Dire 14. Voudra 15. Commençons 16. Devenu
17. ambitieuse 18. Alliez 19. Prêter 20. Aimions 21. Veulent 22. Sortis 23. Vue 24. Fasses 25.nés
26. restées 27. Comprenons 28.plains 29. Aille 30.première 31. douces 32. Vécu 33. Me renseigner
34.descendus 35.pensive 36.soit 37.vont 38.paierais 39. Faisant 40. Feras 41.Peignait 42. Connaissent
43. penses 44. Venez 45. Refusé 46. Dites 47.réfléchir 48.corrigeant 49. Ferons 50. choisissent

SIXTH FORM PREPARATION - GEOLOGY

SUMMER 2025

Key Skills to develop and refine	• use theories, models and ideas to develop geological explanations use knowledge and understanding to pose scientific questions, define geological problems, present scientific arguments and geological ideas • use appropriate methodology, including information and communication technology (ICT), to answer geological questions and solve geological problems • carry out fieldwork, experimental and investigative activities in a range of contexts to include the collection, compilation and analysis of Earth science • data from the field and subsurface, and appropriate risk management manipulate and extrapolate these sometimes incomplete data sets in both two and three-dimensions • evaluate methodology, evidence and partial data sets, and resolve conflicting evidence • communicate information and ideas in appropriate ways (including geological maps and cross-sections) using appropriate terminology, SI units and their prefixes and the ability to express in standard form • know that scientific knowledge and understanding develops over time, consider applications and implications of science in geology, and evaluate their associated benefits and risks, and • evaluate the role of geology within the scientific community in validating new knowledge and ensuring integrity.
1. Visit an area of geological interest near to the school	In the Hadleigh Country Park, there is evidence of a 50 million year old delta in an old very fine-grained sandstone quarry face that was used brickmaking. It is easily accessible with an information board explaining the geological setting. The fine yellow sandstone was part of a river delta at the edge of shallow sea when Essex had a tropical climate. https://hadleighcountrypark.co.uk/learn-more-about-hadleigh-country-park/the-geology-of-hadleigh-country-park/#:~:text=Situated%20only%20a%20short%20distance,Sand%20on%20the%20highest%20ground.
2. Listen to some podcasts	**In our time podcasts with Melvyn Bragg** has many geological podcasts which will certainly help your understanding of the course: Geological evolution of Britain - https://www.bbc.co.uk/programmes/b00n8t48 The KT boundary extinction - https://www.bbc.co.uk/programmes/p003k9d0 Seismology https://www.bbc.co.uk/programmes/m00154gh Cephalopods https://www.bbc.co.uk/programmes/b09pjgrn The Palaeocene-Eocene Thermal Maximum https://www.bbc.co.uk/programmes/b08hpmmf The Earth's core https://www.bbc.co.uk/programmes/b05s3gyv Catastrophism https://www.bbc.co.uk/programmes/b03s9tlz Ediacara biota https://www.bbc.co.uk/programmes/b00lh2s3 Asteroids https://www.bbc.co.uk/programmes/p003k9kh Ageing of the Earth https://www.bbc.co.uk/programmes/p005493g Volcanology https://www.bbc.co.uk/programmes/p005490h Fossils https://www.bbc.co.uk/programmes/p00547d3 The Earth's origins https://www.bbc.co.uk/programmes/p00547hl
3. Read a book	A Brief History of Earth: Four Billion Years in Eight Chapters by Andrew H. Knoll who delivers a rigorous yet accessible biography of the Earth. Another is Notes from Deep Time: A Journey Through Our Past and Future Worlds.

	Helen Gordon looks at the past and future, and how geologists forensically analyse evidence.
4. Watch a film / documentary	**Dr Iain Stewart** has produced some excellent videos on geology. His **Men of Rock series** (1of 3) is relevant in terms of Deep Time and the Work of James Hutton https://www.youtube.com/watch?v=FYfuI2uZLmg A five-part documentary series, presented by Tony Robinson, investigates the history of natural disasters, from the planet's beginnings to the present, putting a new perspective on our existence and suggesting that we are the product of catastrophe. The most useful are **Episode 3 - Planet of Fire on the Permo-Triassic Extinction** where 95% of life on Earth was lost. https://www.youtube.com/watch?v=00ILddHJlKw&t=179s Episode 4 – **Asteroid Impact** interesting account of the end of the dinosaurs and rise of the mammals. https://www.youtube.com/watch?v=hqt4US72yec **David Attenborough and the Tree of Life – evolution and palaeontology** https://www.dailymotion.com/video/xsxubk **Dr Alice Roberts and Last of the Giants. Ice age palaeontology** http://www.documentaryarea.tv/player.php?title=Last%20of%20the%20Giants **Dr Iain Stewart – 10 things you didn't know about tsunamis**. Iain Stewart journeys across the oceans to explore the most powerful giant waves in history, with ten remarkable stories about tsunamis. https://www.dailymotion.com/video/x3bcm0g **Volcano with Dara O'Briain (two episodes on Channel5 catch-up)** Dara O Briain explores the immense power of Italy's most active volcanoes – Stromboli and Etna as well as spending time in Naples and investigating Mount Vesuvius, Campi Flegrei, and the island of Ischia. https://www.channel5.com/show/volcano-with-dara-o-briain
Compulsory task	You need to complete 2 of the 7 options listed above and write a 400-word commentary using the following questions as prompts. Your work will be submitted via Google Classroom, and you should expect to discuss your preparation during an early Geology lesson. 1. What led you to choose the task you did? Consider the factors that shaped your decision. 2. What did you enjoy about it? 3. What would you specifically recommend to others? 4. What did you learn about the topic? 5. What questions were left unanswered? Was there something you would like to explore further?

OPPORTUNITIES FOR GEOGRAPHICAL ENRICHMENT FOR PROSPECTIVE YEAR 12, JUNE 2025

Key Skills to develop and refine	There are many aspects of knowledge, understanding and skills that are required to be an excellent geographer at Sixth Form level and these are often honed outside of the classroom. For example, geographers need to be able to use evidence and examples to support the conclusions that they come to about geographical issues in exam answers. In addition, effective geographers should develop a 'sense of place' so that they can explain what makes any location unique or special. Good geographers also continually look at the world around them and apply what they see to the classroom setting. For example, as you go about exercising and walking you may see urban land use change, quality of life inequalities in urban areas and the interaction between people and their physical environment. You might also see the concept of microclimate in action: why is it raining in Shoebury but dry in Great Wakering? The tasks below are designed to encourage you to examine the wider world around you, to enjoy seeing geography at first hand and to help you develop geographical research skills whilst you are not in school to help prepare for studying Geography in the Sixth Form. CHOOSE AT LEAST ONE OPTION to complete before the start of term; doing these options will broaden your experience and knowledge as geographers. **The suggestions are particularly relevant to any of you intending to study geography at university – think ahead to your UCAS applications.**
Option 1 Books that you could read:	*Landscapes and Geomorphology: A Very Short Introduction* by Andrew Goudie; write 400+ words to explain the science behind landscape formation; *or* *Geography: Ideas in Profile* by Danny Dorling and Carl Lee; write 400+ words to explain the importance of studying geography in our modern world *or* *The Bottom Billion* by Paul Collier; write 400+ words to explain why the world's poorest countries are failing, *or* *Dead Aid* by Dambisa Moyo; write 400+ words to explain the argument that aid is holding back Africa's development *or* *Prisoners of Geography* by Tim Marshall: write 400+ words to explain how geopolitics is more important than ever.

Option 2 Museums that you could visit:	**The Museum of London Docklands (London, E14 4AL)** is a museum of the history and geographical development of London that includes exhibitions on the redevelopment of the Docklands area. [Whilst there, you could visit the **Crossrail Place Roof Garden E14 5AB** and see a range of exotic plants from around the world] **The Natural History Museum (London, SW7 5BD)** houses a world-class collection of artefacts such as rare rocks and gems as well as permanent displays on tectonic processes, resource use and geomorphological processes.
Option 3 Researching contemporary debates:	How should extreme poverty be tackled: more aid or fairer trade? *or* Is it too late to tackle global warming? *or* How many people can the world support? *or* How can we reduce plastic pollution in the oceans? *or* Research the geopolitical tensions over the South China Sea between China and the countries of Asia Pacific.
Option 4 Visiting an area of physical geography interest:	Visit a coastal, riverine or estuarine location and identify the ways that people interact with the natural environment - present this visually as a video or an annotated photo montage display board; *or* Visit a city and identify how human activity has modified the physical environment and the processes taking place (e.g. the impact on run-off, wildlife diversity and climate etc) – present this using presentation software e.g. Prezi or PowerPoint. *or* Visit an area that has been previously glaciated (e.g. Snowdonia, the Lake District, the Peak District National Park) and record the glacial landform features that you see photographically using photo presentation software e.g. Photosnack.com.
Option 5 Studying your local geography:	By looking at your local home area, consider this statement: human geography is more influential in determining the character of a place than physical geography. How could you find evidence to support your opinion? What research or fieldwork techniques would be appropriate?
Option 6 Watching the world	By watching documentaries and videos on YouTube, enjoy the wonder of the natural world. From the Grand Canyon to Antarctica, to the depths of the oceans, to the peaks of mountains, and to the plants that somehow grow through the cracks of the pavement and on buildings, consider this statement: “physical geography is worthy of more study than human geography”. How could you find

	evidence to support your opinion? What research or fieldwork techniques would be appropriate?
	Considering options 2, 3, 5 and 6, you could write a 400+ word assessment considering: 1. What drew you to this option? 2. What did you enjoy about carrying out this option? 3. Geographically, what did you learn from this activity?
Option 7 Reflecting on your geographical learning	One of the most important skills we can develop to make progress is the skill of reflecting. It might seem like an obvious thing to do but we don't always take the time to actually reflect on what we have done to figure out how to improve in the future. For this option, you could reflect on your study of geography, the skills you have developed and things you could still work on. Answer the following questions honestly: 1. Overall, how much do you think you have achieved through your study of geography? 2. List three things you accomplished over your two years of studying the subject at GCSE. 3. Which skills have you developed throughout your study of the subject? 4. Which three things could you still make improvements on? 5. What have you enjoyed most and least about your study of the subject? 6. Is there anything you wish you had done throughout your studies to help you progress that you didn't do at the time? 7. List three ways your study of geography can continue to help you in the future even if you don't plan to carry on studying the subject at A Level.
Option 8 Learning to write a good essay at Sixth Form	Writing a good essay is absolutely key to getting good grades in many subjects at Sixth Form level. Throughout your time studying geography you have been told to develop points, use more evidence or examples and state an evidence-based opinion. The higher you go in education the more elaboration you need to include. Below are two links to essay writing techniques in geography. Read the advice and then write answer to one of the questions in Option 3 above with the aim of achieving 20/20 marks: https://www.transkills.admin.cam.ac.uk/resources/geography/essay-writing-human-geography https://www.transkills.admin.cam.ac.uk/resources-students/geography/essay-writing-physical-geography
Option 9	Access these sites and watch the geographical videos, study the infographics or read the articles to broaden your view of the world:

Different perspectives on the world	Open University site on geography and environmental science https://www.open.edu/openlearn/society-politics-law/geography/geography-matters-collection Visual Capitalist site drawing on surveys of people around the globe https://www.visualcapitalist.com/globalization-by-country/ Leonardo DiCaprio's film on climate change https://www.beforetheflood.com/

GERMAN

Key Skills to develop and refine	- Revision of grammar - The ability to read longer texts - Greater awareness of German culture and society - Exploring your own interests such as music, sport, history, politics through research - German for pleasure through music, film and television
1. Exploring the regions of Germany, Switzerland and Austria	Research on the internet the three German-speaking countries. Focus on: Regions (Bundesländer (Germany, Austria), Kantons (Switzerland)) Landscape Capital cities Industry Culture
2. **Literature**	Read some **literature**. Look up summaries of the following titles and choose one to read: *Die Verwandlung*, Franz Kafka *Vermessung der Welt,* Daniel Kehlmann Er ist weider da, Timor Vermes *Homo Faber*, Max Frisch *Der Richter und sein Henker*, Friedrich Dürrenmatt *Der Vorleser*, Bernhardt Schlink *Das dicke Kind*, Marie Louise Kaschnitz (Short stories can be found on the internet. An e-book may be free or cost less than the paper copy.)
3. **History**	If you enjoy **history**, there is much to explore. Here are some suggestions: *- Medieval Germany* *- The Protestant Reformation (Martin Luther)* *- Prussia, its kings and the Prussian wars* *- Napoleonic Wars* *- The Industrial Revolution* *- World War I and the treaty of Versailles* *- The Weimarer Republic* *- The Third Reich and World War II* *- Post War Germany* *- After the reunification up to present* *- Bismarck* *- Sophie Scholl and Die Weiße Rose*
4. **The Arts**	For artists, musicians and future architects, why not find out about the **cultural heritage** of Germany and the German-speaking world? Research famous artists, paintings, galleries, delve deeper into music, find the lyrics to the songs that appeal to you, or go on virtual tours of buildings you may discover. *Albrecht Dürer, Caspar David Friedrich, Ludwig Kirchner, Emil Nolde, Franz Marc,*

	Hundertwasser, Anselm Kiefer, and Bauhaus are just some names to start.
5. **Politics and current affairs**	If you are interested in **politics** and **current affairs**, find out about German political parties, Angela Merkel and her Immigration Policies, the rise of the AFD and the current government.
6. **Grammar**	Brush up on your **Grammar, especially verbs** and **tenses** using the grammar exercises in the induction booklet and www.german.net/verbs/conjugation/, www.conjuguemos.com or www.languagesonline.org.uk
7. **Film and TV**	Watch a **German film or series** on streaming platforms (e.g. Dark, Deutschland '83) and find out more about the cast, crew, locations, its popularity in the German-speaking world and, if it is based on real life events, how true to the facts the writers and producers decided to make it.
Compulsory task	1 Choose a city or region of a German-speaking country. This can take the form of a PowerPoint presentation, a Word document, a hand-written piece of work, or some other suitable format to present the research. The content should be **in German**, in your own words, and it should be **illustrated**. Aim for approx. 2 min in length. Put your own twist on the research to tell us something about yourself, e.g. German-speaking football teams, history, food, vocabulary, landmarks etc. 2 Complete the Grammar exercises in the Induction booklet.

Westcliff High School for Boys

Sixth Form German

Course Guide and Summer Activities

A-Level students starting in September 2025

Introduction

This booklet contains information about:

- the structure of the examination at A-level, in summary and in detail
- the work you will be doing
- suggested background knowledge with bibliography and other sources of information
- some further ideas for success
- some preliminary work you can do before September of the Lower Sixth

General outline of the course and the examination

1 This is a two-year course – there is no possibility of "dropping" the course at the end of the first year.

2 There is no public examination offering an AS qualification at the end of year 12.

3 At the end of year 12 there will be an internal exam which will have the format of A-level exam. This will help us to determine your UCAS predicted grade.

The Examination:

The A-level examination consists of 3 units each involving separate examinations. We will be following the specification of Eduqas (the English branch of WJEC).

There is *no* coursework element. All examinations are written on the day or are oral. However, the preparation for your oral examination is considered as a kind of coursework, so it is important to follow the rules and guidance.

The three modules are outlined below in brief.

- **Unit 1 – Oral Exam**
- **Unit 2 – Listening, Reading and Translation**
- **Unit 3 – Essay Writing on literature and film**

The A- level examination

Unit	Outline	Time	Weighting (%)
Unit 1	**Oral** **(April-May of Year 13 by visiting examiner: recorded examination)** • ***Task 1:*** *presentation of independent research topic relating to German speaking part of the world (2 min.) + discussion of presentation in depth with examiner (9 mins)* Notes permitted, but only in English and given to examiner at the end of discussion. Presentation must NOT relate to one of the themes covered by the course. • *Task 2: Examiner-led discussion of stimulus card about one of the topics covered over the two years (5 min prep. time + 5-6 min. discussion.* At the end of Task 1 you will be given a stimulus card. You will be given 5 min to think about the card and make notes if you wish in English or German on a separate piece of paper. Notes are given to the examiner at the end.	21-23 mins (incl. 5 min prep. time)	30
Unit 2	**Listening, Reading, Writing** *Listening questions* *Reading questions* *Translation German-English* ***and*** *English - German*	2½ hours	50
Unit 3	**Essay Writing** Two closed-book essays. Essay 1: based on a literary (written) work), 300 words. Essay 2: based on a film or another literary (written) work, 300 words Access to dictionaries or copies of the literary work is not permitted.	2 hours	20

	There will be a choice of two titles to choose from for each essay, students choose one of the two for each title.		

General Topic Areas

Like GCSE, the vocabulary you will be expected to know is taught and learned through the study of topic areas. These reflect higher levels of knowledge, language and thinking than those required at GCSE level. You will see that there are new skills included here such as the study of literature and historical topics.

Areas of interest	Social issues and trends	Political, intellectual and artistic culture
Themes Sub-themes	**Being a young person in German-speaking society** • Families and citizenship *Changing family structures; the changing nature of marriage and partnership; being a good citizen* • Youth trends and personal identity *Trends in fashion; how young people respond to modern technology; relationships with others and peer pressure* • Education and employment opportunities *The education system and student issues; work and travel opportunities and the changing work scene*	**Understanding the German-speaking world** • Regional culture and heritage in Germany, German-speaking countries and communities *Festivals; customs and traditions; historical sites; museums and galleries* • Media, art, film and music in the German-speaking world *Trends in media and art; film and music in the lives of young people*
Themes Sub-themes	**Diversity and difference** • Migration and integration *Reasons for migration; factors which make migration/integration easy/difficult* • Cultural identity and marginalisation *Reasons for marginalisation; ways to eliminate marginalisation* • Cultural enrichment and celebrating difference *The positive aspects of a diverse society* • Discrimination and diversity *Life for those who are discriminated against*	**The making of modern Germany: 1989 onwards** • Initial and subsequent process of reunification *Social and political challenges linked to reunification; the events of autumn 1989* • Social cohesion in present-day Germany *Social and community challenges facing contemporary Germany* • The economic impact of a united Germany *The economic advantages and challenges linked to reunification*

Literature and Film

Alongside the topics above, you will be studying a written work and a film (two written works can be studied instead of the film option). The current list of set text texts and films is available to view in the Specification on the AQA website, and we currently choose to study **Der *Besuch der Alten Dame*** *and* ***Good Bye Lenin***. We have made these choices as both are outstanding works which past A-level students have enjoyed.

Der Besuch der Alten Dame was written by Friedrich Dürrenmatt. The drama tells the story of billionaire Claire Zachanassian who returns to her rundown hometown with a macabre proposition: she will donate a million pounds to the town and its citizens in exchange for the murder of the man who got her pregnant and abandoned her years ago. Dürrenmatt's darkly comic satiric plays are credited with helping revitalize German theatre following World War II.

Goodbye Lenin, is a 2003 German tragicomedy film directed by Wolfgang Becker. The story follows a family in East Germany; the mother is dedicated to the socialist cause and falls into a coma in October 1989, shortly before the November revolution. By studying literature and film, you gain a deeper insight into the cultural heritage of Germany and the German speaking world, your language skills improve, and you add an important skill to your repertoire which is particularly valued by universities.

Further notes on the units of the course

In all units, it is essential that you have done wider background reading in addition to the topic material covered in class. This will give you great advantage in the examinations. Wider reading enables you to augment your vocabulary, and to develop a feel for German style.

A wide range of reading material is available to you and therefore there is no problem in locating suitable texts to cater for every interest. Quality websites on the internet, such as broadsheet newspapers like *Die Frankfurter Allgemeine and die Welt* are very useful.

It is strongly recommended that you visit one of the German-speaking countries during the course, at least once. This will undoubtedly enhance your competence and confidence in spoken and written German.

You will be working from October with the German Assistant on your topics and on conversation in general. These are essential periods that form a **compulsory and integral part of your course and timetable**. You must always attend (registers are completed by the assistant) and you must give your apologies in advance in the event of any planned absence for good reason.

Classwork during the year

Writing German

You should always aim for a high degree of accuracy and always learn vocabulary and grammar regularly and systematically, e.g. nouns *always* with genders.

Grammar

Whilst the above mentioned units reflect the vocabulary which you will have to know, the mastery of grammar is a skill which is can be used in all contexts. There is a full list of the grammatical structures which you need to master in the specification.

Oral and written work during the course

Oral work

During the course, you will have a weekly period with the languages assistant, starting in early October until the end of May. The course and the examination lays great emphasis on oral competence and fluency.

Oral work in German in class may take the form of

- giving short answers to questions on a text
- explaining terms
- discussions
- seminars
- questioning each other
- critique
- group work
- preparing and giving a point of view which may not be your own, etc.
- interpreting exercises
- presenting your chosen topic

Throughout the Lower Sixth and Upper Sixth you will work on your presentation and practising discussing your chosen topic as well practising discussion arising from 'stimulus cards'. You will receive to such cards, with a text and/or image. You should use this as a stimulus for *objective observations* on what is presented, *discussing your opinion or speculating* on what is before you, and *commenting on wider issues* associated with the material.
You should willingly try and communicate in German in general in order to practise as much as possible with a view to developing fluency.

Written work

Written work in German and English in class and at home may include

- short answers to questions on a text
- grammar and syntax exercises
- summaries
- tabulated information (advantages/disadvantages, arguments for and against, in bullet-point form), etc
- short accounts
- letters
- translation from German
- translation into German
- essays on topics

The material at this level will naturally be more complex and many more answers will involve *deriving* conclusions from what you hear or read, as opposed to simple factual recall.

AS and A-Level grammar

Nouns
Articles
Adjectives
Numerals
Adverbs
Quantifiers/intensifiers
Pronouns
Verbs
Prepositions (with accusative, dative, genitive, accusative and dative)
Conjunctions (coordinating and subordinating)
Negation
Questions
Commands
Word order
Other constructions
Discourse markers
Fillers
Tenses (Present, Perfect, Imperfect, Plu-Perfect, Future, Conditional, Subjunctive 1, Passive Voice)

How to approach written work

When you are given any piece of written work to do which involves writing prose in French, you should **before** you start:

1. review the topic just covered in your textbook
2. revise the essential vocabulary that has appeared as part of the topic
3. examine the title carefully and the requirements of the task
4. make a plan of points to cover, if none has been given as part of the task
5. re-read the relevant texts in the textbook or on hand-outs, noting useful phrases and expressions
6. consider implications, reasons, opinions, balancing views where appropriate
7. revise any points of grammar that you think may be necessary, and briefly review your last piece of written work to establish where you may have had difficulty in expressing yourself before, be it tenses, word order, etc.

During the writing you should

8. use drafting as a matter of course
9. try and use new vocabulary
10. generally think before you put pen to paper
11. check all work through before handing in by the deadline given – sometimes it is beneficial to revisit the work a day later and 'proof read'.

On **return** of the piece of work you should

12. carefully read all comments, not just the score
13. carefully examine all errors of content
14. carefully examine all errors of grammar and syntax
15. write a corrected version (sometimes corrections will be sufficient)
16. write at the end of the piece of work any targets for yourself which arise from the work, such as use of vocabulary, revision of or finding out about grammatical structures/rules of syntax
17. ask about any issue of which you are unsure
18. compare the comments and score with the previous piece of work to establish whether you are making progress
19. retain the piece of work in your exercise book for future reference.

How to approach literature and film

This will be a major step up for most pupils.
It is essential that new vocabulary is looked up and that the passages/scenes intended for reading/viewing and discussion in class are prepared in advance in order that you might get most out of this part of the course.

Short questions, then essays follow, beginning with summaries and then themes. You should make use of new vocabulary in essays and oral work.

It is essential to master the facts, consider the interpretation, engage in discussion and revisit parts covered so that the work is thoroughly known and so that you are fully prepared for examination questions. Refer to the above advice on essays.

Wider and background reading

- the library clearly contains books, reference and for loan
- The Sixth Form Study Centre contains computers

The internet represents an excellent resource for quick reading. Reading and listening to news items, as often as possible in German is invaluable, as you will absorb vocabulary and expressions useful for your development in the subject. Of greatest use are current affairs because you will already know something about the subject before you tackle a German text. This will help you with understanding. Also useful are articles which exist in both German and English. This will help you identify vocabulary and idioms very quickly.

The sites http://www.ard.de/home/ard/ARD_Startseite/21920/index.html and www. https://www.zdf.de/sendung-verpasst allows you to watch news and general tv shows and programmes from Germany on catch up. For a short overview of German news try https://www.tagesschau.de/100sekunden/

All German newspapers and TV channels have websites on which you can watch videos such as news summaries.

Candidates at A Level German are expected to have a working knowledge of German society and culture, and you must keep up to date.

The German Institute: https://www.goethe.de/ins/gb/en/sta/lon.html

The Goethe-Institut London is the cultural institute of the Federal Republic of Germany. It is well worth a visit. It offers a range of cultural events and information services.
The cultural programme includes film screenings, panel discussions and talks, as well as collaborations with partners on the local culture scene.

The library and information service offers media on German literature, arts, society and history. Electronic media can be accessed 24/7 via our e-Library. They also provide up-to-date information on culture, society and politics in Germany via social media.

The website also offers plenty of articles and material on the A level topics and the film and the book you are studying.

Dictionaries – paper and online

German-English/English-German paper copy

The *Collins-Robert* is the recommended dictionary.

Online German-English/English-German

www.wordreference.com - good, but *do* read the forums
www.lingue.de but make sure the examples you see are used on *German* websites.
http://www.reverso.net – useful for translating phrases

Web resources

The scale of web resources is rapidly becoming vast, but the following search engines may be of use:

1 www.germany-info.org (general information in English on Germany)
2 www.[any city].de (gives a variety of information, political, cultural, news, tourist, etc)
3 www.[any city].at (ditto)
4 www.[any city].ch (ditto)
5 www.ch.ch (general information about Switzerland)
6 www.schule.de
7 www.delernen.de site for foreigners learning German maintained by the Lutheran Church
8 www.wikipedia.de online encyclopaedia, German version (not simply a translation of the English)
www.bundesregierung.de (German political information)
9 www.ard.de television website, news items often condensed for easy consumption
10 www.zdf.de television website, news items often condensed for easy consumption

Newspapers and magazines

11 www.welt.de (daily newspaper)
12 www.zeit.de (weekly newspaper)
13 www.focus.de (weekly magazine)
14 www.spiegel.de (weekly magazine, linguistically demanding)
15 www.bild.de (widely-read tabloid newspaper)
16 www.presse.at (Austrian national daily)
17 www.nzz.ch (*Neue Zürcher Zeitung* online)
18 www.bernerzeitung.ch
19 www.facts.ch (an online news magazine from Switzerland: formerly a paper magazine, which ended in 2007)

Literature and literature-related books and websites

Major text for study in the Upper Sixth:

- Friedrich Dürrenmatt *Der Besuch der alten Dame*

Websites for major text:

www.duerrenmatt.com
www.cdn.ch (website of the *Centre Dürrenmatt* at Neuchâtel, providing biographical and other information on Dürrenmatt)
www.duerrenmatt.net (forum and discussion)

Film

The following films are of significance for the German A-level course:

Das Leben der Anderen (set in East Germany of the 1980s)
Goodbye Lenin (set in East Germany just as the Berlin Wall fell, 1989)
Sophie Scholl (set in Nazi Germany)
Das Weiße Band (set in Wilhelmine northern Germany before the First World War)

Work you can do during the summer holidays after GCSE

- Do lots of background and listening, reading, watching as outlined
- Read newspapers and magazines in German
- Listen to German radio
- Watch German TV
- Acquaint yourself with some general knowledge about the German-speaking countries as suggested above
- Grammar practice (see below for some exercises

Think seriously about opportunities to go to Germany, with or without the school.

Tips for success

- Enjoy your study and take an active interest
- Organise your file properly
- Hand in work on time – give it proper priority
- Research and investigate thoroughly
- Balance the demands of the various parts of the course
- Keep up to date with new vocabulary and grammar
- Ask for extra help if you need it
- Share ideas and problems
- Keep to all deadlines
- Participate and be pro-active
- Attend every lesson punctually and with the right materials
- Use people – your teachers, the librarian and the assistant and others you may know outside school – as a resource.

Viel Glück!

Frau Niedziela, Frau Bennett, Herr Rayment and the rest of the German Department

Complete some extra Grammar work on the next page

Übungen: Verben, Gern, Negation, Wortstellung

A. Verben. *Choose an appropriate verb from the list, and fill in the correctly conjugated form.*

beginnen	finden	fliegen	gehen	haben
hören	kommen	sein	spielen	studieren

1. Mein Bruder _____ Informatik an der Uni.
2. Wir _____ im Sommer nach Kanada.
3. Karin _____ aus Österreich.
4. Wir _____ Amerikaner.
5. Ich _____ heute einen neuen Job.
6. Mein Vater _____ sehr gern klassische Musik.
7. _____ du heute in die Bibliothek?
8. Wo _____ ich hier Detektivbücher?
9. Kinder, _____ ihr gern Fußball?
10. _____ du dieses Semester viele Kurse?

B. Gern oder nicht gern? *Answer the following questions in a complete sentence.*

1. Welche Musik (oder welche Band) hörst du gern? _____
2. Lernst du gern Mathe? _____
3. Gehst du gern ins Kino *(=to the movies)*? _____
4. Welchen Wochentag hast du gern? _____
5. Was machst du gern in deiner Freizeit *(=freetime)*? _____

C. Nicht oder kein/e/n? *Fill in the blanks with 'nicht' or the correct form of 'kein'.*

1. Sie kommt heute _____ zum Unterricht.
2. Heute habe ich _____ Zeit *(f)*.
3. Thomas geht _____ gern einkaufen.
4. Er ist _____ Student.
5. Meine Augen sind _____ blau.
6. Ich kaufe im Supermarkt _____ ein.
7. Ich habe _____ Angst *(f)* vor Feuer.
8. Du hast _____ Bruder.
9. Das ist _____ Wand!
10. Ich bin _____ zwanzig Jahre alt.

D. Wortstellung. *Move an element (e.g. the time) in each sentence to the front, and restate the sentence correctly with the new word order. (Not directly on quiz.)*

1. Tante Emma kommt morgen um sechs Uhr mit dem Bus nach Hause.
2. Sie geht abends um 11 Uhr auf dem Sofa schlafen.
3. Vater geht montags um halb eins ins Restaurant.
4. Ich gehe heute um halb sechs schnell nach Hause.
5. Onkel Johann und Georg fliegen morgen nach München.
6. Die Studenten lernen abends sehr fleißig *(=diligently)* Deutsch.

Übung: Verben Konjugieren – Present Tense

A. Singular or Plural? *Decide whether each sentence refers to a singular person or to several people, and put an "S" or a "P" in the blank accordingly. If a sentence is ambiguous, put an "A".*

_____ 1. Sie ist sehr nett.
_____ 2. Was spielen sie dort? Fußball?
_____ 3. Sie heißen Julia und Maria.
_____ 4. Haben Sie einen Sohn, Herr Brandt?
_____ 5. Sie geht jeden Abend ins Kino.
_____ 6. Normalerweise kommen sie um 11.00 Uhr nach Hause.
_____ 7. Sie studieren Mathematik, nicht wahr?
_____ 8. Tanzen Sie gern?

B. Sentences. *Fill in the blank with the appropriate form of the verb in parentheses.*

1. Andreas _____ ein Jahr hier in Madison. *(bleiben)*
2. Wo _____ du? *(wohnen)*
3. Mein Bruder _____ ein neues Haus. *(suchen)*
4. _____ du am Computer? *(arbeiten)*
5. Emily und Jean _____ beide aus Minnesota. *(kommen)*
6. Wie _____ ihr die Deutschlehrerin? *(finden)*
7. Nächstes Jahr _____ ich nach Deutschland. *(reisen)*
8. Die Kinder _____ sehr gut, _____ du nicht? *(tanzen / meinen)*
9. Wir _____ Deutsch. *(lernen)*
10. Rolf _____ Informatik an der Uni. *(studieren)*
11. Tina, was _____ du am Wochenende? *(machen)*
12. Das Buch _____ zu viel! *(kosten)*
13. Mein Englischlehrer _____ sehr viel. *(reden)*
14. Julie _____ gern in den Bergen. *(wandern)*
15. Wann _____ du nach Hause? *(gehen)*

Übungen: Das Perfekt, Konjunktionen und Wortstellung

A. Mini-Dialoge. *Ergänzen Sie die Dialoge mit einer Form von haben oder sein.*

1. Ingo: Was _____ du am Sonntag gemacht?
   Axel: Nach dem Frühstück _____ ich zum Fischmarkt gegangen.

2. Martin: Wann _____ ihr gestern Abend eingeschlafen?
   Jens: Um Mitternacht. Wir _____ bis elf Uhr ferngesehen, dann _____ wir ins Bett gegangen.

3. Frau Pauli: _____ Sie in Deutschland gewohnt?

Frau Kamm: Ja, wir _____ bei meinen Verwandten in Hamburg geblieben.

B. Liebe auf den ersten Blick. *Gestern hat sich Katrin in Kurt verliebt. Helfen Sie Katrin, diese Seite ihres Tagebuchs zu schreiben. Ergänzen Sie die Sätze mit einem Partizip der Verben in Klammern.*

Gestern habe ich einen ganz netten Mann _____ *(kennen lernen)*. Er heißt Kurt. Ich habe ihn zuerst im Kaffeehaus mit meinen Bekannten Heiko und Nils _____ *(sehen)*. Dort haben wir alle Kaffee _____ *(trinken)* und Karten _____ *(spielen)*. Wir haben über Sport und Politik _____ *(sprechen)*. Kurt und ich haben uns sofort gut _____ *(verstehen)*. Ich habe Kurt meine Telefonnummer _____ *(geben)*. Am Abend hat er mich _____ *(anrufen)* und _____ *(fragen)*, ob ich am Samstag mit ihm zum Faschingsfest gehen möchte. Natürlich habe ich ja _____ *(sagen)*. Jetzt glaube ich, dass ich mich in ihn _____ *(verlieben)* habe!

C. Aber das war gestern. *Schreiben Sie die Sätze ins Perfekt um.*

1. Fabian kauft einen Ring. _____
2. Amelie geht mit Harald aus. _____
3. Gudrun arbeitet am Samstag. _____
4. Du vergisst dein Buch. _____
5. Ihr steht heute Morgen sehr früh auf. _____
6. Karin und Imke diskutieren viel. _____
7. Heute schreibe ich einen Brief. _____
8. Am Wochenende fahren meine Freunde nach Berlin. _____
9. Ich esse Brot und Käse zum Abendessen. _____
10. Heike studiert Philosophie. _____

D. Uli und Jochen sind beste Freunde. *Machen Sie aus den zwei Sätzen einen neuen Satz. Benutzen Sie die Konjunktionen in Klammern, und achten Sie auf die Wortstellung im neuen Satz.*

1. Uli und Jochen machen einen Spaziergang. Das Wetter ist so schön. *(weil)*

   _____

2. Uli ist glücklich. Seine kleine Schwester kommt nicht mit. *(dass)*

   _____

3. Gestern sind die zwei Freunde zu Hause geblieben. Es hat so stark geregnet. *(weil)*

   _____

4. Sie wissen nicht. Das Wetter soll morgen besser sein. *(ob)*

   _____

5. Sie denken. Sie können morgen einkaufen gehen. *(dass)*

   _____

E. Eine gute Studentin. *Machen Sie aus jedem Satzpaar einen Satz. Benutzen Sie die Konjunktion in Klammern. Seien Sie vorsichtig! Es gibt nicht nur unterordnende Konjunktionen, aber auch koordinierende Konjunktionen!*

1. Monika geht heute nicht zur Uni. Sie ist krank. *(weil)*

   _____

2. Ich will wissen. Monika ist wirklich sehr krank. *(ob)*

_____

3. Manchmal möchte ich zu Hause bleiben. Ich bin eine gute Studentin. *(aber)*

_____

4. Ich gehe zur Uni. Ich bin krank. *(wenn)*

_____

5. Ich gehe immer gern zum Deutschkurs. Deutsch macht Spaß. *(denn)*

_____

F. So ein Pech! *Bringen Sie die Wörter in die richtige Reihenfolge* (=order). *Beginnen Sie jeden Satz mit dem unterstrichenen* (=underlined) *Satzteil.*

1. Seit August / nicht mehr / Hanno / geht / mit seiner alten Freundin / aus

_____

2. Nach dem großen Krach / getrennt / sich / sie / haben

_____

G. Fragen. *Beantworten Sie diese Fragen mit 1-3 ganzen Sätzen.*

1. Was hast du in den Ferien gemacht?

_____

_____

_____

2. Schreib 3 Sätze über deinen Tag gestern. Was hast du gemacht und wann?

_____

_____

_____

_____

Übungen: Präteritum, Als-Wenn-Wann, Genitiv

A. Präteritum. *Fill in the blanks with the simple-past forms of the verbs in parentheses. Make sure to add appropriate endings to match the subject!*

Als Stefanie ein Kind _____ *(sein)*, _____ *(leben)* sie in Ketchikan. Das ist eine Insel in Alaska. Sie _____ *(müssen)* jeden Morgen mit dem Postboot zur Schule fahren. Sie _____ *(nehmen)* immer ihren Hund mit, weil er gern mit ihr zusammen _____ *(laufen)*. Nach der Schule _____ *(warten)* sie oft eine oder zwei Stunden, bis das Boot endlich _____ *(kommen)*. Sie _____ *(gehen)* manchmal mit ihren Freundinnen ins Café. Dort _____ *(sprechen)* die Freundinnen *(pl)* über die Jungen, die sie während des Tages in der Schule _____ *(sehen)*. Stefanie _____ *(gefallen)* besonders gut der Schüler Nils. Am Wochenende _____ *(wollen)* Nils mit ihr zusammen ins Kino gehen. Stefanie _____ *(wissen)* aber nicht, ob sie mit Nils gehen _____ *(dürfen)*. Sie _____ *(fragen)* ihre Eltern einmal, aber Mutti _____ *(geben)* ihr keine Antwort. Aber Stefanie _____ *(denken)* schon daran, den ganzen Tag mit Nils zu verbringen. Sie _____ *(können)* aber nicht allein in die Stadt fahren, und sie

_____ *(kennen)* niemanden, der ein Auto hatte, aber sie
_____ *(finden)* einen Weg: sie _____ Nils
_____ *(anrufen)*, und er _____ *(fahren)* mit seinem Auto zu ihr und
_____ *(bringen)* sie in die Stadt.

B. Nochmal Präteritum. *Fill in the chart with the simple-past forms. There is no chart like this on the quiz, but these are important verbs to know!*

machen	machte	hat gemacht	*(to make)*
bleiben	_____	ist geblieben	*(to stay)*
sagen	_____	hat gesagt	*(to say)*
trinken	_____	hat getrunken	*(to drink)*
bekommen	_____	hat bekommen	*(to receive)*
wohnen	_____	hat gewohnt	*(to live)*
helfen	_____	hat geholfen	*(to help)*
essen	_____	hat gegessen	*(to eat)*
schlafen	_____	hat geschlafen	*(to sleep)*
stehen	_____	hat gestanden	*(to stand)*
suchen	_____	hat gesucht	*(to look for)*
werden	_____	ist geworden	*(to become)*
lesen	_____	hat gelesen	*(to read)*
kaufen	_____	hat gekauft	*(to buy)*
nennen	_____	hat genannt	*(to call)*
küssen	_____	hat geküsst	*(to kiss)*
schreiben	_____	hat geschrieben	*(to write)*
arbeiten	_____	hat gearbeitet	*(to work)*
anfangen	_____	hat angefangen	*(to start)*
aufwachen	_____	ist aufgewacht	*(to wake up)*

C. Als, Wenn, Wann, Ob. *Put ALS, WENN, WANN, or OB in each blank. On rare occasions there may be more than one correct answer.*

1. - _____ kommst du morgen Abend vorbei? Um 11 Uhr?
   - _____ ich Zeit habe, komme ich um 11.

2. - Barbara, _____ macht der Supermarkt heute zu?
   - Um halb acht — willst du dorthin gehen?
   - Ja, _____ du mit mir kommen kannst.
   - Ich weiß nicht, _____ ich kommen kann. Ich habe vieles zu tun.
   - Immer _____ ich deine Hilfe brauche, hast du etwas anderes zu tun!

3. - _____ habt ihr Diana kennen gelernt?
   - Vor zwei Jahren, _____ wir in Deutschland studierten.

4. - Weißt du, _____ die Oper anfängt?
   - Nein. Aber sag mir doch bitte, _____ du es herausfindest.
   - Ich weiß nicht, _____ ich die Zeit haben werde, mich zu informieren.

5. - _____ bist du gestern Abend nach Hause gekommen?
   - _____ meine Freunde auch nach Hause gingen, um 11 Uhr.
   - Ich weiß nicht, _____ du mir die Wahrheit *(=truth)* sagst. Ich bin aufgewacht, _____ du die Tür aufmachtest, und es war 3 Uhr!

6. - Kommen die Meiers zum Abendessen?
   - Ich weiß nicht, _____ sie kommen. _____ ich sie gestern sah, habe ich sie gefragt, aber sie haben nicht geantwortet.

7. - _____ man fertig mit der Prüfung ist, darf man nach Hause gehen.
   - Ich möchte auch wissen, _____ wir Hausaufgaben haben!

8. - Ich spielte immer mit meinem Hund, _____ ich ein Kind war.
   - Ja? Ich hatte keinen Hund, aber jeden Sommer, _____ wir meine Oma besuchten, habe ich mit ihrer Katze gespielt.

D. Die Hotelwirtin weiß einfach alles! *In the answers below, replace the 'von + dative' construction with the genitive form for each noun.*

1. Herr Lehmann: Wie ist die Telefonnummer von dem Hotel *(n.)*?
   Frau Palmer: Die Telefonnummer _____ _____ ist 88 088.

2. Herr Metz: Was ist die Postleitzahl von der Stadt *(f.)*?
   Frau Palmer: Die Postleitzahl _____ _____ ist 35521.

3. Herr Beck: Was ist der Preis von den Karten *(pl.)*?
   Frau Palmer: Der Preis _____ _____ ist DM 25.

4. Frau Stumpp: Was sind die Öffnungszeiten von dem Markt *(m.)*?
   Frau Palmer: Die Öffnungszeiten _____ _____ sind täglich von 7 bis 15 Uhr.

E. Genitivformen. *Rewrite the sentences using the genitive form to replace the 'von' constructions.*

1. Das Auto von meinem Bruder muss repariert werden.

   _____

2. Hast du den Anfang von diesem Buch gelesen?

   _____

3. Die Kusine von unseren Freunden rief gestern an.

   _____

4. Der Hunger von dieser Katze kennt keine Grenzen.

   _____

Übungen: Konjunktiv mit würde

A. Möchtest du …? *Ask questions using 'möchtest du …?' and give appropriate responses in the subjunctive.*

BEISPIEL: an den See fahren / in den Bergen wandern

Möchtest du an den See fahren? -- Nein, ich würde lieber in den Bergen wandern.

1. ein Glas Wein trinken / etwas essen

_____

_____

2. ein Buch lesen / schlafen gehen

_____

_____

3. frühstücken / im Bett bleiben

_____

_____

4. deine Mutter anrufen / einen Brief schreiben

_____

_____

B. Was meinen Sie? *Answer the questions with your opinion phrased in the subjunctive. (Note:* an deiner Stelle *means "if I were you …")*

BEISPIEL: Soll ich nach Frankreich oder nach Italien fahren? -- An deiner Stelle würde ich nach Italien fahren.

1. Soll ich mir einen Porsche oder einen Ferrari kaufen? -- An deiner Stelle _____
2. Soll ich Deutsch oder Französisch lernen? -- An deiner Stelle _____
3. Soll ich arbeiten oder ins Theater gehen? -- An deiner Stelle _____
4. Soll ich ihr ein Buch oder eine CD schenken? -- An deiner Stelle _____

C. Schreiben Sie die Sätze im Konjunktiv! *Rewrite the sentences in the subjunctive. The* wenn*-clause uses the present subjunctive (e.g.* wäre, hätte, könnte*), the then-clause uses the würde + infinitive formation.*

1. Wenn ich 20 Jahre alt bin, suche ich einen Job.

_____

2. Wenn man mich fragen soll, sage ich "nein".

_____

3. Wenn Sie hier bleiben wollen, müssen Sie eine Krawatte anziehen.

_____

4. Ich kann nicht leben, wenn ich keinen Fernseher habe.

_____

Kleine Übungen: Nominativ, Akkusativ, Dativ

A. *Tell whether the underlined nouns/pronouns in these sentences are SUBJECTS (S), DIRECT OBJECTS (DO), INDIRECT OBJECTS (IO), or OBJECTS OF PREPOSITIONS (OP).*

1. The salesman offered the customer the car.
2. She bought the house with the money from her parents.
3. For my dog, I'm buying a chew-toy.
4. I wrote my sister a letter on the computer.

B. *Now do the same thing, but with these German sentences.*

1. Der Sohn gibt seiner Mutter eine Blume.
2. Ich bringe Wein und Käse zu der Party.
3. Die Lehrerin hat dem Kind mit seinen Hausaufgaben geholfen.
4. Die Fotos habe ich meinen Freunden gezeigt *(=showed)*.

C. *The following sentences mix nominative, accusative and dative forms, so watch out.*

1. Heute habe ich ein_____ hässlichen Mann gesehen!
2. Dies____ Tisch ist wirklich alt. _____ *(you)* sollst ein____ neuen Tisch kaufen!
3. Nächste Woche wollen wir _____ *(you)* besuchen.
4. _____ *(you)* musst _____ *(me)* dein____ Geld *(n)* geben!
5. Kannst du d_____ Mann sein_____ Suppe bringen, bitte?
6. Wir kaufen _____ *(her)* ein_____ Eis *(n)*.
7. Kann ich _____ *(You, formal)* ein____ Tasse Kaffee bringen?
8. Ich wohne seit ein_____ Woche *(f)* hier.
9. Außer mein_____ Freunde___ weiß niemand, dass ich krank bin.
10. D____ Mantel habe ich für _____ *(you)* gekauft!
11. Das Buch ist von ein_____ französischen Autor *(m)*.
12. Morgen fahren wir durch d____ Stadt. D____ Glockenturm *(m)* ist schön. Wir laufen um d____ Turm und kaufen dort ein____ Postkarte *(f)*.

History

Key Skills to develop and refine	Research, analysis and evaluative skills
1.	Look at the **A Level History 2025 27 Teams Page** and contact Mr Jeffreys if you need to be added to this – this will provide some articles and some early information about the course.
2.	You could read a section of 'A People's Tragedy' by Orlando Figes, which introduces aspects of the Russia course, although this is entirely optional
3.	You could read a section of 'The Stuart Age' by Barry Coward, which introduces aspects of the Stuarts course, although this is entirely optional
4.	You could read a section of 'Civil War' by Peter Ackroyd, which introduces aspects of the Stuarts course, although this is entirely optional
5.	You could read a section of 'A History of Britain' by Simon Schama (volume 2), which introduces aspects of the Stuarts course in an easy-to-read way, although this is entirely optional
6.	Think about what makes a successful ruler and what makes a poor ruler – think about what you have learned about British or Russian History so far and what the story is by 1625 or 1894. However please be assured that there is no need to know any of this at the start of the course.
7.	The most important thing that the History Department wants you to do over the summer is relax and reenergise, so that you can come back ready for a fabulous course of study.

Maths A-Level
Summer Work

Westcliff High School

for Boys

WHSB Mathematics Department

Introduction

The Mathematics Department at WHSB wants to ensure that you make the best start to your Year 12 study as possible. You may have heard about a **step up** from GCSE to A Level, and that even Grade 9 students at GCSE level can find the pace and content of the course challenging, especially in the first few weeks. Therefore, we insist on you completing the work in this booklet before you begin the course in September. All of these topics are in the GCSE syllabus, although if you are an external applicant to WHSB you may not have been taught them as not all schools teach the entire higher syllabus to all pupils. We have provided worked examples and instruction throughout so that if any of these topics are not familiar, you should be able to teach yourself from this booklet. These topics essentially cover the first four chapters of Pure Mathematics 1 (a few lessons covering any new content will be taught in the first week).

In the first week of the course you will take a test on the contents of this booklet.

If you score below 70% you will be required to complete additional work and take a second test around two weeks later. If you score below 70% on this second test, it is our view that you are unlikely to be able to successfully complete the A level course and we would recommend you discontinue your study of Mathematics in order to pursue a subject for which you are better suited.

Contents

Chapter 1

Outline of the Course

Exam Board Specification: Edexcel 8371 / 9371

Why Study Mathematics?: Higher level Mathematics is becoming more beneficial in a world that is technologically dependent. Alongside teaching students the necessary building blocks for many other subjects such as Physics, Engineering and Economics, we also aim to develop the students' ability to think and tackle problems in a logical and systematic manner. These thinking and study skills will produce highly effective learners in all subjects, not just great Mathematicians.

1.1 The A level Course

Unit 1	**Pure Mathematics 1**	**120 minutes examination**	$33\frac{1}{3}\%$
This unit includes much of what has been studied at GCSE, extending this to set a firm foundation for the Pure Mathematics done throughout A level. Students will be learning: Proof; Algebra and Functions; Coordinate Geometry in the (x, y) plane; Sequences and Series; Trigonometry; Exponentials and Logarithms; Differentiation; Integration and Vectors.			
Unit 2	**Pure Mathematics 2**	**120 minutes examination**	$33\frac{1}{3}\%$
This unit expands on the work done in Pure Mathematics 1, taking the topics learned previously and expanding upon them. Students will be learning: Proof; Algebra and Functions; Coordinate Geometry in the (x, y) plane; Sequences and Series; Trigonometry; Differentiation; Integration and Numerical Methods.			
Unit 3	**Statistics and Mechanics**	**120 minutes examination**	$33\frac{1}{3}\%$
These topics are very similar to the Statistics 1 and Mechanics 1 courses from the old specification. In Statistics students will be learning about Statistical sampling, Data presentation and Interpretation, Probability, Statistical Distributions and Statistical Hypothesis testing. In Mechanics students will be learning about Quantities and units in Mechanics, Kinematics, Forces and Newton's laws and Moments. This unit is split in to two sections (Statistics and then Mechanics) and half the marks are awarded for each section.			

Chapter 2

Reading list

There are many popular books relating to Mathematics published every year and, considering your intention to study Mathematics at Advanced Level, these may well be of interest to you. Certainly if you choose to study Mathematics at University you will need to demonstrate your interest in the subject beyond the curriculum and one way of doing so is by your wider reading. You may wish to read the following, but there are of course many other books which you can find in the school library or purchase yourself.

David Acheson, **1089 and All That** (Oxford: OUP, 2002)

E. T. Bell, **Men of Mathematics** (Touchstone Books, 1937)

John Derbyshire, **Prime Obsession: Bernhard Riemann and the Greatest Unsolved Problem in Mathematics** (Plume Books, 2004)

William Dunham, **The Mathematical Universe** (Wiley, 1994); **Journey Through Genius** (Penguin Books, 1991)

Darrell Huff, **How to Lie with Statistics** (London: Penguin, 1991)

Marcus du Sautoy, **Music of the Primes** (Harper Perennial, 2004)

Simon Singh, **The Code Book: The Secret History of Codes and Code-breaking** (London: Fourth Estate, 1999); **Fermat's Last Theorem** (Delta, 1997); **The Simpsons and Their Mathematical Secrets** (Bloomsbury 2014)

Ian Stewart, **Why Beauty is Truth: The History of Symmetry** (Basic Books, 2008);

Professor Stewart's Casebook of Mathematical Mysteries (Profile Books, 2015)

Chapter 3

What you should already know and where to find it

The notes that follow are designed to remind you about material studied at GCSE that will appear in the first few chapters of Pure Mathematics 1.

If you need additional support with any of these materials the Dr Frost, Maths Genie or Physics and Maths Tutor websites are very useful.

This booklet covers most of the topics listed here so work through all of the preparatory material provided before seeking additional help. When you begin the course in September you will also have access to Microsoft Teams, where lots of materials will be placed. To access this you will need to use your school email.

There is some new material in the first four chapters of Pure Mathematics 1 and this will be formally taught in class in the first week, before the Chapters 1-4 test:

Section 1.8: Rationalising the denominator of a surd

Section 2.6: The discriminant

Section 3.4: Simultaneous linear inequalities

Section 3.5: Quadratic inequalities

Section 4.4: Intersection of graphs

Section 4.5: Graph transformations

The below topics are based on the Pure Mathematics 1 textbook list. Material for these topics is easy to find on websites like www.physicsandmathstutor.com. The material you should know is:

Chapter 1: Algebra and Functions
Section 1.1: Simplifying an expression by collecting like terms *Where did we do this?* This is Key Stage 3-level Algebra *Where can I get extra practice?* If you need help with this then this course is not for you.
Section 1.2: The laws of indices *Where did we do this?* This is Key Stage 3-level algebra *Where can I get extra practice?* If you need help with this then this course is not for you!
Section 1.3: Expanding an expression *Where did we do this?* This is Key Stage 3-level algebra *Where can I get extra practice?* If you need help with this then this course is not for you!
Section 1.4: Factorising an expression *Where did we do this?* This is Key Stage 3-level algebra *Where can I get extra practice?* If you need help with this then this course is not for you!
Section 1.5: Factorising a quadratic expression ***Video Help*** *https://www.youtube.com/watch?v=6NIdTWcpK1s&list=PLhfTFUpngHaW6s54XUUZmHJvC57KyT316&index=3* *Where can I get extra practice?* https://www.mathsgenie.co.uk/factorising-harder.html
Section 1.6: The laws of indices for all rational exponents ***Video Help*** https://www.youtube.com/watch?v=pUekEPvXWCU&list=PLhfTFUpngHaW6s54XUUZmHJvC57KyT316&index=1 *Where can I get extra practice?* https://www.mathsgenie.co.uk/resources/4-indices.pdf https://www.mathsgenie.co.uk/resources/6-fractional-and-negative-indices.pdf https://www.physicsandmathstutor.com/pdf-pages/?pdf=https%3A%2F%2Fpmt.physicsandmathstutor.com%2Fdownload%2FMaths%2FA-level%2FC1%2FTopic-Qs%2FOCR-MEI%2FC1%2520Algebra%2520-%2520Indices%25201%2520QP.pdf https://www.physicsandmathstutor.com/pdf-pages/?pdf=https%3A%2F%2Fpmt.physicsandmathstutor.com%2Fdownload%2FMaths%2FA-level%2FC1%2FTopic-Qs%2FOCR-MEI%2FC1%2520Algebra%2520-%2520Indices%25202%2520QP.pdf
Section 1.7: The use and manipulation of surds ***Video Help*** https://www.youtube.com/watch?v=D6tGkiAGq2E&list=PLhfTFUpngHaW6s54XUUZmHJvC57KyT316&index=5 *Where can I get extra practice?* https://www.mathsgenie.co.uk/resources/7-surds.pdf

Section 1.8: Rationalising the denominator of a fraction when it is a surd

Video Help

https://www.youtube.com/watch?v=vKATQNlrv5o&list=PLhfTFUpngHaW6s54XUUZmHJvC57KyT316&index=6

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/as-pure-algebraic-expressions.pdf

https://www.physicsandmathstutor.com/pdf-pages/?pdf=https%3A%2F%2Fpmt.physicsandmathstutor.com%2Fdownload%2FMaths%2FA-level%2FC1%2FTopic-Qs%2FOCR-MEI%2FC1%2520Algebra%2520-%2520Surds%2520QP.pdf

Chapter 2: Quadratic Functions

Section 2.1: Plotting the graph of quadratic functions

Where did we do this? This is Key Stage 3-level algebra

Where can I get extra practice? If you need help with this then this course is not for you!

Section 2.2: Solving quadratic equations by factorisation

Video Help

https://www.youtube.com/watch?v=UEYen7bjs0o&list=PLhfTFUpngHaVKopUpsRPsQRMBPiU2kpDQ&index=1

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/5-solving-quadratics-by-factorising.pdf

Section 2.3: Completing the square

Video Help

https://www.youtube.com/watch?v=AdWQwPqcIc8&list=PLhfTFUpngHaVKopUpsRPsQRMBPiU2kpDQ&index=2

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/9-completing-the-square.pdf

Section 2.4: Solving quadratic equations by completing the square

Video Help

https://www.youtube.com/watch?v=AdWQwPqcIc8&list=PLhfTFUpngHaVKopUpsRPsQRMBPiU2kpDQ&index=2

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/as-pure-completing-the-square.pdf

https://www.physicsandmathstutor.com/pdf-pages/?pdf=https%3A%2F%2Fpmt.physicsandmathstutor.com%2Fdownload%2FMaths%2FA-level%2FC1%2FTopic-Qs%2FOCR-Set-1%2FC1%2520Completing%2520the%2520Square.pdf

Section 2.5: Solving quadratic equations by using the formula

Video Help

https://www.youtube.com/watch?v=UEYen7bjs0o&list=PLhfTFUpngHaVKopUpsRPsQRMBPiU2kpDQ&index=1

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/7-quadratic-formula.pdf

Chapter 3: Equations and Inequalities

Section 3.1: Solving simultaneous linear equations by elimination

Video Help

https://www.youtube.com/watch?v=FvwkZQ0Ymk0&list=PLhfTFUpngHaWJ5wPMJo_1CU954NqthqcT&index=1

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/5-simultaneous-equations.pdf

Section 3.2: Solving simultaneous linear equations by substitution

Video Help

https://www.youtube.com/watch?v=FvwkZQ0Ymk0&list=PLhfTFUpngHaWJ5wPMJo_1CU954NqthqcT&index=1

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/5-simultaneous-equations.pdf

Section 3.3: Using substitution when one equation is linear and the other is quadratic

Video Help

https://www.youtube.com/watch?v=RIIqfS9rXQA&list=PLhfTFUpngHaWJ5wPMJo_1CU954NqthqcT&index=2

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/9-quadratic-simultaneous-equations.pdf

https://www.physicsandmathstutor.com/pdf-pages/?pdf=https%3A%2F%2Fpmt.physicsandmathstutor.com%2Fdownload%2FMaths%2FA-level%2FC1%2FTopic-Qs%2FOCR-Set-1%2FC1%2520Simultaneous%2520Equations.pdf

Chapter 4: Sketching curves

Section 4.2: Interpreting the graphs of cubic functions

Video Help

https://www.youtube.com/watch?v=slYwhWn16ko&list=PLhfTFUpngHaXt-XLcnpVQxMA320SqbpzY&index=1

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/as-pure-sketching-and-transforming-curves.pdf

https://www.physicsandmathstutor.com/pdf-pages/?pdf=https%3A%2F%2Fpmt.physicsandmathstutor.com%2Fdownload%2FMaths%2FA-level%2FC1%2FTopic-Qs%2FOCR-MEI%2FC1%2520Curve%2520Sketching%2520-%2520Factorising%2520%26%2520Sketching%2520Polynomials%25201%2520QP.pdf

Section 4.4: Using the intersection points of graphs of functions to solve equations

Video Help

https://www.youtube.com/watch?v=03gyABEr8Zo&list=PLhfTFUpngHaXt-XLcnpVQxMA320SqbpzY&index=4

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/as-pure-sketching-and-transforming-curves.pdf

Section 4.5: The effect of the transformations $f(x + a)$ and $f(x) + a$

Video Help

https://www.youtube.com/watch?v=Vd62T4zpGUQ&list=PLhfTFUpngHaXt-XLcnpVQxMA320SqbpzY&index=5

Where can I get extra practice?

https://www.mathsgenie.co.uk/resources/9-transforming-graphs.pdf

Section 4.6: The effect of the transformations $f(ax)$ and $af(x)$
Video Help
https://www.youtube.com/watch?v=1IPfSPVzKQg&list=PLhfTFUpngHaXt-XLcnpVQxMA320SqbpzY&index=6
Where can I get extra practice?
https://www.mathsgenie.co.uk/resources/9-transforming-graphs.pdf

Section 4.7: Performing transformations on the sketches of curves
Video Help
https://www.youtube.com/watch?v=sCflUfI_gXk&list=PLhfTFUpngHaXt-XLcnpVQxMA320SqbpzY&index=7
Where can I get extra practice?
https://www.mathsgenie.co.uk/resources/as-pure-sketching-and-transforming-curves.pdf

Chapter 4

Preparation Material for September

4.1 Basic Algebra

4.1.1 Indices

You should be able to manipulate algebraic expression involving indices using the following rules:

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

$$(a^m)^n = a^{mn}$$

$$a^{-m} = \frac{1}{a^m}$$

$$a^{\frac{n}{m}} = \sqrt[m]{a^n}$$

Example:

(a) $2r^5 \times 4r^{-2} = 2 \times 4 \times r^5 \times r^{-2}$
$= 8 \times r^{5-2}$
$= 8r^3$

(b) $(3x^3)^2 \div x^4 = 27x^6 \div x^4$
$= 27x^2$

Questions:

1. (a) $a^4 \times a^3$ (b) $x^5 \div x^2$ (c) $(b^4 \times b^3) \div b^5$

(d) $a^4 \div a^3$ (e) $x^4 \times x^5$ (f) $(x^4 \times x^5)^2$

(g) $(a^5 \div a^2) \times a$ (h) $(a^3)^2 \times (a^2)^3$ (i) $(x^2 \times x^3)^2 \div x^4$

(j) $(b^4 \div b^2)^3$ (g) $(b^4)^3 \div (b^2)^3$ (l) $[a^4 \times (a^2)^3] \div a^8$

(m) $\frac{x^7 \times x^2}{x^4}$ (n) $\frac{a^4 \times (a^2)^2}{a^8}$ (o) $\frac{x^5}{x^2 \times x^2}$

4.1.2 Expanding and combining like terms

You can expand an expression by multiplying each term inside the bracket by the term(s) outside. Like terms can be combined to simplify an expression.

Example

(a) $-3x(5 - 2x) \equiv -15x + 6x^2$

(b) $2x(5x + 3) - 4(x^2 - 2x) \equiv 10x^2 + 6x - 4x^2 + 8x$

$\equiv 6x^2 + 14x$

(c) $(x + 4)(2x - 1) \equiv x(2x - 1) + 4(2x - 1)$

$\equiv 2x^2 - x + 8x - 4$

$\equiv 2x^2 + 7x - 4$

Questions:

2. Multiply out and simplify

(a)	$x(x + 1)$	(b)	$2(2x + 1)$	(c)	$2x(x - 1)$
(d)	$4x(2 + x)$	(e)	$5x(3 - 2x)$	(f)	$x^2(1 + x)$
(g)	$(x + 1)(x + 2)$	(h)	$(x + 1)(x - 1)$	(i)	$(x + 2)(x - 1)$
(j)	$(x - 3)(x - 2)$	(k)	$(1 + a)(1 + 2a)$	(l)	$(x + y)(x - y)$
(m)	$(ax + b)(cx - d)$	(n)	$(x + 1)^2$		

3. Multiply out and simplify

(a)	$(3x - 2y) + (4x - y)$	(b)	$(p - m) + (m - 2p)$
(c)	$5(x - 2) + 3(4 - x)$	(d)	$(3a + 2b) - (a - b)$
(e)	$2(3m + n) - 3(m - 3n)$	(f)	$(x - y) - (y - z) - (z - x)$
(g)	$3a(b - c) + (3b - 2)a$	(h)	$m(m - n) - n(n - m)$
(i)	$x(y - z) + y(z - x) + z(x - y)$	(j)	$3(2y + 5z) - 4(2y - x)$

4.1.3 Factorising

You can factorise expressions if each term has a common factor.

An expression will be fully factorised if the terms inside the bracket do not have any common factors.

Example:

Factorise

(a) $x^2 + 2x$ (b) $3x^2 - 9x$ (c) $x^3 - x^2$

Solutions

(a) Here, as both terms are multiples of x, we can write

$$x^2 + 2x \equiv x(x + 2)$$

(b) In this case, both terms are multiples of x and 3, giving,

$$3x^2 - 9x \equiv 3x(x - 3)$$

(c) In this example, both terms are multiples x^2,

$$x^3 - x^2 \equiv x^2(x - 1)$$

Quadratic expressions can be factorised into two brackets.

For quadratics for the form $x^2 + bx + c$ (i.e where the coefficient of x^2 is 1) we simply need to think of two numbers which add up to b and multiply to c. If these numbers are w and v then the quadratic factorises to $(x + w)(x + v)$.

Example:

Factorise

(a) $x^2 + 6x + 8$ (b) $x^2 - 5x + 6$

Solutions

(a) Two numbers which add to 6 and multiply to 8 are **4 and 2**. Hence the quadratic factorises to

$$(x + 4)(x + 2)$$

(b) Two numbers which add to -5 and multiply to 6 are **-3 and -2**. Hence the quadratic factorises to

$$(x - 2)(x - 3)$$

This method works because of the way we expand quadratic brackets. Imagine we are given the quadratic $(x + m)(x + n)$. Using one of the variety of methods to expand this (we recommend the grid method) we would get:

$\times$	x	$+n$
x	x^2	nx
$+m$	mx	mn

$$\text{Hence } (x + m)(x + n) \equiv x^2 + nx + mx + mn$$
$$\equiv x^2 + (m + n)x + mn$$

This shows that our previous method for factorising will always work on quadratics of this given form.

If we wanted to factorise a quadratic of the form $ax^2 + bx + c$ then we must use a slightly altered method. Firstly, we find 2 numbers which add to b and multiply to $a \times c$. Call these numbers w and v again. The quadratic is then rewritten as $(ax + w)(ax + v)$.

Please note: This is not the full factorisation.

At this point we must cancel down the coefficients in the brackets in pair, as if they were the numerator and denominator of a fraction (i.e Divide $(ax + w)$ by the highest common factor of a and w, and then divide $(ax + v)$ by the highest common factor of a and v). The resulting brackets will be the factors of your quadratic equation.

Example:

Factorise

(a) $3x^2 - 5x + 2$ (b) $6x^2 + 7x + 2$

Solutions

(a) Two numbers which add to -5 and multiply to 6 are **-3 and -2**. Hence, we rewrite the expression as $(3x - 3)(3x - 2)$. We note that the first factor has a highest common factor of 3, so diving by that gives our final factorised form

$$(x - 1)(3x - 2)$$

(b) Two numbers which add to 7 and multiply to 12 are **3 and 4**. Hence, we rewrite the expression as $(6x + 3)(6x + 4)$. We note that the first factor has a highest common factor of 3 and the second factor has a highest common factor of 2, so dividing respectively by these gives out final factorised form

$$(2x + 1)(3x + 2)$$

Questions:

4. Factorise

(a) $x^3 + x^2$ (b) $2x^2 - x^3$ (c) $4x^3 - 2x^2$

(d) $8x^3 + 4x^2$ (e) $16x^2 - 36x^3$ (f) $4x^3 + 22x^2$

(g) $16x^2 - 6x^3$ (h) $14x^3 + 21x^2$ (i) $28x^3 - 49x^2$

5. *(This question concerns the difference of two squares)*

(a) Expand $(x + 5)(x - 5)$

(b) Factorise $x^2 - 25$

(c) Factorise each of the following:

(i) $x^2 - 49$ (ii) $x^2 - 64$ (iii) $x^2 - 100$

(iv) $x^2 - a^2$ (v) $x^2 - 4b^2$

6. Factorise

(a) $x^2 + 7x + 12$ (b) $x^2 + 8x + 7$ (c) $x^2 + 11x + 18$

(d) $x^2 + 12x + 27$ (e) $x^2 + 17x + 70$ (f) $x^2 + 6x + 8$

(g) $x^2 + 16x + 28$ (h) $x^2 + 18x + 77$ (i) $x^2 + 16x + 63$

7. Factorise

(a) $x^2 + x - 2$ (b) $x^2 + x - 20$ (c) $x^2 - x - 12$

(d) $x^2 - 13x + 36$ (e) $x^2 - 10x + 16$ (f) $x^2 + x - 42$

(g) $x^2 + 13x - 30$ (h) $x^2 - 17x + 72$ (i) $2x^2 - 2x - 99$

8. Factorise

(a) $2x^2 + 3x + 1$ (b) $2 + 7p + 3p^2$ (c) $2y^2 - 5y + 3$

(d) $2 - m - m^2$ (e) $3r^2 - 2r - 1$ (f) $5 - 19y - 4y^2$

(g) $4 - 13a + 3a^2$ (h) $5x^2 - 8x - 4$ (i) $4x^2 + 8x + 3$

(j) $9s^2 - 6s + 1$ (k) $4m^2 - 25$ (l) $2 - y - 6y^2$

(m) $4u^2 + 17u + 4$ (n) $6p^2 + 5p - 4$ (o) $8x^2 + 19x + 6$

4.1.4 Surds and rationalising the denominator

You can manipulate surds using the following rules:

$$\sqrt{ab} \equiv \sqrt{a} \times \sqrt{b} \qquad\qquad \sqrt{\frac{a}{b}} \equiv \frac{\sqrt{a}}{\sqrt{b}}$$

These follow the same rules as those of indices, namely $(a^m)^n \equiv a^{mn}$ because a surd is just an index (recall that $a^{\frac{n}{m}} \equiv \sqrt[m]{a^n}$.)

To rationalise the denominator of a fraction containing a surd of the form $\frac{a}{\sqrt{b}}$ you need to multiply by $\frac{\sqrt{b}}{\sqrt{b}}$ to obtain $\frac{a\sqrt{b}}{b}$.

Example:

Simplify:

(a) $\sqrt{12} \equiv \sqrt{4 \times 3} \equiv \sqrt{4} \times \sqrt{3} \equiv 2\sqrt{3}$

(b) $\sqrt{20} + \sqrt{5} \equiv \sqrt{4 \times 5} + \sqrt{5} \equiv \sqrt{4} \times \sqrt{5} + \sqrt{5} \equiv 2\sqrt{5} + \sqrt{5} \equiv 3\sqrt{5}$

(c) $\frac{\sqrt{72}-\sqrt{8}}{\sqrt{2}} \equiv \frac{\sqrt{36\times2}-\sqrt{4\times2}}{\sqrt{2}} \equiv \frac{6\sqrt{2}-2\sqrt{2}}{\sqrt{2}} \equiv \frac{4\sqrt{2}}{\sqrt{2}} \equiv 4$

(d) $\frac{\sqrt{99}}{\sqrt{11}} \equiv \sqrt{\frac{99}{11}} \equiv \sqrt{9} \equiv 3$

Questions:

9. Simplify

(a) $\sqrt{18}+\sqrt{50}$ (b) $\sqrt{48}-\sqrt{27}$ (c) $2\sqrt{8}+\sqrt{72}$

(e) $\sqrt{360}-2\sqrt{40}$ (e) $2\sqrt{5}-\sqrt{45}+3\sqrt{20}$ (d) $\sqrt{24}+\sqrt{150}-2\sqrt{96}$

10. Express in the form $a+b\sqrt{3}$

(a) $\sqrt{3}(2+\sqrt{3})$ (b) $4-\sqrt{3}-2(1-\sqrt{3})$ (c) $(1+\sqrt{3})(2+\sqrt{3})$

(d) $(4+\sqrt{3})(1+2\sqrt{3})$ (e) $(3\sqrt{3}-4)^2$ (f) $(3\sqrt{3}+1)(2-5\sqrt{3})$

11. Simplify

(a) $(\sqrt{5}+1)(2\sqrt{2}+3)$ (b) $(1-\sqrt{2})(4\sqrt{2}-3)$ (c) $(2\sqrt{7}+3)^2$

(d) $(3\sqrt{2}-1)(2\sqrt{2}+5)$ (e) $(\sqrt{5}-\sqrt{2})(\sqrt{5}+2\sqrt{2})$ (f) $(3-\sqrt{8})(4+\sqrt{2})$

12. Express each of the following as simply as possible with a rational denominator

(a) $\frac{1}{\sqrt{5}}$ (b) $\frac{2}{\sqrt{3}}$ (c) $\frac{1}{\sqrt{8}}$ (d) $\frac{14}{\sqrt{7}}$ (e) $\frac{3\sqrt{2}}{\sqrt{3}}$ (f) $\frac{\sqrt{5}}{\sqrt{15}}$

(g) $\frac{1}{3\sqrt{7}}$ (h) $\frac{12}{\sqrt{72}}$ (i) $\frac{1}{\sqrt{80}}$ (j) $\frac{3}{2\sqrt{54}}$ (k) $\frac{4\sqrt{20}}{3\sqrt{18}}$ (l) $\frac{3\sqrt{175}}{2\sqrt{27}}$

4.2 Quadratics

4.2.1 Graphs of Quadratic functions

You need to be able to sketch graphs of quadratic functions. You can do this by a drawing a table of values, for example you could take values of x between -4 and +4 and find the corresponding value of y by substituting it into the equation you are given, and then plotting the points on a graph.

If you are only sketching a graph, you need to know its shape and where it crosses the axes.

A quadratic graph is ∪ shaped if the coefficient of x^2 (a if the quadratic is given in the form $ax^2 + bx + c$) is positive.

A quadratic graph is ∩ shaped if the coefficient of x^2 (a if the quadratic is given in the form $ax^2 + bx + c$) is negative.

To find out where it crosses the y-axis you need to know what y is when $x = 0$, which is easy to find by substituting $x = 0$ into your equation.

To find out where it crosses the x-axis you need to know what x is when $y = 0$. You can do this by several methods, for example factorising, completing the square or using the quadratic formula. These methods are all covered below.

4.2.2 Solving Quadratics by factorising

You should be able to solve quadratics by factorising. If you have a factorised expression which is equal to 0, then you have two (or more) terms which multiply to give 0. For a set of numbers to multiply to 0 then one of those numbers must also be 0, and hence one of those factors is 0.

Example:

(a) Solve $x^2 - 5x + 6 = 0$

This factorises to $(x - 3)(x - 2) = 0$

so either $x - 3 = 0$ or $x - 2 = 0$.

Hence our solutions are $x = 3$ or $x = 2$.

(b) Solve $6x^2 - 7x + 2 = 0$

Firstly, we try and factorise this. We find two numbers that multiply to ac and add to b, so here multiply to 12 and add to −7. These numbers are −3 and −4.

Hence we rewrite the expression as $(6x - 3)(6x - 4)$ and we note that the first factor has a common factor of 3 and the second common factor 2.

Hence our factorised form is $(2x - 1)(3x - 2)$. Thus our original equation reduces to

$$(2x - 1)(3x - 2) = 0$$

so either $2x - 1 = 0$ or $3x - 2 = 0$.

Hence our solutions are $x = \frac{1}{2}$ or $x = \frac{2}{3}$

Questions:

13. Solve the following equations by factorization

(a) $x^2 + 2x - 35 = 0$ (b) $x^2 - 15x - 54 = 0$

(c) $x^2 - x - 90 = 0$ (d) $x^2 + 15x + 54 = 0$

(e) $x^2 + 20x + 51 = 0$ (f) $x^2 - 12x + 32 = 0$

(g) $x^2 - 24x + 143 = 0$ (h) $x^2 - 17x + 60 = 0$

(i) $x^2 - 14x - 176 = 0$ (j) $x^2 - 26x + 133 = 0$

(k) $x^2 + 7x - 44 = 0$ (l) $x^2 + 2x - 195 = 0$

(m) $2x^2 - 5x + 3 = 0$ (n) $2x^2 - 7x - 9 = 0$

(o) $2x^2 + 13x + 6 = 0$

14. Solve the following equations

(a) $x^2 - 16 = 0$ (b) $x^2 = 49$

(c) $4x^2 - 81 = 0$ (d) $9x^2 = 64$

These quadratics are known as the difference of two squares and you can factorise them quickly if you spot the pattern.

15. Solve the following equations

(a) $q^2 - 6q = -9$ (b) $x^2 + 81 = 18x$ (c) $y^2 = 22y - 121$

(d) $4(3x - 1) = 9x^2$ (e) $-25 = 4y(y - 5)$

16. Solve the following equations

(a) $x^2 = 25$ (b) $a^2 = 36$ (c) $y^2 = \frac{49}{4}$

(d) $b^2 - 16 = 0$ (e) $a^2 - 64 = 0$ (f) $x^2 - \frac{4}{81} = 0$

(g) $4y^2 = 0$ (h) $2x^2 = 32$ (i) $3p^2 - 27 = 0$

(j) $5p^2 - 20 = 0$ (k) $25b^2 - 40 = 9$ (l) $3b^2 - 8 = 4$

17. Find the solutions of each of the following equations

(a) $y^2 = y + 56$ (b) $12w^2 = 13w - 3$

(c) $11y = -4 - 6y^2$ (d) $c(c - 10) = 2$

(e) $q^2 = -2(q - 4)$ (f) $d(d + 2) = 3$

(g) $x(x - 5) = 84$ (h) $y(5y + 27) = 18$

(i) $3p^2 = 6p(2 + p)$ (j) $2x(4x + 5) = 3$

(k) $13x = 2(2x^2 + 5)$ (l) $2(10 - x^2) = 3x$

(m) $4y - 3 = 3y(y - 2)$ (n) $-12y - 9(y + 1) = 6y^2$

(o) $(a + 4)(a - 2) = -5$ (p) $(3x - 4)(x - 4) = -5$

4.2.3 Completing the square

Completing the square is a valuable technique for solving quadratics (and is how the quadratic equation is derived), but also for other topics such as graph transformations.

It is crucial that you are proficient at completing the square for AS Mathematics.

Completing the square is essentially a way of rewriting a quadratic expression in the form $a(x+b)^2+c$, where a, b and c are constants. This makes it easy to solve if we have an equation, but also easy to see how the expression is a transformation of the graph $y=x^2$, which in turn allows us to find minimum or maximum points of the curve easily.

We'll start with the case where $a=1$, so quadratic equations of the form x^2+bx+c.

In order to find the completed square form, we have to first identify the **closest perfect square**. The closest perfect square is a perfect square (i.e a quadratic of the form $(x+a)^2$) where, when expanded, the coefficient of x is the same as in the equation we want to complete the square on.

Example

Given $x^2+8x+10$ we would search for a perfect square of the form $(x+a)^2$ that, when expanded, gave x^2+8x+c, where c is a constant.

In this case, the closest perfect square is $(x+4)^2$. When expanded, this gives $x^2+8x+16$. *(Note that $(x+a)^2 \equiv x^2+2ax+a^2$, this will help you search for the correct closest perfect square)*.

We then note what we need to subtract or add from the closest perfect square in order to obtain our original equation. $(x+4)^2 \equiv x^2+8x+16$ so $(x+4)^2-6$ gives us $x^2+8x+16-6$. Hence

$$x^2+8x+10 \equiv (x+4)^2-6$$

If $a \neq 1$ then you need to factorise first.

Given $2x^2-4x-8$ we first factorise to $2(x^2-2x-4)$. The coefficients here need not be nice numbers, so we suggest working in fraction form,

We then complete the square on x^2-2x-4, which gives $(x-1)^2-5$. Hence we get

$$2x^2-4x-8 \equiv 2[(x-1)^2-5].$$

The preferred form for the completed square form should not contain the square brackets above, so we expand the square brackets to give

$$2x^2-4x-8 \equiv 2(x-1)^2-10.$$

The reason we use completed square form is that we can solve quadratic equations from this point.

If $2x^2 - 4x - 8 = 0$

$2(x-1)^2 - 10 = 0$

$(x-1)^2 - 5 = 0$

$x - 1 = \sqrt{5}$ *Note the $\pm$ sign which is necessary when square rooting in equations*

then we rewrite this as $x = 1 \pm \sqrt{5}$

Questions:

18. Express in the form $(x + a)^2 + b$

(a) $x^2 + 2x + 4$ (b) $x^2 - 2x + 4$ (c) $x^2 - 4x + 1$ (d) $x^2 + 6x$

(e) $x^2 + 4x + 8$ (f) $x^2 - 8x - 5$ (g) $x^2 + 12x + 30$ (h) $x^2 - 10x + 25$

(i) $x^2 + 6x - 9$ (j) $18 - 4x + x^2$ (k) $x^2 + 3x + 3$ (l) $x^2 + x - 1$

(m) $x^2 - 18x + 100$ (n) $x^2 - x - \frac{1}{2}$ (o) $20 + 9x + x^2$ (p) $x^2 - 7x - 2$

(q) $5 - 3x + x^2$ (r) $x^2 - 11x + 37$ (s) $x^2 + \frac{2}{3}x + 1$ (t) $x^2 - \frac{1}{2}x - \frac{1}{4}$

19. Express in the form $a(x + b)^2 + c$

(a) $2x^2 + 4x + 3$ (b) $2x^2 - 8x - 7$ (c) $3 - 6x + 3x^2$ (d) $4x^2 + 24x + 11$

(e) $-x^2 - 2x - 5$ (f) $1 + 10x - x^2$ (g) $2x^2 + 2x - 1$ (h) $3x^2 - 9x + 5$

(i) $3x^2 - 24x + 48$ (j) $3x^2 - 15x$ (k) $70 + 40x + 5x^2$ (l) $2x^2 + 5x + 2$

(m) $4x^2 + 6x - 7$ (n) $-2x^2 + 4x - 1$ (o) $4 - 2x - 3x^2$ (p) $\frac{1}{3}x^2 + \frac{1}{2}x - \frac{1}{4}$

20. Solve each equation by completing the square, giving your answers as simply as possible in terms or surds where appropriate.

(a) $y^2 - 4y + 2 = 0$ (b) $p^2 + 2p - 2 = 0$ (c) $x^2 - 6x + 4 = 0$

(d) $7 + 10r + r^2 = 0$ (e) $x^2 - 2x = 11$ (f) $a^2 - 12a - 18 = 0$

(g) $m^2 - 3m + 1 = 0$ (h) $9 - 7t + t^2 = 0$ (i) $u^2 + 7u = 44$

(j) $2y^2 - 4y + 1 = 0$ (k) $3p^2 + 18p = -23$ (l) $2x^2 + 12x = 9$

(m) $-m^2 + m + 1 = 0$ (n) $4x^2 + 49 = 28x$ (o) $1 - t - 3t^2 = 0$

4.2.3 Using the Quadratic formula

If you complete the square on the equation $ax^2 + bx + c = 0$ you get the quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

You need to know this equation and how to use it.

It is just a case of simply substituting in your values of a, b and c in to the given equation.

Example

$4x^2 - 3x - 2 = 0$ has values of $a = 4$, $b = -2$ and $c = -2$

so

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(4)(-2)}}{2(4)} = \frac{3 \pm \sqrt{41}}{8}$$

Hence your two answers are $x = \frac{3+\sqrt{41}}{8}$ and $x = \frac{3-\sqrt{41}}{8}$

4.2.4 Solving simultaneous equations by elimination and substitution

There are two main methods for solving simultaneous equations: elimination and substitution. Solving a pair of simultaneous equations is the same as finding where two lines intersect, i.e. you are finding the point at which their x and y values are the same for both equations, which in terms of coordinates means they both go through the same point and hence intersect.

Elimination involves manipulating the equations until one variable can be easily eliminated. This is the quicker method to solve them but only works for when we have linear terms in x and y, so **not** when we have x^2 or y^2.

Example:

$$4x - 5y = 4$$

$$6x + 2y = 25$$

If we multiply the first equation by 3 and the second equation by 2 we get $12x$ in each equation. We can then subtract the two equations from each others to obtain an equation only in y.

$$12x - 15y = 12$$

$$12x + 4y = 50$$

Subtracting these equations from each other (essentially column subtraction) gives

$$-19y = -38$$

$$y = 2$$

We must substitute back in to one of the original equations to find the value of x.

Arbitrarily choosing the first equation we get

$$4x - 5(2) = 4$$
$$4x - 10 = 4$$
$$4x = 14$$

$x = 3.5$ and so the solution is $x = 3.5,\ y = 2$

Substitution can be used to solve any simultaneous equation and does not rely on the equations being set up such that one term is easily eliminated. You can substitute in an expression (for x or y) given in one equation into the other equation to end up with an equation with just one variable.

Example:

$$x + y = 11$$

$$xy = 30$$

Rewriting the first equation, we get $x = 11 - y$

Substituting this in for x in the second equation gives $(11 - y)y = 30$

which is now an equation we can solve. $11y - y^2 = 30$

$$y^2 - 11y + 30 = 0$$
$$(y - 5)(y - 6) = 0$$
$$y = 5 \text{ or } 6$$

Remembering that a solution contains both x and y terms, we substitute both values back in to one of the equations to obtain the x terms. Note we will have two solutions here.

$$x = 11 - (5) \text{ or } x = 11 - (6)$$

$$x = 6 \text{ or } 5$$

We must be careful how we give our solutions, ensuring we pair the correct x value with the correct y value. We could give the solution in two forms:

$$x = 6 \text{ and } y = 5$$

$x = 5$ and $y = 6$ or we could write the solutions as coordinate pairs

$$(6, 5) \text{ or } (5, 6)$$

Questions:

21. Solve each pair of simultaneous equations

(a) $y = 3x$
$y = 2x + 1$

(b) $y = x - 6$
$y = \frac{1}{2}x - 4$

(c) $y = 2x + 6$
$y = 3 - 4x$

(d) $x + y - 3 = 0$
$x + 2y + 1 = 0$

(e) $x + 2y + 11 = 0$
$2x - 3y + 1 = 0$

(f) $3x + 3y + 4 = 0$
$5x - 2y - 5 = 0$

22. Find the coordinates of intersection of the given straight lines and curve in each case.

(a) $y = x + 2$
$y = x^2 - 4$

(b) $y = 4x + 11$
$y = x^2 + 3x - 1$

(c) $y = 2x - 1$
$y = 2x^2 + 3x - 7$

23. Solve each pair of simultaneous equations

(a) $x^2 - y + 3 = 0$
$x - y + 5 = 0$

(b) $2x^2 - y - 8x = 0$
$x + y + 3 = 0$

(c) $x^2 + y^2 = 25$
$2x - y = 5$

(d) $x^2 + 2xy + 15 = 0$
$2x - y + 10 = 0$

(e) $x^2 - 2xy - y^2 = 7$
$x + y = 1$

(f) $3x^2 - x - y^2 = 0$
$x + y - 1 = 0$

(g) $2x^2 + xy + y^2 = 22$
$x + y = 4$

(h) $x^2 - 4y - y^2 = 0$
$x - 2y = 0$

(i) $x^2 + xy = 4$
$3x + 2y = 6$

(j) $2x^2 + y - y^2 = 8$
$2x - y = 3$

(k) $x^2 - xy + y^2 = 13$
$2x - y = 7$

(l) $x^2 - 5x + y^2 = 0$
$3x + y = 5$

(m) $3x^2 - xy + y^2 = 36$
$x - 2y = 10$

(n) $2x^2 + x - 4y = 6$
$3x - 2y = 4$

(o) $x^2 + x + 2y^2 = 52$
$x - 3y + 17 = 0$

24. Solve each pair of simultaneous equations

(a) $x - \frac{1}{y} - 4y = 0$
$x - 6y - 1 = 0$

(b) $xy = 6$
$x - y = 5$

(c) $\frac{3}{x} - 2y + 4 = 0$
$4x + y - 7 = 0$

4.3 Sketching curves

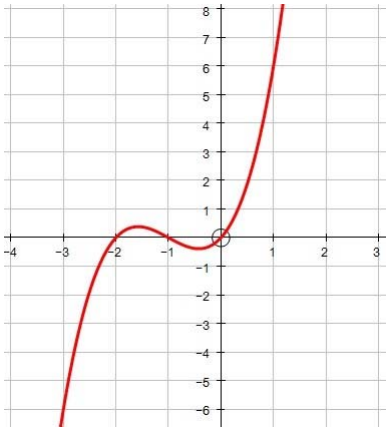
Sketching curves is often a weakness of Mathematics students, but a crucial skill for answering many questions and simplifying others. At interview for Mathematics or Mathematics-related degree courses, students often report back that they were asked to sketch a graph which they would not have prior knowledge of ($y = x^2 \sin x$, for example). It is important that throughout the course you develop your graph sketching skills, but some graphs you should already know and these are covered here.

Remember that for a sketch you always need to know the shape of the graph and where it crosses the axes (as with quadratic graphs which we covered earlier).

4.3.1 Sketching curves of cubic functions

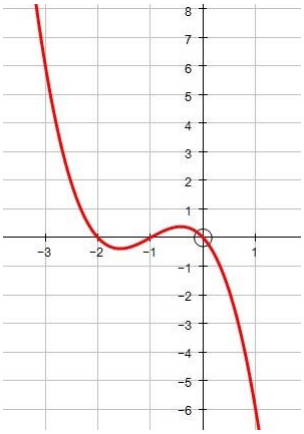
A cubic function with a positive x^3 term has the shape below.

This is the graph of $y = x(x + 1)(x + 2)$, which when expanded is the graph of $y = x^3 + 3x^2 + 2x$.



A cubic function with a negative x^3 term has the shape below.

This is the graph of $y = -x(x + 1)(x + 2)$, which when expanded is the graph of $y = -x^3 - 3x^2 - 2x$.

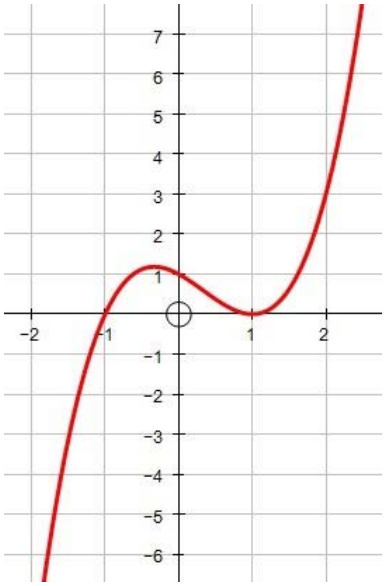


To find out where the graph crosses the axes, you follow the same procedure as with quadratics.

To find out where it crosses the y-axis you need to know what y is when $x = 0$, which is easy to find by substituting $x = 0$ into your equation.

To find out where it crosses the x-axis you need to know what x is when $y = 0$. Initially, the cubic will already be factorised or will be easily factorisable (you could factorise out a factor of x initially and then factorise the remaining quadratic) and so it becomes a case of solving the individual factors equal to 0.

Example:



When $x = 0$ (so on the y-axis),

$y = (-1)^2(1) = 1.$

When $y = 0$ (so on the x-axis),

$0 = (x-1)^2(x+1)$ so $x = 1$ (twice) or $x = -1$

The repeated root at $x = 1$ means that the graph doesn't cross through the axis there, it only touches it, or lies tangent to it.

Questions:

25. Sketch each graph, showing the coordinates of any points of intersection with the coordinate axes

(a) $y = (x+1)(x-1)(x-3)$ (b) $y = 2x(x-1)(x-5)$

(c) $y = -(x+2)(x+1)(x-2)$ (d) $y = x^2(x-4)$

(e) $y = 3x(2+x)(1-x)$ (f) $y = (x+2)(x-1)^2$

26. (a) Factorise fully $x^3 + 6x^2 + 9x$

(b) Hence, sketch the curve $y = x^3 + 6x^2 + 9x$, showing the coordinates of any points where the curve meets the coordinate axes.

27. Given that the constants p and q are such that $p > q > 0$, sketch each of the following graphs showing the coordinates of any points of intersection with the coordinate axes.

(a) $y = (x-p)(x-q)^2$ (b) $y = (x-p)(x^2-q^2)$

4.3.1 Sketching the reciprocal function

As with the previous two functions we have sketched, the reciprocal function looks different depending on the sign.

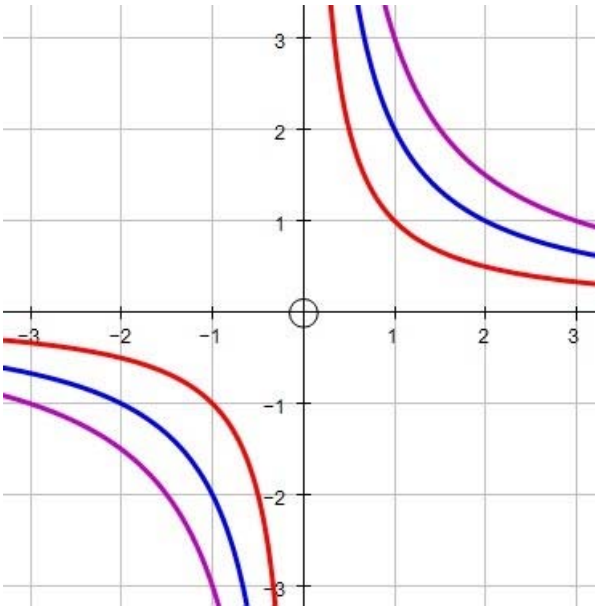
If you have $y = \frac{k}{x}$ for a positive constant k the graph looks like the one on the left.

If you have a negative constant k then the graph looks like the one on the right.

Positive Reciprocal:

This is the graph of $y = \frac{1}{x}$, $y = \frac{2}{x}$ and $y = \frac{3}{x}$

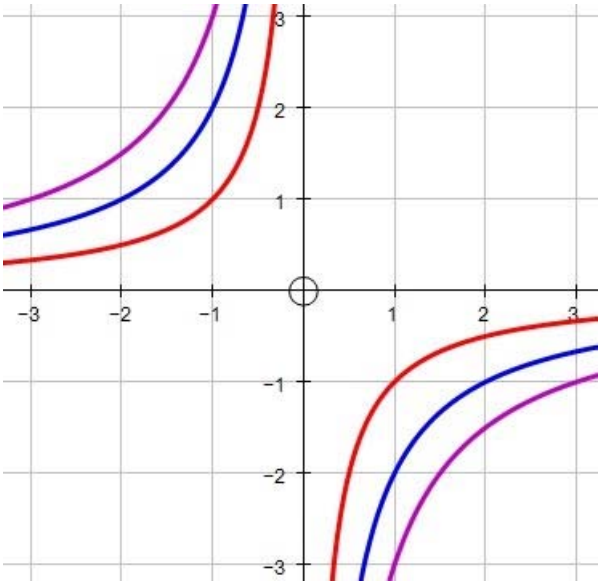
The closest graph to the axes is $y = \frac{1}{x}$



Negative Reciprocal:

This is the graph of $y = -\frac{1}{x}$, $y = -\frac{2}{x}$ and $y = -\frac{3}{x}$

The closest graph to the axes is $y = -\frac{1}{x}$



Chapter 5
Practice examination style paper

1. Expand and simplify

$(a)\ (2x+3)(2x-1)$ (b) $(3x-2)^2$ (c) $5x(4-x)-3(4x-8)$

2. Factorise

(a) $x^2 - 5x$ (b) $4a^2 - 81$ (c) $2x^2 + 5x - 3$ (d) $6y^2 - 13y + 5$

3. Solve the following equations

(a) $a^2 + 4a = 12$ (b) $7(6x-7) = 9x^2$ (c) $\frac{2}{y+1} + 1 = 2y$

4. Complete the square

(a) $x^2 - 6x + 11$ (b) $x^2 + 4x - 4$ (c) $2x^2 - 8x + 5$

5. Write each of these as a single power of x and/or y

(a) $(xy^2)^3$ (b) $\frac{1}{x^5}$ (c) $\frac{y^6}{y^{-2}}$ (d) $\frac{3}{x^2} \times \frac{4x^5}{3}$ (e) $\left(\frac{\sqrt{y}}{5}\right)^2$ (f) $\frac{(4\sqrt{x})^3}{16x}$

6. Solve

(a) $2^{x-1} = 16$ (b) $2(3^y - 10) = 34$ (c) $x^{\frac{3}{2}} = 64$ (d) $2^{x^2+2} = 8^x$

7. Simplify

(a) $5\sqrt{3} + \sqrt{27}$ (b) $\frac{\sqrt{5}+\sqrt{20}}{\sqrt{5}}$ (c) $\sqrt{18} \times \sqrt{50}$ (d) $\sqrt{12} - \frac{5}{\sqrt{3}}$

8. Solve $x\sqrt{12} + 9 = x\sqrt{3}$ giving your answer in the form $k\sqrt{3}$, where k is an integer.

9. Solve the simultaneous equations $x = y - 3$ and $3x^2 - 2xy + y^2 - 17 = 0$

10. Sketch the following graphs.

(a) $y = x^2 - 5x + 6$ (b) $y = -\frac{2}{x}$ (c) $y = x^3 - 2x^2 - 15x$

Chapter 6

Solutions

6.1 Solutions to Exercises

1 (a) a^7 (b) x^3 (c) b^2 (d) a (e) x^9
(f) x^{18} (g) a^4 (h) a^{12} (i) x^6 (j) b^6
(k) b^6 (l) a^2 (m) x^5 (n) 1 (o) x

2 (a) $x + x^2$ (b) $4x + 2$ (c) $2x^2 - 2x$ (d) $8x + 4x^2$
(e) $15x - 10x^2$ (f) $x^2 + x^3$ (g) $x^2 + 3x + 2$ (h) $x^2 - 1$
(i) $x^2 + x - 2$ (j) $x^2 - 5x + 6$ (k) $2a^2 + 3a + 1$ (l) $x^2 - y^2$
(m) $acx^2 + (bc - ad)x - bd$ (n) $x + 2x + 1$

3 (a) $7x - 3y$ (b) $-p$ (c) $2x + 2$ (d) $2a + 3b$
(e) $3m + 11n$ (f) $2x - 2y$ (g) $6ab - 3ac - 2a$
(h) $m^2 - n^2$ (i) 0 (j) $4x - 2y + 15z$

4 (a) $x^2(x + 1)$ (b) $x^2(2 - x)$ (c) $2x^2(2x - 1)$ (d) $4x^2(2x + 1)$
(e) $4x^2(4 - 9x)$ (f) $2x^2(2x + 11)$ (g) $2x^2(8 - 3x)$ (h) $7x^2(2x + 3)$
(i) $7x^2(4x - 7)$

5 (a) $x^2 - 25$ (b) $(x + 5)(x - 5)$ (c)(i) $(x + 7)(x - 7)$
(c)(ii) $(x + 8)(x - 8)$ (c)(iii) $(x + 10)(x - 10)$ (c)(iv) $(x + a)(x - a)$
(c)(v) $(x + 2b)(x - 2b)$

6 (a) $(x + 3)(x + 4)$ (b) $(x + 1)(x + 7)$ (c) $(x + 2)(x + 9)$
(d) $(x + 3)(x + 9)$ (e) $(x + 7)(x + 10)$ (f) $(x + 2)(x + 4)$
(g) $(x + 2)(x + 14)$ (h) $(x + 7)(x + 11)$ (i) $(x + 7)(x + 9)$

7 (a) $(x + 2)(x - 1)$ (b) $(x + 5)(x - 4)$ (c) $(x + 3)(x - 4)$
(d) $(x - 4)(x - 9)$ (e) $(x - 2)(x - 8)$ (f) $(x + 7)(x - 6)$
(g) $(x + 15)(x - 2)$ (h) $(x - 8)(x - 9)$ (i) $(x + 9)(x - 11)$

8 (a) $(2x + 1)(x + 1)$ (b) $(3p + 1)(p + 2)$ (c) $(2y - 3)(y - 1)$

	(d)	$(2+m)(1-m)$	(e)	$(3r+1)(r-1)$	(f)	$(5+y)(1-4y)$
	(g)	$(3a-1)(a-4)$	(h)	$(5x+2)(x-2)$	(i)	$(2x+1)(2x+3)$
	(j)	$(3s-1)^2$	(k)	$(2m+5)(2m-5)$	(l)	$(2+3y)(1-2y)$
	(m)	$(4u+1)(u+4)$	(n)	$(3p+4)(2p-1)$	(o)	$(8x+3)(x+2)$

9 (a) $8\sqrt{2}$ (b) $\sqrt{3}$ (c) $10\sqrt{2}$
(d) $2\sqrt{10}$ (e) $5\sqrt{5}$ (f) $-\sqrt{6}$

10 (a) $3+2\sqrt{3}$ (b) $2+\sqrt{3}$ (c) $5+3\sqrt{3}$
(d) $10+9\sqrt{3}$ (e) $43-23\sqrt{3}$ (f) $-43+\sqrt{3}$

11 (a) $13+5\sqrt{5}$ (b) $7\sqrt{2}-11$ (c) $37+12\sqrt{7}$
(d) $7+13\sqrt{2}$ (e) $1+\sqrt{10}$ (f) $8-5\sqrt{2}$

12 (a) $\frac{1}{5}\sqrt{5}$ (b) $\frac{2}{3}\sqrt{3}$ (c) $\frac{1}{4}\sqrt{2}$
(d) $2\sqrt{7}$ (e) $\sqrt{6}$ (f) $\frac{1}{3}\sqrt{3}$
(g) $\frac{1}{21}\sqrt{7}$ (h) $\sqrt{2}$ (i) $\frac{1}{20}\sqrt{5}$
(j) $\frac{1}{12}\sqrt{6}$ (k) $\frac{4}{9}\sqrt{10}$ (l) $\frac{5}{6}\sqrt{21}$

13 (a) $x=-7$ or $x=5$ (b) $x=18$ or $x=-3$ (c) $x=10$ or $x=-9$
(d) $x=-9$ or $x=-6$ (e) $x=-3$ or $x=-17$ (f) $x=4$ or $x=8$
(g) $x=11$ or $x=13$ (h) $x=12$ or $x=5$ (i) $x=22$ or $x=-8$
(j) $x=19$ or $x=7$ (k) $x=-11$ or $x=4$ (l) $x=-15$ or $x=-\frac{1}{2}$
(m) $x=3$ or $x=-\frac{1}{2}$ (n) $x=\frac{9}{2}$ or $x=-1$ (o) $x=3$ or $x=-\frac{1}{2}$

14 (a) $x=4$ or $x=-4$ (b) $x=7$ or $x=-7$ (c) $x=\frac{9}{2}$ or $x=-\frac{9}{2}$
(d) $x=\frac{8}{3}$ or $x=-\frac{8}{3}$

15 (a) $q=3$ (b) $x=9$ (c) $y=11$
(d) $x=\frac{2}{3}$ (e) $y=\frac{5}{2}$

16 (a) $x=\pm 5$ (b) $a=\pm 6$ (c) $y=\pm\frac{7}{2}$
(d) $b=\pm 4$ (e) $a=\pm 8$ (f) $x=\pm\frac{2}{9}$
(g) $y=\pm\frac{3}{2}$ (h) $x=\pm 4$ (i) $p=\pm 3$

(j) $p = \pm 2$ (k) $p = \pm\frac{7}{5}$ (l) $b = \pm 2$

17 (a) $y = 8$ or $y = -7$ (b) $w = \frac{3}{4}$ or $w = \frac{1}{3}$ (c) $y = -\frac{4}{3}$ or $y = -\frac{1}{2}$

(d) $c = -1$ or $c = 2$ (e) $q = 2$ or $q = -4$ (f) $d = 1$ or $d = -3$

(g) $x = 12$ or $x = 7$ (h) $y = -6$ or $y = \frac{3}{5}$ (i) $p = 0$ or $p = -4$

(j) $x = \frac{1}{4}$ or $x = -\frac{3}{2}$ (k) $x =$ or $x = 2$ (l) $x = \frac{5}{2}$ or $x = -4$

(m) $y =$ or $y = 3$ (n) $y = -\frac{1}{2}$ or $y = -3$ (o) $a = 1$ or $a = -3$

(p) $x = 3$ or $x = \frac{7}{3}$

18 (a) $(x+1)^2 + 3$ (b) $(x-1)^2 + 3$ (c) $(x-2)^2 - 3$

(d) $(x+3)^2 - 9$ (e) $(x+2)^2 + 4$ (f) $(x-4)^2 - 21$

(g) $(x+6)^2 - 6$ (h) $(x-5)^2$ (i) $(x+3)^2 - 18$

(j) $(x-2)^2 + 14$ (k) $\left(x+\frac{3}{2}\right)^2 + \frac{3}{4}$ (l) $\left(x+\frac{1}{2}\right)^2 - \frac{5}{4}$

(m) $(x-9)^2 + 19$ (n) $\left(x-\frac{1}{2}\right)^2 - \frac{3}{4}$ (o) $\left(x+\frac{9}{2}\right)^2 - \frac{1}{4}$

(p) $\left(x-\frac{7}{2}\right)^2 - \frac{57}{4}$ (q) $\left(x-\frac{3}{2}\right)^2 + \frac{11}{4}$ (r) $\left(x-\frac{11}{2}\right)^2 + \frac{27}{4}$

(s) $\left(x+\frac{1}{3}\right)^2 + \frac{8}{9}$ (t) $\left(x-\frac{1}{4}\right)^2 - \frac{5}{16}$

19 (a) $2(x+1)^2 + 1$ (b) $2(x-2)^2 - 15$ (c) $3(x-1)^2$

(d) $4(x+3)^2 - 25$ (e) $-(x+1)^2 - 4$ (f) $-(x-5)^2 + 26$

(g) $2\left(x+\frac{1}{2}\right)^2 - \frac{3}{2}$ (h) $3\left(x-\frac{3}{2}\right)^2 - \frac{7}{4}$ (i) $3(x-4)^2$

(j) $3\left(x-\frac{5}{2}\right)^2 - \frac{75}{4}$ (k) $5(x+4)^2 - 10$ (l) $2\left(x+\frac{5}{4}\right)^2 - \frac{9}{8}$

(m) $4\left(x+\frac{3}{4}\right)^2 + \frac{37}{4}$ (n) $-2(x-1)^2 + 1$ (o) $-3\left(x+\frac{1}{3}\right)^2 + \frac{13}{3}$

(p) $\frac{1}{3}\left(x+\frac{3}{4}\right)^2 - \frac{7}{16}$

20 (a) $y = 2 \pm \sqrt{2}$ (b) $p = -1 \pm \sqrt{3}$ (c) $x = 3 \pm \sqrt{5}$

(d) $r = -5 \pm 3\sqrt{2}$ (e) $x = 1 \pm 2\sqrt{3}$ (f) $a = 7 \pm 3\sqrt{6}$

(g) $m = \frac{1}{2}(3 \pm \sqrt{5})$ (h) $y = \frac{1}{2}(7 \pm \sqrt{13})$ (i) $u = -11$ or 4

(j) $y = 1 \pm \frac{1}{2}\sqrt{2}$ (k) $p = 3 \pm \frac{2}{3}\sqrt{3}$ (l) $x = -3 \pm \frac{3}{2}\sqrt{6}$

(m) $m = \frac{1}{2}(1 \pm \sqrt{5})$ (n) $x = \frac{7}{2}$ (o) $t = \frac{1}{6}(-1 \pm \sqrt{13})$

(p) $a = \frac{1}{4}(7 \pm \sqrt{17})$

21 (a) $x = 1$ and $y = 3$ (b) $x = 4$ and $y = -2$ (c) $x = -\frac{1}{2}$ and $y = 5$

(d) $x = 7$ and $y = -4$ (e) $x = -5$ and $y = -3$ (f) $x = \frac{1}{3}$ and $y = -\frac{5}{3}$

22 (a) $(-2, 0)$ and $(3, 5)$ (b) $(-3, -1)$ and $(4, 27)$ (c) $(-2, -5)$ and $(\frac{3}{2}, 2)$

23 (a) $x = -1, y = 4$ or $x = 2, y = 7$ (b) $x = \frac{1}{2}, y = -\frac{7}{2}$ or $x = 3, y = -6$ (c) $x = 0, y = -5$ or $x = 4, y = 3$

(d) $x = -3, y - 4$ or $x = -1, y = 8$ (e) $x = -2, y = 3$ or $x = 2, y = -1$ (f) $x = -1, y = 2$ or $x = \frac{1}{2}, y = \frac{1}{2}$

(g) $x = -1, y = 5$ or $x = 4, y = -3$ (h) $x = 0, y = 0$ or $x = \frac{8}{3}, y = \frac{4}{3}$ (i) $x = 2, y = 0$ or $x = \frac{5}{2}, y = -\frac{5}{2}$

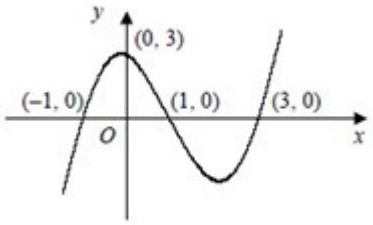
(j) $x = 2, y = 1$ or $x = 5, y = 7$ (k) $x = 3, y = -1$ or $x = 4, y = 1$ (l) $x = 1, y = 2$ or $x = \frac{5}{2}, y = -\frac{5}{2}$

(m) $x = -2, y = -6$ or $x = 2, y = -4$ (n) $x = \frac{1}{2}, y = -\frac{5}{4}$ or $x = 2, y = 1$ (o) $x = -5, y = 4$ or $x = -2, y = 5$

24 (a) $x = -5, y = -1$ $x = 4, y = \frac{1}{2}$ (b) $x = -1, y = -6$ $x = 6, y = 1$ (c) $x = \frac{1}{2}, y = 5$ $x = \frac{3}{4}, y = 4$

25

(a)



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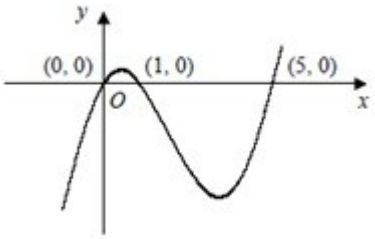

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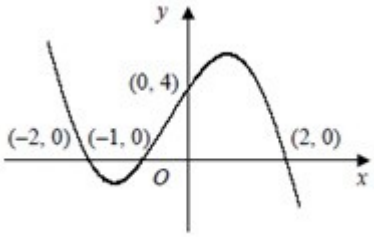

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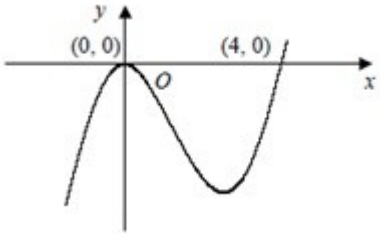

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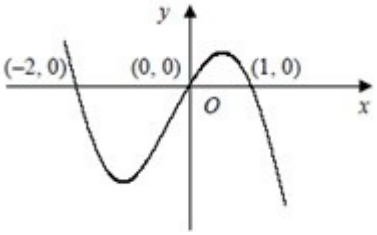

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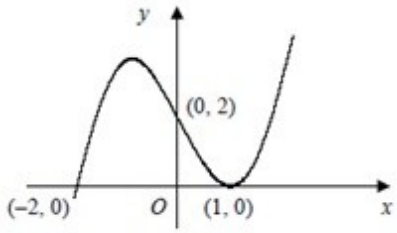
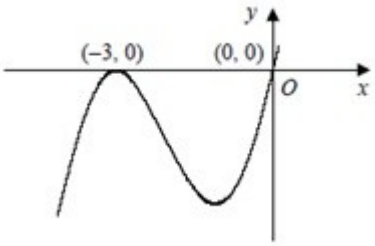
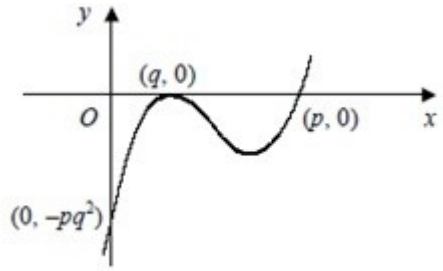


26 (a) $x(x + 3)^2$

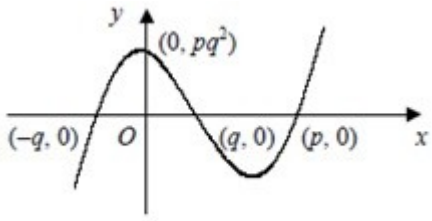
(b)



27 (a)



(b) $y = (x - p)(x + q)(x - q)$



6.2 Solutions to Practice examination style paper

1 (a) $4x^2 + 4x - 3$ (b) $9x^2 - 12x + 4$ (c) $8x - 5x^2 + 24$

2 (a) $x(x-5)$ (b) $(2a + 9)(2a - 9)$ (c) $(2x - 1)(x + 3)$ (d) $(3y + 1)(2y - 5)$

3 (a) $a = 2$ or $a = -6$ (b) $x = \frac{7}{3}$ (c) $y = -\frac{3}{2}$ or $y = 1$

4 (a) $(x - 3)^2 + 2$ (b) $(x + 2)^2 - 20$ (c) $2(x - 2)^2 - 3$

5 (a) x^2y^6 (b) x^{-5} (c) y^8 (d) $4x^3$ (e) $\frac{y}{25}$ (f) $4x^{\frac{1}{2}}$

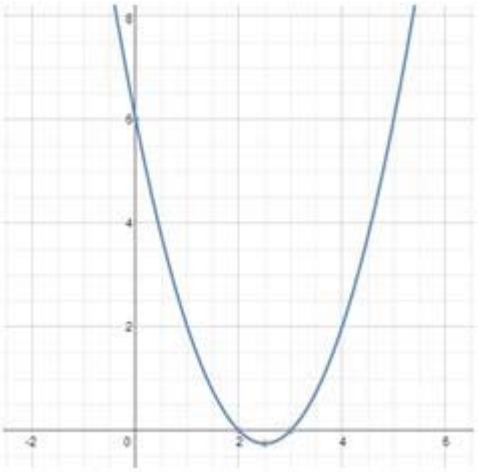
6 (a) x=5 (b) y=3 (c) x=16 (d) x=2 or x=1

7 (a) $8\sqrt{3}$ (b) 3 (c) 30 (d) $\frac{1}{\sqrt{3}}$

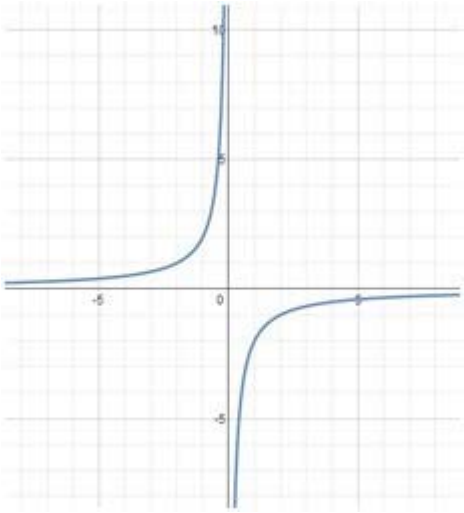
8 $x = -3\sqrt{3}$

9 $x = -2, y = 1$ and $x = 2, y = 5$

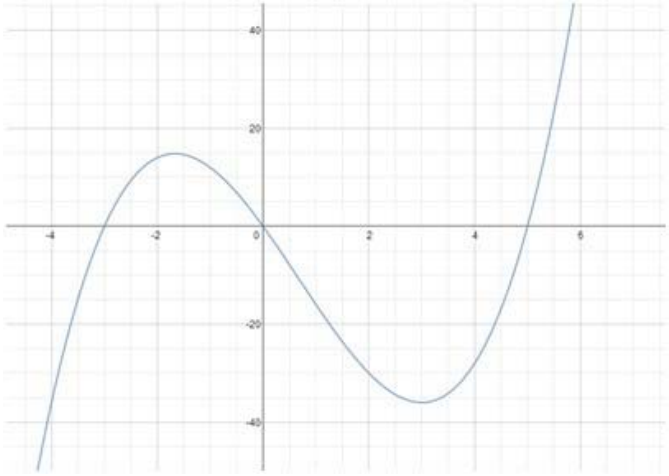
10 (a)



(b)



(c)



Music

Key Skills to develop and refine	• Understanding of the symphony • Understanding of music in the twentieth century • Skills of analysis • Skills of evaluation • Composition skills • Aural skills
1. Read a book	*Listen to This* by Alex Ross has several articles on different musical topics. A more substantial read, but more relevant to the course, is *The Rest is Noise* by the same author, which covers the development of music in the 20th century. This is useful for AOSE in particular.
2. Familiarise yourself with the Symphony	Listen to various symphonies such as: Stamitz, *Symphony in D* Haydn, *Symphony 101* Beethoven, *Symphony No. 5 in Cm* Tchaikovsky, *Symphony No. 5* Mahler, *Symphony No. 1 'Titan'* Consider how they differ from one another, and how the changing times may have contributed to these differences.
3. Explore music podcasts	Listen to some music podcasts to explore assorted styles and theoretical ideas. An example is The Listening Service which can be found on BBC Sounds.
4. Watch informative documentaries	Search for the following videos on YouTube to introduce yourself to topics studied in A Level Music: Howard Goodall – Introduction to the symphony Howard Goodall – a deeper look at the symphony Howard Goodall – Debussy and Impressionism
5. Improve your writing of harmony and chordal texture	Go to www.ALevelMusic.com and use the resources in the "Chorale Worksheets" section of the site to develop your writing of typical cadences in western classical music.

PHYSICAL EDUCATION

Key Skills to develop and refine	• To understand the different dimensions of Physical Education and Sport which impact on wider societal issues. • To develop the ability to read critically using a wide range of sources.
1. Review the specification	Highlight areas that you think you will be especially interested in. Produce a summary (one paragraph) to explain how studying A Level Physical Education may help to refine and improve your performance in your chosen sport.
2. Listen to some podcasts	Listen to the following episode of the High Performance podcast: E317 (**Prof. Steve Peters: Meet The Secret Weapon Behind Elite Athletes & The Top 1%). In this episode,** Renowned psychiatrist and best-selling author of 'The Chimp Paradox', Prof. Steve Peters shares his expertise on how the mind works and how to make the most of it.
3. Read a book	Read the article *Why do governments invest in elite sport?* A polemic Grixa Carmichael, 2011) which was provided during the induction session. Use this to complete the compulsory task.
4. Watch a film	**Icarus**. Give your opinion of the film? What was the most thought-provoking element? Why? What solutions/sanctions do you think would help reduce the doping that occurs in professional sport?
Compulsory task	Produce a mind map showing the reasons why government might invest in both grassroots and elite sport. You should consider the following areas: economic benefits, health benefits, social benefits,

Summer Preparation Work for A Level Physics

1. Ensure you have an account on https://www.isaacphysics.org
   Use your WHSB email address if you have one. If you do not have a WHSB email address yet, use a personal email address – you can change it in September.
2. Click this link to join the appropriate group:
   https://isaacphysics.org/account?authToken=JTX2KE
   The class code is JTX2KE.
3. Watch this playlist of videos:
   https://www.youtube.com/playlist?list=PLmFthZ_IoSnc0YyUFTXr2Vv3KpaIpwNJJ
   Each video from the playlist is also linked below. I recommend spacing the work out over the summer.
4. Answer the questions from Isaac Physics.
   Make sure you are logged into Isaac Physics and are in the group using the link or code above before you answer these questions.
   The questions are also linked below, but will appear under "My Isaac > My Assignments" if you are correctly logged onto Isaac Physics.

Week 1: Vectors

🎥 https://youtu.be/aBQr3tcANHs?si=9fyqLpjizkHjVOY7

🖉 https://isaacphysics.org/gameboards?stage=all#pre_uni_maths_lvl2_4

Week 2: Algebra

🎥 https://youtu.be/SLo_pJx-7ug?si=ckfP_3bEPGQzLeB4

🖉 https://isaacphysics.org/gameboards?stage=all#pre_uni_maths_lvl1_1

Week 3: Logarithms

🎥 https://youtu.be/nDvJDQHiJ6E?si=V0VPWORGJYSGYbJY

🖉 https://isaacphysics.org/gameboards?stage=all#maths_book_gcse_ch3_13_hprob

Week 4: Dimensional analysis

🎥 https://youtu.be/LLO3r-uXwgY?si=lC5-b8TyiT-f7ZIw

🖉 https://isaacphysics.org/gameboards#4fe3ed32-c2a3-47ea-b7f7-16956058d320

Week 5: Graphing skills

🎥 https://youtu.be/jMN_ipP7hfE?si=wG35TJqE1Ne9F4qL

🖉 https://isaacphysics.org/gameboards?stage=all#phys19_a6

Week 6: Errors

🎥 https://youtu.be/4gO6UrvNKKw?si=gUpKO6d467__r42Q

🖉 https://isaacphysics.org/gameboards?stage=all#phys19_e3

Politics

Dear prospective Politics student,

The A level syllabus we follow is from Edexcel (2017). We do the US Politics Option for Paper 3, and our Optional Ideology is Feminism. You can download the specification at:

https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/politics-2017.html

The specification may not mean too much to you at the moment but you can at least see the main components: UK Politics (focusing on ideas such as Representation and Democracy or political parties and elections); UK Government (focusing on institutions such as Parliament and Cabinet); Core Ideologies (Liberalism, Conservatism and Socialism); Optional Ideology (the aforementioned Feminism; US Politics & Government (combining both the institutions of government with the practice of politics in the US) and Comparative Politics (comparing aspects of UK and US politics).

To give you a sense of how these topics might be approached, consider two recent news stories: Black Lives Matter (and in particular the protests in Bristol) and the House of Commons' decisions on procedures against sexual harassment and bullying within Parliament.

Black Lives Matter

Amongst the most repeated concepts on UK Politics are Representation, Participation, Accountability and Legitimacy. The argument is that if you are going to have a democratic system of government ("government of the people, for the people and by the people" according to Abraham Lincoln in 1863) then you need citizens to participate in your democratic processes; to have their views represented through those processes; and to have decision-makers accountable to them in some way (a core definition of democracy might include the ability of the people to change those who govern them by peaceful means).

Read the BBC coverage of the toppling of the statue of late 17th early 18th Century slave trader Edward Colston in Bristol at the start of June 2020. Make sure you follow the Related Topics at the bottom because they help to explain that this was a story that began several years ago (e.g., the "Who was Edward Colston…" article was originally written in February 2018).

https://www.bbc.co.uk/news/uk-england-bristol-52965803

Also, look at the comments from Mayor of Bristol Marvin Rees:

https://www.theguardian.com/uk-news/2020/jun/10/bristol-mayor-marvin-rees-edward-colston-statue-slavery

https://www.theguardian.com/uk-news/2020/jun/13/bristol-mayor-colston-statue-removal-was-act-of-historical-poetry

The question we can then ask is, **was the Black Lives Matters protest in Bristol that included the toppling of the statue a triumph for democracy or a failure**? Was direct action by a group of citizens more successful in terms of political representation, participation, and accountability than the "normal" democratic process of elections? Or was the protestors' action an affront to political legitimacy (usually defined as the right and acceptance of an authority, usually a governing law or a regime)?

House of Commons procedures for dealing with sexual harassment and bullying

This may seem to be a narrower topic – how the House of Commons should deal with what are really quite normal workplace issues affecting every company or public body in the land – but it does raise some interesting questions about one of our key institutions of government. Part of the question revolves around the status of MPs as our elected representatives. Who should be able to remove an MP from their position and prevent them carrying out that representative function? Only the electorate, the House of Commons collectively or an outside agency in the form of an unelected tribunal or court?

Read the following articles and you will see that the government was trying to deal with an awkward constitutional situation (to expel an MP and thus negate a democratic choice by the electorate should not be in the hands of anybody except Parliament itself) whilst creating a complaints process that would be fair to both sides (given that politically motivated "false" accusations were at least conceivable, as well as politically motivated "defence" of a colleague).

https://www.bbc.co.uk/news/uk-politics-53153004

https://www.theguardian.com/politics/2020/jun/23/rees-mogg-accused-of-wrecking-parliament-harassment-body (Actually, if you watched the debate in the House of Commons, he did nothing of the sort).

The background to much of this can be found at:

https://www.bbc.co.uk/news/uk-politics-48935860

Again, following the links to other stories, especial Dame Laura Cox's Report is helpful.

You can even skim read Dame Laura Cox's full Report (155 pages!) from 2018 that showed the worrying extent of sexual harassment and bullying with Parliament and the lack of faith employees had in the existing complaints procedure (she is a distinguished judge and former barrister):

https://www.parliament.uk/mps-lords-and-offices/offices/commons/media-relations-group/news/statement-on-dame-laura-coxs-report-into-the-bullying-and-harassment-of-house-of-commons-staff-/

The question we can ask ourselves is **should an unelected tribunal have the power to remove an MP from office?** On what basis do we set aside the decision of the electorate? Is the independence and sovereignty of Parliament actually more important that the need to have a robust complaints procedure to tackle what can be serious (though not unlawful) misbehaviour in the workplace in line with the expectation of every other worker in the UK?

Have a look at the Recall of MPs Act 2015 either on Wikipedia or the House of Commons Library. This might have provided an option so that MPs were not expelled directly but forced to seek re-election. However, neither the (then) Leader of the House, Jacob Rees-Mogg MP, or the House of Commons generally wanted to use this approach. Can you see why? Interestingly, there has been a case of an MP being found guilty of harassing an employee, but because it was the verdict of an Employment Tribunal and not a law Court, the MP could not be "recalled" under the terms of the Act. It looks as if the Recall of MPs act 2015 will need to be amended. The most recent case (an SNP MP) has ended up being seen as essentially an internal party matter, but the number of MPs being

accused of bullying and harassment is significant at 56 since the new procedure came in. This does not include the criminal investigations of a small number of MPs for rape, sexual assault, stalking and threatening behaviour.

What kind of student are you?

We expect our Politics students to have an interest in politics. That means listening to BBC Radio 4 The *Today Programme* in the morning, or reading a decent broadsheet newspaper, or following political journalism on-line of through magazines such as the New Statesman or The Spectator, watching *Newsnight* or a Sunday politics programme such as *Andrew Marr* or *Robert Peston* rather than switching channels. You do not need to do all these things every day/week, but each day should see you inform yourself about UK and US politics is some way at a reasonably high level.

It is great if you are aware of and willing to invest in relevant programmes on TV. Now, BBC are reshowing the excellent *Thatcher: A Very British Revolution* whilst Sky is showing the documentary *Hillary* which is great for US politics. BBC I-Player still has a series of excellent, short presentations by the political journalist Steve Richards which include *Why Parties Split* and *Great Prime Ministers* etc.

However, **one resource I want you all to look at** as it is designed for use with our A level course is at:

https://www.prechewedpolitics.co.uk/

We have an annual subscription that is set up to run through my account. That means that from every July that students – including you – can log-in using my details:

Username: stevensr@whsb.essex.sch.uk

Password: Learn@Home2021 [it is case sensitive, I think]

It is an excellent site and resource that I have used for 4-5 years. There are "video" programmes on important topics and accompanying handouts and worksheets. For UK Politics we always start with "Democracy and Participation" whilst for UK Government it is "The UK Constitution."

Some ideas for wider independent reading/study are given below. Try giving one of the books by David Runciman or the *Yes Minister* TV programmes (certainly on YouTube) or an account of a General Election campaign a go:

Newspapers

Domestic news and editorial pages from a broadsheet and/or tabloid or a semi-regular basis

Internet

Conservative Party www.conservatives.com

Labour Party www.labour.org.uk

Liberal Democrats www.libdems.org.uk

Satirical, tittle-tattle and gossip parliamentary blog www.order-order.com

Political bookshop and portal site www.politicos.co.uk (you can get the books/DVDs etc. listed below…)

TV and Radio

Radio Four's *Today Programme*

BBC 2's *Newsnight*

Channel Four News

BBC1's *Question Time*

BBC Video/DVD

Yes Minister (also available in book by Anthony Jay and Jonathan Lynn)

Yes, Prime Minister (also available in book by Anthony Jay and Jonathan Lynn)

The Thick of It (bad language throughout – the BBC sign language department had to "invent" 4 new swear words in the first episode alone)

Light-hearted or provocative

How to be a minister by Gerald Kaufman

The Art of Political Lying by Peter Oborne

A Very Short Introduction to British Politics by Anthony Wright MP (an old favourite…)

Humorous anecdotal accounts (though dated!)

Diaries by Alan Clark (highly readable; quite irreverent and racy stuff but about the 1980s so dated from your point-of-view)

A View from the Foothills by Chris Mullin MP (a well-received diary from a self-confessed "failed" Labour politician with many good insights into the nature of government and politics)

Servants of the People by Andrew Rawnsley (quite humorously written but serious comment on the early days of New Labour. Again, this is rather "ancient history" for you, but it was a seminal moment in UK political history)

The End of the Party by Andrew Rawnsley (fascinating and in places quite vicious account of the second part of New Labour's period in office; particularly critical of Brown and the internal feuding)

Recent(ish) Political Campaigns

Why the Tories Won: The Inside Story of the 2015 Election by Tim Ross (good account of the "surprise" Tory victory in 2015 which came as no surprise to those inside the campaign. It is particularly good at explaining how the Tories were starting to make clever use of social media)

The British General Election of 2015 by Philip Cowley and Dennis Kavanagh

Betting the House: The Inside Story of the 2017 General Election by Tim Ross and Tom McTague

The British General Election of 2017 by Philip Cowley and Dennis Kavanagh (one of the best in a series of studies of British Elections from 1945 onwards)

The British General Election of 2019 by Robert Ford and others (Written by several UK academics this is recently published in paperback)

Unleashing Demons: The Insider Story of Brexit by Craig Oliver (a chief advisor to David Cameron)

Memoirs and Historical Accounts

The Downing Street Years by Lady Thatcher (not that readable, unfortunately. Again "ancient history" though Thatcher was a genuinely "historic" figure who changed Britain and British politics)

Prime Ministers: The Office and its Holders since 1945 by Peter Hennessy (well informed but a hefty tome; excellent Introduction. Superbly written)

The New Machiavelli by Jonathan Powell (difficult to categorise memoir by Blair's Chief of Staff which seeks to salvage the reputation of both Blair and Machiavelli – see below!)

The Unfulfilled Prime Minister: Tony Blair's Quest for a Legacy by Peter Riddell (a leading political journalist's take on the hugely influential but not necessarily ultimately successful Prime Minister?)

British Prime Ministers by Robert Parker (short, accessible reviews which go up to Cameron in the 2013 edition)

Why we get the wrong politicians by Isabel Hardman (I do not really agree with Ms Hardman, but the opening chapters do explain the trials and obstacles in the way of becoming an MP)

The Prime Ministers We Never Had by Steve Richards (A very experienced journalist, Steve Richards produced several (25min) programmes for BBC Parliament channel on subjects such as "Turning Points" and "Prime Ministers" and the above title. You may be able to find them on YouTube or I-player)

Political Thought: Novels

Nineteen Eighty-Four by George Orwell

Animal Farm by George Orwell

Political Thought: Academic/General

How Democracy Ends by David Runciman (Professor of Politics at Cambridge; most of his books are worth reading because they are intended for the intelligent reader rather than academics – try *Where Power Stops*)

Political Thought: Heavyweight Literature

Politics by Aristotle (the invention of "political science" as it looks less towards the "ideal" state of, say Plato's *Republic*, but more towards government as it exists. Not an easy read and Jonathan Barnes' *Aristotle: A Very Short Introduction* is much more accessible)

Leviathan by Thomas Hobbes (a pessimistic look at "the state of nature" which advocates almost any political alternative to the horrors of anarchy. Again, not easy at all… Try Richard Tuck's *Hobbes: A Very Short Introduction* instead)

Two Treatises for Government by John Locke (the foundation of 18th Century liberalism with ideas of government by consent and limited government; John Dunn's *Locke: A Very Short Introduction* is very good)

The Social Contract by Jean-Jacques Rousseau (an optimistic look at "the state of nature" which sees society as a potentially corrupting influence if there are no safeguards; really for university politics courses)

On Liberty by John Stuart Mills (in many ways the key text for 19th Century liberalism)

The Road to Serfdom by Friedrich Hayek (hugely influential on many modern conservatives, written in 1944 it defended free market liberal economics and savaged socialism and fascism for their promotion of collective values over the freedom of the individual; some Y13 Politics & Economic students do tackle this…)

In Defence of Politics by Sir Bernard Crick (a little dated but intended for intelligent Sixth Former/undergraduate; Crick was the main driver for Citizenship to be taught in schools)

The Prince by Niccolo Machiavelli (problematic without some understanding of renaissance Italy; I tend to find Sixth Formers dive into this and get very little benefit)

The New Machiavelli: How to wield power in the modern world by Jonathan Powell (perhaps conceptually flawed but written by close confidant and advisor to Tony Blair; might work best with previous book and certainly readable)

Please work through the two questions I have posed on Black Lives Matters and the House of Commons vote on harassment procedures. You do not need to write anything but taking notes from the articles is actually very good practice. You should be able to see how our course tries to explore some of the concepts beneath the headlines. Questions such as how democracy can be made effective or meaningful; whether representative democracy (i.e., elections for mayor, councillor, MP etc.) is necessary and sufficient or whether it can be strengthened through other forms of political participation and representation etc.

Mr Stevens

Design and Technology: Product Design

Key Skills to develop and refine	- **Designing aptitude using Solidworks 3D CAD package (or similar)** - **Graphic communication and accuracy of sketching skills** - **An appreciation of what is 'good design' based on Dieter Rams 10 Principles** - **Understand what it is like to work as an engineer for Dyson**
1.	Practise your skills using Solidworks. Download details will be made available on Microsoft Teams page. Mac users will need to use alternative packages such as Fusion360 (free trial versions for education). Use some simple YouTube tutorials to develop your skills using this software.
2.	Using your sketch books, practise your sketching technique using an appropriate 3d drawing method. Look around your house for personal belongings and interesting pieces of furniture and replicate in perspective. Further your skills by adding appropriate render or shade.
3.	Using resources such as the Design Museum, investigate and explore Dieter Rams 10 Principles of Good Design. https://designmuseum.org/discover-design/all-stories/what-is-good-design-a-quick-look-at-dieter-rams-ten-principles
4.	The James Dyson Foundation provides some fantastic resources to further your understanding of the world of engineering and appreciate what it is like to be an engineer working for Dyson. Using the link below, explore some of the profiles, discussing their experiences working at Dyson. https://www.jamesdysonfoundation.co.uk/resources/other-engineering-resources/engineer-stories.html
Compulsory task	**Using hand sketches and CAD software (as above – not SketchUp), produce a set (at least one page of A4) of possible ideas for a folding Angle-Poise desktop lamp. Drawings and model should be accompanied by construction details and annotation.**

PSYCHOLOGY

Key Skills to develop and refine	• An understanding of how psychological research is conducted, including an analysis of effective ways to conduct research with human participants. • An understanding of psychological concepts including mental illness diagnostic criteria. • Real-life applications of psychological research in law and healthcare. • The process of conducting psychological research and publishing research that has been peer reviewed in academic journals.
1. Research Methods techniques used in Psychology	Using the Internet, look up some of the Research methods used by Psychologists. What are the strengths and limitations of using each to study human behaviour? 1. Experimental methods e.g. Laboratory experiment, Field experiment 2. Observational techniques e.g. Controlled observation, Naturalistic observation; Covert Observation, Overt Observation 3. Self-report techniques e.g. Interviews, Questionnaires 4. Case Studies 5. Correlations
2. Research the DSM and ICD	Using the Internet, look up how different conditions are diagnosed. Search for the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the International Classification of Diseases (ICD-11). Look at the criteria for diagnosing two disorders, what symptoms would an individual display?
3. British Psychological Society (BPS)	Access the BPS website 'Research Digest' https://digest.bps.org.uk/ Read two articles that interest you.
4. Read a full journal article using Google Scholar.	Access Google Scholar online https://scholar.google.com/ This will filter Google to give you published academic research studies. Search for a Psychological topic that interests you and read a published research study. Consider why it is important to verify or check the quality of research (peer review) before it is published.
Compulsory task	**You must complete the tasks listed above labelled 1-3.** Task 4 is optional. You should expect to discuss your preparation during an early Psychology lesson. What did you learn? What questions were left unanswered?

Religious Studies

Key Skills to develop and refine	• To think critically and analytically • To empathise with the views of others • To explore philosophical language and thought through significant concepts and the works of key thinkers. • To consider a range of ethical theories, both deontological and teleological, religious, and non-religious. • To explore how ethical language has changed over time
1. Read a Non-Fiction Book	Read at least one of these: • Think by Simon Blackburn • Ethics: A Very Short Introduction by Simon Blackburn • The Thinker's Guide to God by Peter Vardy and Julie Arliss • The Thinker's Guide to Evil by Peter Vardy and Julie Arliss • The God Delusion by Richard Dawkins These books might be a little trickier: • Christian Theology by Alister McGrath • The Puzzle of God by Peter Vardy • The Puzzle of Ethics by Peter Vardy • Language, Truth, and Logic by A.J. Ayer
2. Read a Fiction Book	• The Parable of the Sower by Octavia Butler • Purple Hibiscus by Chimamanda Ngozi Adichie • The Dispossessed by Ursula Le Guin • The Handmaid's Tale by Margaret Atwood • The Power by Naomi Alderman • The Color Purple by Alice Walker • Orlando by Virginia Woolf • Do Androids Dream of Electric Sheep by Philip K. Dick • The Brothers Karamasov by Fyodor Dostoyevsky • Animal Farm by George Orwell
3. Watch a Film	• The Truman Show • Eternal Sunshine of the Spotless Mind • Her • Being John Malkovich • Inception • Persepolis • Solaris • Blade Runner • Ex Machina • Invictus • Dead Man Walking • Cry Freedom • The Matrix
4. Play a Game	These games cover many issues particularly from the Ethics session of the course: • The Last of Us • The Bioshock Series

	• Mass Effect (particularly #2) • The Stanley Parable • The Talos Principle • Papers Please!
5. Email newsletters	Search for these online and sign up to their weekly newsletter delivered direct to your inbox: • Farnam Street's Brain Food: https://fs.blog/newsletter/ • Brain Pickings: https://www.brainpickings.org/newsletter/ • Alain de Botton's School of Life: https://www.theschooloflife.com/london/
6. Podcast	You should be able to find these through any podcast app, but you can also listen direct from their websites: • Philosophy Bites: http://www.philosophybites.com/ The PanPsyCast: www.thepanpsycast.com • Radio 4s 'In Our Time: https://www.bbc.co.uk/programmes/b006qykl/episodes/player
7. You Tube Channels	• Crash Course Philosophy: https://www.youtube.com/watch?v=1A_CAkYt3GY&list=PL8dPuuaLjXtNgK6MZucdYldNkMybYIHKR • Philosophy Tube: https://www.youtube.com/user/thephilosophytube
Compulsory task	You need to complete at least **two** of the **seven** options listed above and write a 400-word commentary using the following questions as prompts. Your work will be submitted via Microsoft Teams, and you should expect to discuss your preparation during an early RS lesson: 1. What led you to choose the task you did? Consider the factors that shaped your decision. 2. What did you enjoy about it? 3. What would you specifically recommend to others? 4. What did you learn about Religious Studies/Philosophy/Ethics? 5. What questions were left unanswered? Was there something you would like to explore further?

SPANISH

Key Skills to develop and refine	- Revision of grammar - The ability to read longer texts - Greater awareness of Spanish culture and society - Exploring your own interests such as music, sport, history, politics through research - Spanish for pleasure through music, film and television
1. The regions of Spain	Read the information in the **regions of Spain** booklet and complete the activities throughout the document. There is a wealth of information there and we hope you will be inspired to delve deeper into some of the aspects of the regions that you find most interesting. You should also prepare your own research on **Andalucía**, in the style of the other regions covered in the booklet.
2. **Literature**	Read some **literature**. There is a short story on the next few pages, followed by a list of suggested books. Look up summaries of the titles mentioned and choose one to read. (You may be able to find a PDF online or in the Files section of the MS Team, for WHSB students. Alternatively the e-book may be free or cost less than the paper copy.)
3. **History**	If you enjoy **history**, there is much to explore. Here are some suggestions: - *Al-Andalus* may appeal to you if Spain's Islamic past is of interest; - *Los Reyes Católicos* - *La Inquisición* - *El imperio español y los territorios* - *El imperio Inca* - *La revolución mexicana* - *La Guerra Civil Española* - *Simón Bolívar* - *Fidel Castro* - *Augusto Pinochet*
4. **The Arts**	For artists, musicians and future architects, why not find out about the **cultural heritage** of Spain and the Spanish-speaking world? Research famous artists, paintings, galleries, delve deeper into music, find the lyrics to the songs that appeal to you, or go on virtual tours of buildings you may discover. *Gaudi, Picasso, Dalí, Kahlo, Velázquez* and *Goya* are just some names to start.
5. **Politics and current affairs**	If you are interested in **politics** and **current affairs**, find out about Spanish political parties, the rise of *Vox* or the transition from dictatorship to democracy in the 1970s. You may like to look up human rights activists *Helena Maleno Garzón* and *Sani Ladan*, antiracism activists *Moha Gerehou* and *Desirée Bela-Lobedde* (they can be found on social media), *los CIE* and *los manteros*.
6. **Verbs and tenses**	Brush up on **verbs** and **tenses** using www.conjuguemos.com or www.languagesonline.org.uk –

	(https://www.languagesonline.org.uk/Hotpotatoes/spanishindex.html#Grammar).
7. **Film and TV**	Watch a **Spanish series** on Netflix or www.rtve.es and find out more about the cast, crew, locations, its popularity in the Spanish-speaking world and, if it is based on real life events, how true to the facts the writers and producers decided to make it.
Compulsory task	Research on **Andalucía** – see above. This can take the form of a PowerPoint presentation, a Word document, a hand-written piece of work, or some other suitable format to present the research. The content should be **in Spanish**, in your own words, and it should be **illustrated**. For a guide to length, please refer to the regions of Spain booklet. Put your own twist on the research to tell us something about yourself, e.g. Andalusian football teams, history, food, vocabulary, landmarks etc.

Westcliff High School for Boys

Sixth Form Spanish

Course Guide and Summer Activities

A-Level students starting in September 2025

Contents

Introduction

This booklet contains information about:

- the structure of the examination at A-Level, in summary and in detail
- the work you will be doing
- suggested background knowledge with bibliography and other sources of information
- some further ideas for success
- some preliminary work you can do before September of the Lower Sixth

General outline of the course and the examination

1 This is a two-year course – there is no possibility of "dropping" the course at the end of the first year.

2 There is no public examination offering an AS qualification at the end of year 12.

3 At the end of year 12 there will be an internal examination which will have the format of the A-Level examination. This will help us to determine your UCAS predicted grade.

The Examination:

The A-Level examination consists of 3 units each involving separate examinations. We will be following the specification of AQA for Spanish.

There is *no* coursework element. All examinations are written on the day or are oral. However, the preparation for your oral examination is considered as a kind of coursework, so it is important to follow the rules and guidance.

The three modules are outlined below in brief.

- **Paper 1 – Listening, Reading and Translation**
- **Paper 2 – Essay Writing on literature and film**
- **Paper 3 – Oral**

A more detailed breakdown follows:

The A-Level examination

Paper	Outline	Time	Weighting (%)
Paper 1	**Listening, Reading, Writing** Listening questions *Reading questions* *Translation Spanish-English* ***and*** *English – Spanish*	2½ hours	50 (*200 marks*)
Paper 2	**Essay Writing** Two closed-book essays. Essay 1: based on a literary (written) work, 300 words. (we study *La casa de Bernarda Alba* by Federico García Lorca) Essay 2: based on a film or another literary (written) work, 300 words. (we study *El laberinto del fauno* by Guillermo del Toro) Access to dictionaries or copies of the literary work is not permitted. There will be a choice of two titles to choose from for each essay.	2 hours	20 (*80 marks*)
Paper 3	**Oral** **(April-May of Year 13 by teacher examiner: recorded examination)** ***Task 1****: Examiner-led discussion of stimulus card about one of the topics covered over the two years (5 min. prep. time + 5-6 min. discussion.* ***Task 2:*** *presentation of independent research topic relating to Spanish speaking part of the world (2 min.) + discussion of presentation in depth with examiner (9-10 mins)* You will be given 5 min to think about the card and make notes if you wish in English or *Spanish* on a separate piece of paper. Notes are given to the examiner at the end. Notes permitted for the presentation, but only in English. Presentation must NOT relate to one of the themes taught during the course and the topic chosen must be different from those of other students.	21-23 mins (incl. 5 min prep. time)	30 (*120 marks*)

General Topic Areas

Like GCSE, the vocabulary you will be expected to know is taught and learned through the study of topic areas. These reflect higher levels of knowledge, a deeper understanding of language and thinking than those required at GCSE level. You will see that there are new skills included here, such as the study of literature, and more complex topics which will require research and will allow for debate.

3.1 Social issues and trends

Students must study the themes and sub-themes below in relation to at least one Spanish-speaking country. Students must study the themes and sub-themes using a range of sources, including material from online media.

3.1.1 Aspects of Hispanic society

Students may study all sub-themes in relation to any Spanish-speaking country or countries.

- Modern and traditional values (Los valores tradicionales y modernos)
  - Los cambios en la familia
  - Actitudes hacia el matrimonio/el divorcio
  - La influencia de la Iglesia Católica
- Cyberspace (El ciberespacio)
  - La influencia de internet
  - Las redes sociales: beneficios y peligros
  - Los móviles inteligentes en nuestra sociedad
- Equal rights (La igualdad de los sexos)
  - La mujer en el mercado laboral
  - El machismo y el feminismo
  - Los derechos de los gays y las personas transgénero

3.1.2 Multiculturalism in Hispanic society

Students may study all sub-themes in relation to any Spanish-speaking country or countries.

- Immigration (La inmigración)
  - Los beneficios y los aspectos negativos
  - La inmigración en el mundo hispánico
  - Los indocumentados - problemas
- Racism (El racismo)
  - Las actitudes racistas y xenófobas
  - Las medidas contra el racismo
  - La legislación anti-racista
- Integration (La convivencia)
  - La convivencia de culturas
  - La educación
  - Las religiones

3.2 Political and artistic culture

Students must study the themes and sub-themes below in relation to at least one Spanish-speaking country.

3.2.1 Artistic culture in the Hispanic world

Students must study the sub-theme Spanish regional identity in relation to Spain. Students may study the remaining sub-themes in relation to any Spanish-speaking country or countries.

- Modern day idols (La influencia de los ídolos)
  - Cantantes y músicos
  - Estrellas de televisión y cine
  - Modelos
- Spanish regional identity (La identidad regional en España)
  - Tradiciones y costumbres
  - La gastronomía
  - Las lenguas
- Cultural heritage (El patrimonio cultural)
  - Sitios turísticos y civilizaciones prehispánicas: Machu Picchu, la Alhambra, etc
  - Arte y arquitectura
  - El patrimonio musical y su diversidad

3.2.2 Aspects of political life in the Hispanic world

Students must study Monarchies and dictatorships in relation to any relevant Spanish-speaking country or countries. Students may study the remaining sub-themes in relation to any Spanish-speaking country or countries.

- Today's youth, tomorrow's citizens (Jóvenes de hoy, ciudadanos del mañana)
  - Los jóvenes y su actitud hacia la política : activismo o apatía
  - El paro entre los jóvenes
  - Su sociedad ideal
- Monarchies and dictatorships (Monarquías y dictaduras)
  - La dictadura de Franco
  - La evolución de la monarquía en España
  - Dictadores latinoamericanos
- Popular movements (Movimientos populares)
  - La efectividad de las manifestaciones y las huelgas
  - El poder de los sindicatos
  - Ejemplos de protestas sociales (eg El 15-M, las Madres de la Plaza de Mayo, …)

Literature and Film

Alongside the topics above, you will be studying a written work and a film (two written works can be studied instead of the film option). The current list of set text texts and films is available to view in the Specification on the AQA website, and we currently choose to study *El laberinto del fauno* and *La casa de Bernarda Alba*. We have made these choices as both are outstanding works which past A-level students have enjoyed.

El laberinto del fauno was written and directed by Guillermo del Toro and combines the reality of post-civil war Spain with the protagonist's challenges in a parallel world of potentially even greater danger. *La casa de Bernarda Alba*, meanwhile, is the last play by Federico García Lorca and is considered a masterpiece of Spanish literature. Bernarda condemns her five daughters to eight years of mourning following the death of their father, eight years in which they must not leave the house. We recommend the bilingual Methuen edition of the play, ISBN 9780713686777, and copies will be provided in the summer term of Year 12, but students may wish to buy their own copy to annotate and keep.

By studying literature and film, you gain a deeper insight into the cultural heritage of Spain and the Spanish speaking world, your language skills improve, and you add an important skill to your repertoire which is particularly valued by universities.

Further notes on the themes of the course

In all examination papers, it is essential that you have done wider background reading in addition to the topic material covered in class. This will give you great advantage in the examinations. Wider reading enables you to augment your vocabulary, and to develop a feel for Spanish style. You should endeavour to do some reading in Spanish every day.

A wide range of reading material is available to you and therefore there is no problem in locating suitable texts to cater for every interest. Quality websites on the internet, such as those newspapers like *El Diario* www.eldiario.es *and La Razón* www.larazon.es are very useful.

It is strongly recommended that you visit one of the Spanish-speaking countries during the course, if you are able to. This will undoubtedly enhance your competence and confidence in spoken and written Spanish. A trip to Almería for GCSE and A Level students will hopefully be organised for February 2027; we visited for the first time in February 2023 and have been twice since. We have a partner school in Almería, IES Albaída, and there will be opportunities to correspond and meet students from that school.

You will be working in pairs with our Spanish Language Assistant on your topics and on conversation in general. You will have one period each week for conversation; these are essential periods that form a **compulsory and integral part of your course and timetable**. You must always attend (registers are completed by the Assistant) and you must give your reasons in advance in the event of any planned absence.

Classwork during the year

You should always aim for a high degree of accuracy and always learn vocabulary and grammar regularly and systematically, e.g. nouns *always* with genders.

Grammar

Whilst the afore mentioned themes reflect the vocabulary which you will have to know, the mastery of grammar is a skill which is can be used in all contexts.

There is a full list of the grammatical structures which you need to master in the specification. https://www.aqa.org.uk/subjects/languages/as-and-a-level/spanish-7692/subject-content/grammar

Revision of verbs and tenses can be done by looking up verb tables in www.wordreference.com and by using www.conjuguemos.com, where there are verb charts by tense and a number of games and printable resources to help verb conjugation practice. www.linguee.com is another useful website which has examples of sentences and words in different contexts.

A-Level students will be expected to have studied all grammar and structures that appear in the AQA lists for **both** AS and A-level. Some of the grammar will be familiar to you, whilst there will be some grammar that is new. Mastering the use of the subjunctive mood is an important part of the A-Level Spanish course.

AS and A-Level grammar

Nouns
Articles
Adjectives
Numerals
Adverbs
Quantifiers/intensifiers
Pronouns
Verbs
Prepositions
Conjunctions
Négation
Questions
Commands
Word order
Other constructions
Discourse markers
Fillers

Oral and written work during the course

Oral work

During the course, you will have a weekly period with the Spanish Language Assistant. The course and the examination lay great emphasis on oral competence and fluency.

Oral work in the Spanish class may take the form of

- giving short answers to questions on a text
- explaining terms
- discussions
- seminars
- questioning each other
- critique
- group work
- preparing and giving a point of view which may not be your own, etc.
- interpreting exercises
- presenting your chosen topic

Throughout the Lower Sixth and Upper Sixth you will work independently on your presentations, and you will practise discussing different topics in depth, as well as practising 'stimulus cards'. You can find examples of the stimulus cards on the AQA website. You should use this as a starting point for *objective observations* on what is presented, *discussing your opinion or speculating* on what is before you, and *commenting on wider issues* associated with the material. You must include examples from the Spanish-speaking world to illustrate your ideas. You have to have opinions!

You should willingly try to communicate in Spanish in general, in order to practise as much as possible with a view to developing fluency.

Written work

Written work in Spanish in class and at home may include

- short answers to questions on a text
- grammar and syntax exercises
- summaries
- tabulated information (advantages/disadvantages, arguments for and against, in bullet-point form), etc
- short accounts
- letters
- translation into Spanish
- essays on topics

You will also need to develop your translation skills from Spanish into English.

The material at this level will naturally be more complex and many more answers will involve *drawing* conclusions from what you hear or read, as opposed to simple factual recall.

How to approach written work

When you are given any piece of written work to do which involves writing prose in Spanish, you should **before** you start:

1. review the topic just covered in your textbook
2. revise the essential vocabulary that has appeared as part of the topic
3. examine the title carefully and the requirements of the task
4. make a plan of points to cover, if none has been given as part of the task
5. re-read the relevant texts in the textbook or in hand-outs, noting useful phrases and expressions
6. consider implications, reasons, opinions, balancing views where appropriate
7. revise any points of grammar that you think may be necessary, and briefly review your last piece of written work to establish where you may have had difficulty in expressing yourself before, be it tenses, word order, etc.

During the writing you should

8. make a draft before re-writing your work
9. try and use new vocabulary
10. generally think before you put pen to paper
11. check all work through before handing in by the deadline given – sometimes it is beneficial to revisit the work a day later so it can be proofread

On **return** of the piece of work you should

12. carefully read all the comments, not just look at the mark
13. carefully examine all errors of content
14. carefully examine all errors of grammar and syntax
15. write a corrected version (sometimes corrections will be sufficient)
16. write at the end of the piece of work any targets for yourself which arise from the work, such as the use of vocabulary, revision of or finding out about grammatical structures/rules of syntax
17. ask about any issue of which you are unsure
18. compare the comments and mark with the previous piece of work to establish whether you are making progress
19. retain the piece of work in your exercise book for future reference.

How to approach literature and film

This will be a major step up for most students.
It is essential that new vocabulary is looked up and that the passages/scenes intended for reading/viewing and discussion in class are prepared in advance in order that you might get the most out of this part of the course.

Short questions, then essays follow, beginning with summaries and then themes. You should make use of new vocabulary in essays and oral work.

It is essential to master the facts, consider the interpretation, engage in discussion and revisit parts covered so that the work is known in detail and so that you are fully prepared for examination questions. Refer to the above advice on essays.

Wider and background reading

- The library clearly contains books, reference and for loan
- We have a small number of books in the Spanish department which students may borrow
- The Sixth Form Study Centre contains computers for research

The internet represents an excellent resource for quick reading. Reading and listening to news items as often as possible in Spanish is invaluable, as you will absorb vocabulary and expressions useful for your development in the subject. Of greatest use are current affairs programmes and articles because you will already know something about the subject before you tackle a Spanish text. This will help you with understanding. Also useful are articles which exist in both Spanish and English. This will help you identify vocabulary and idioms very quickly.

The site www.rtve.es allows you to watch news from Spain and Spanish-speaking countries.

All Spanish newspapers and TV channels have websites on which you can watch videos such as news summaries. You may also find it helpful to watch the news in Spanish on www.bbc.co.uk/mundo

The Spanish Department does have a small collection of literature and works of non-fiction which students may borrow. Some are very recent publications on immigration and racism, offering a range of benefits and will be rewarding reads. A list of works of literature suitable for A-Level students is listed on page 16 of this document.

Candidates at A Level Spanish are expected to have a working knowledge of Spanish society and culture, and you must keep up to date.

The Instituto Cervantes

www.cervantes.es

Founded in 1991, the *Instituto Cervantes'* mission is the teaching of the Spanish language. The *Instituto* also collaborates with schools in the UK on educational cooperation programmes to promote Spanish language learning and organise teacher training. The *Centro Virtual Cervantes* website https://cvc.cervantes.es/ has a rich variety of resources, including **Lecturas paso a paso** for graded reading practice, and **Pasatiempos de Rayuela** for interactive games aimed at different levels of fluency in Spanish.

If you are interested in how Spanish differs from one country to another, have a look at **Voces hispánicas** within the *Centro Virtual Cervantes* website. There you will be able to listen to examples of speakers from different Spanish-speaking countries as well as hear examples of regional differences in Spain. The videos are accompanied by notes on linguistic features and pronunciation, and there is also a transcript for each video below the accompanying notes. The videos are a little old, but don't let this put you off. https://cvc.cervantes.es/lengua/voces_hispanicas/default.htm .

Dictionaries – paper and online

Spanish-English/English-Spanish paper

The *Oxford Spanish Dictionary* or *The Collins Spanish Dictionary (complete and unabridged)* are the recommended dictionaries. You may find it useful to have a copy of one of these at home.

Monolingual

A monolingual dictionary can be useful, but you do not need to buy one.

Online Spanish-English/English-Spanish

www.wordreference.com - good, but *do* read the forums. www.linguee.com – excellent for examples of sentences and words in context, but check carefully. www.rae.es – there is a very useful monolingual dictionary on the website of the Real Academia Española.

You may enjoy seeing the tweets of the RAE if you use Twitter. There are interesting questions that are answered when the hashtag **#dudaRAE** is used, and the RAE tweets **#PalabraDelDía** and **Consultas de la semana** https://twitter.com/RAEinforma

Online sources

Keeping up to date and making your Spanish learning exciting is much easier than it used to be. Here are a few sites, but please do your own research and please share ideas with the MFL team.

Netflix has a great number of Spanish-language series and films, as you may know already, ranging from the contemporary **La casa de papel, La sociedad de la nieve** and **Fariña** to the period drama **Las chicas del cable** and **La cocinera de Castamar**. **Nevenka** and **El caso Alcasser** are amongst some excellent documentaries which will give you an insight into Spanish society. Or try **Las crónicas del taco** for another view of Mexico.
If you find a series that you really enjoy, try watching it first with English subtitles then watch the same episode with Spanish subtitles. It's really helpful for picking up new vocabulary and focusing on the language once you know that you can follow the plot.

If you don't have Netflix, www.rtve.es has many television series, as well as the news and radio in Spanish. You may enjoy **El Ministerio del Tiempo**, **Masterchef**, **Cuéntame cómo pasó** or scroll through the films and other series that are free to watch. Some may not be available outside of Spain, but many are. We recommend putting on the subtitles; although these will be in Spanish, it still helps to understand when there are no English subtitles available.

There are some useful links to news and TV websites in Spanish-speaking countries that are listed on: http://www.bbc.co.uk/languages/spanish/

As well as the AQA website, the Eduqas website also has some interactive resources for Spanish A-Level. Go to https://resources.eduqas.co.uk/Pages/ResourceByArgs.aspx?subId=29&lvlId=1

Work you should do during the summer holidays before your start the A-level course

- Buy a good large dictionary **or** ensure you explore the online dictionaries already mentioned
- Read newspapers and magazines in Spanish
- Listen to Spanish radio; even having it playing in the background is good for your language skills
- Watch Spanish TV or series on Netflix or RTVE
- Acquaint yourself with some general knowledge about Spanish-speaking countries
- Do some of the suggested activities on the follow page – Activities for the summer

Tips for success

- Enjoy your studies and take an active interest; the students who do best in Spanish are those who love it and live it.
- Organise your work properly; we will use large format exercise books, but you also will need a folder organised by topic at home for extra materials.
- Hand in work on time – give it proper priority
- Research and investigate thoroughly
- Balance the demands of the various parts of the course
- Keep up to date with new vocabulary and grammar
- Ask for extra help if you need it
- Share ideas and problems
- Keep to all deadlines
- Participate and be proactive in lessons
- Attend every lesson punctually and with the right materials
- Use people – your teachers, the Librarian and the Assistant and others you may know outside school – as a resource.

Activities for the summer

You have some time to spend getting ready for the A-Level course and we look forward to hearing about how you have been preparing over the summer. We do not expect you to have studied every day for weeks and weeks, but we will be disappointed and unimpressed if someone turns up to the first lesson and says they have done nothing to prepare for A-Level Spanish.

Here are some suggestions, but they are not exhaustive and merely serve as a starting point to give you ideas and reference materials. You should choose something that interests you, but please don't neglect grammar and verbs in particular.

1. Read the information prepared by Srta Bernárdez Touceda on the **regions of Spain** and complete the activities throughout the booklet. There is a wealth of information here. Also prepare your own research on **Andalucía**; see page 121 of the document.

2. Read some **literature**. There is a short story on the next few pages, followed by a list of suggested books. Look up summaries of the titles mentioned and choose one to read. (You may be able to find a PDF online. Alternatively the e-book or audiobook may be free or cost less than the paper copy.)

3. If you enjoy **history**, there is much to explore. Here are some suggestions:
- *Al-Andalus* may appeal to you if Spain's Islamic past is of interest;
- *Los Reyes Católicos*
- *La Inquisición*
- *El imperio español y los territorios*
- *El imperio Inca*
- *La revolución mexicana*
- *La Guerra Civil Española*
- *Simón Bolívar*
- *Fidel Castro*
- *Augusto Pinochet*

4. For artists, musicians and future architects, why not find out about the **cultural heritage** of Spain and the Spanish-speaking world? Research famous artists, paintings, galleries, delve deeper into music, find the lyrics to the songs that appeal to you, or go on virtual tours of buildings you may discover. *Gaudi, Picasso, Dalí, Kahlo, Velázquez* and *Goya* are just some names to start.

5. If you are interested in **politics** and **current affairs**, find out about Spanish political parties, the rise of *Vox* or the transition from dictatorship to democracy in the 1970s. You may like to look up human rights activists *Helena Maleno Garzón* and *Sani Ladan*, antiracism activists *Moha Gerehou* and *Desirée Bela-Lobedde* (they can be found on social media), *los CIE* and *los manteros*.

6. Brush up on **verbs** and **tenses** using www.conjuguemos.com or www.languagesonline.org.uk – (https://www.languagesonline.org.uk/Hotpotatoes/spanishindex.html#Grammar).

7. Watch a **Spanish series** on Netflix or www.rtve.es and find out more about the cast, crew, locations, its popularity in the Spanish-speaking world and, if it is based on real life events, how true to the facts the writers and producers decided to make it.

Lectura - Un cuento corto

Es que somos muy pobres
(de la colección de cuentos en *El llano en llamas*) por
Juan Rulfo

Aquí todo va de mal en peor. La semana pasada se murió mi tía Jacinta, y el sábado, cuando ya la habíamos enterrado y comenzaba a bajársenos la tristeza, comenzó a llover como nunca. A mi papá eso le dio coraje, porque toda la cosecha de cebada estaba asoleándose en el solar. Y el aguacero llegó de repente, en grandes olas de agua, sin darnos tiempo ni siquiera a esconder aunque fuera un manojo; lo único que pudimos hacer, todos los de mi casa, fue estarnos arrimados debajo del tejabán, viendo cómo el agua fría que caía del cielo quemaba aquella cebada amarilla tan recién cortada.

Y apenas ayer, cuando mi hermana Tacha acababa de cumplir doce años, supimos que la vaca que mi papá le regaló para el día de su santo se la había llevado el río.

El río comenzó a crecer hace tres noches, a eso de la madrugada. Yo estaba muy dormido y, sin embargo, el estruendo que traía el río al arrastrarse me hizo despertar en seguida y pegar el brinco de la cama con mi cobija en la mano, como si hubiera creído que se estaba derrumbando el techo de mi casa. Pero después me volví a dormir, porque reconocí el sonido del río y porque ese sonido se fue haciendo igual hasta traerme otra vez el sueño.

Cuando me levanté, la mañana estaba llena de nublazones y parecía que había seguido lloviendo sin parar. Se notaba en que el ruido del río era más fuerte y se oía más cerca. Se olía, como se huele una quemazón, el olor a podrido del agua revuelta.

A la hora en que me fui a asomar, el río ya había perdido sus orillas. Iba subiendo poco a poco por la calle real, y estaba metiéndose a toda prisa en la casa de esa mujer que le dicen *la Tambora*. El chapaleo del agua se oía al entrar por el corral y al salir en grandes chorros por la puerta. *La Tambora* iba y venía caminando por lo que era ya un pedazo de río, echando a la calle sus gallinas para que se fueran a esconder a algún lugar donde no les llegara la corriente.

Y por el otro lado, por donde está el recodo, el río se debía de haber llevado, quién sabe desde cuándo, el tamarindo que estaba en el solar de mi tía Jacinta, porque ahora ya no se ve ningún tamarindo. Era el único que había en el pueblo, y por eso nomás la gente se da cuenta de que la creciente esta que vemos es la más grande de todas las que ha bajado el río en muchos años.

Mi hermana y yo volvimos a ir por la tarde a mirar aquel amontonadero de agua que cada vez se hace más espesa y oscura y que pasa ya muy por encima de donde debe estar el puente. Allí nos estuvimos horas y horas sin cansarnos viendo la cosa aquella. Después nos subimos por la barranca, porque queríamos oír bien lo que decía la gente, pues abajo, junto al río, hay un gran ruidazal y sólo se ven las bocas de muchos que se abren y se cierran y como que quieren decir algo; pero no se oye nada. Por eso nos subimos por la barranca, donde también hay gente mirando el río y contando los perjuicios que ha hecho. Allí fue donde supimos que el río se había llevado a *la Serpentina,* la vaca esa que era de mi hermana Tacha porque mi papá se la regaló para el día de su cumpleaños y que tenía una oreja blanca y otra colorada y muy bonitos ojos.

No acabo de saber por qué se le ocurriría a *la Serpentina* pasar el río este, cuando sabía que no era el mismo río que ella conocía de a diario. *La Serpentina* nunca fue tan atarantada. Lo más seguro es que ha de haber venido dormida para dejarse matar así nomás por nomás. A mí muchas veces me tocó despertarla cuando le abría la puerta del corral porque si no, de su cuenta, allí se hubiera estado el día entero con los ojos cerrados, bien quieta y suspirando, como se oye suspirar a las vacas cuando duermen.

Y aquí ha de haber sucedido eso de que se durmió. Tal vez se le ocurrió despertar al sentir que el agua pesada le golpeaba las costillas. Tal vez entonces se asustó y trató de regresar; pero al volverse se encontró entreverada y acalambrada entre aquella agua negra y dura como tierra corrediza. Tal vez bramó pidiendo que le ayudaran. Bramó como sólo Dios sabe cómo.

Yo le pregunté a un señor que vio cuando la arrastraba el río si no había visto también al becerrito que andaba con ella. Pero el hombre dijo que no sabía si lo había visto. Sólo dijo que la vaca manchada pasó patas arriba muy cerquita de donde él estaba y que allí dio una voltereta y luego no volvió a ver ni los cuernos ni las patas ni ninguna señal de vaca. Por el río rodaban muchos troncos de árboles con todo y raíces y él estaba muy ocupado en sacar leña, de modo que no podía fijarse si eran animales o troncos los que arrastraba.

Nomás por eso, no sabemos si el becerro está vivo, o si se fue detrás de su madre río abajo. Si así fue, que Dios los ampare a los dos.

La apuración que tienen en mi casa es lo que pueda suceder el día de mañana, ahora que mi hermana Tacha se quedó sin nada. Porque mi papá con muchos trabajos había conseguido a *la Serpentina*, desde que era una vaquilla, para dársela a mi hermana, con el fin de que ella tuviera un capitalito y no se fuera a ir de piruja como lo hicieron mis otras dos hermanas, las más grandes.

Según mi papá, ellas se habían echado a perder porque éramos muy pobres en mi casa y ellas eran muy retobadas. Desde chiquillas ya eran rezongonas. Y tan luego que crecieron les dio por andar con hombres de lo peor, que les enseñaron cosas malas. Ellas aprendieron pronto y entendían muy bien los chiflidos, cuando las llamaban a altas horas de la noche. Después salían hasta de día. Iban cada rato por agua al río y a veces, cuando uno menos se lo esperaba, allí estaban en el corral, revolcándose en el suelo, todas encueradas y cada una con un hombre trepado encima.

Entonces mi papá las corrió a las dos. Primero les aguantó todo lo que pudo; pero más tarde ya no pudo aguantarlas más y les dio carrera para la calle. Ellas se fueron para Ayutla o no sé para dónde; pero andan de pirujas.

Por eso le entra la mortificación a mi papá, ahora por la Tacha, que no quiere vaya a resultar como sus otras dos hermanas, al sentir que se quedó muy pobre viendo la falta de su vaca, viendo que ya no va a tener con qué entretenerse mientras le da por crecer y pueda casarse con un hombre bueno, que la pueda querer para siempre. Y eso ahora va a estar difícil. Con la vaca era distinto, pues no hubiera faltado quién se hiciera el ánimo de casarse con ella, sólo por llevarse también aquella vaca tan bonita.

La única esperanza que nos queda es que el becerro esté todavía vivo. Ojalá no se le haya ocurrido pasar el río detrás de su madre. Porque si así fue, mi hermana Tacha está tantito así de retirado de hacerse piruja. Y mamá no quiere.

Mi mamá no sabe por qué Dios la ha castigado tanto al darle unas hijas de ese modo, cuando en su familia, desde su abuela para acá, nunca ha habido gente mala. Todos fueron criados en el temor de Dios y eran muy obedientes y no le cometían irreverencias a nadie. Todos fueron por el estilo. Quién sabe de dónde les vendría a ese par de hijas suyas aquel mal ejemplo. Ella no se acuerda. Le da vueltas a todos sus recuerdos y no ve claro dónde estuvo su mal o el pecado de nacerle una hija tras otra con la misma mala costumbre. No se acuerda. Y cada vez que piensa en ellas, llora y dice: “Que Dios las ampare a las dos.”

Pero mi papá alega que aquello ya no tiene remedio. La peligrosa es la que queda aquí, la Tacha, que va como palo de ocote crece y crece y que ya tiene unos comienzos de senos que prometen ser como los de sus hermanas: puntiagudos y altos y medio alborotados para llamar la atención.

-Sí -dice-, le llenará los ojos a cualquiera dondequiera que la vean. Y acabará mal; como que estoy viendo que acabará mal.

Ésa es la mortificación de mi papá.
Y Tacha llora al sentir que su vaca no volverá porque se la ha matado el río. Está aquí a mi lado, con su vestido color de rosa, mirando el río desde la barranca y sin dejar de llorar. Por su cara corren chorretes de agua sucia como si el río se hubiera metido dentro de ella.

Yo la abrazo tratando de consolarla, pero ella no entiende. Llora con más ganas. De su boca sale un ruido semejante al que se arrastra por las orillas del río, que la hace temblar y sacudirse todita, y, mientras, la creciente sigue subiendo. El sabor a podrido que viene de allá salpica la cara mojada de Tacha y los dos pechitos de ella se mueven de arriba abajo, sin parar, como si de repente comenzaran a hincharse para empezar a trabajar por su perdición.

If you have enjoyed this short story, *Es que somos muy pobres*, and would like to read more works of literature, here are some suggestions from the AQA list of texts that can be studied at A-level:

- Gabriel García Márquez *Crónica de una muerte anunciada*
- Laura Esquivel *Como agua para chocolate*
- Ramón J. Sender *Réquiem por un campesino español*
- Carlos Ruiz Zafón *La sombra del viento*
- Isabel Allende *La casa de los espíritus*
- Gustavo Adolfo Bécquer *Rimas*
- Fernando Fernán-Gómez *Las bicicletas son para el verano*
- Luis de Castresana *El otro árbol de Guernica*
- Gabriel García Márquez *El coronel no tiene quien le escriba*

You may be interested in other works by the above-mentioned authors, and also

- Carmen Laforet *Nada*
- Juan Rulfo *Pedro Párramo*
- Anónimo *Lazarillo de Tormes*
- Javier Cercas *Soldados de Salamina*
- Miguel de Unamuno *Niebla*

We hope that this introduction to the course has inspired you to get ready for your A-Level course. We look forward to seeing you in September.

¡Buena suerte!

Sr Madrid Arranz, Sra McKeown, Srta Bernárdez Touceda
and the Spanish Language Assistant for 2025-26, the Spanish Department at WHSB