



EXAM CHANGES 2022

GCSE Combined Science Trilogy Advanced Information Foundation Tier

Exam Board: AQA

SUMMARY OF ADAPTATIONS

- A list of topics for major focus and topics not assessed in each paper has been published.
- For *the **Physics papers only*** students will be provided with an equation sheet which **must be** used in the exam.
- The format/structure of the exam papers will be the same as usual.
- Students will need to apply the knowledge gained through lessons to interpret unfamiliar information provided with the exam question.
- Assessment of practical skills, maths skills and scientific skills will occur throughout all of the papers.

HOW THE SCHOOL IS USING THIS INFORMATION

- Practice and mock exams will be adapted to reflect summer 2022 exams.
- Intervention sessions will focus on the topics for each paper.
- Revision plans will be updated to reflect the major focuses.
- Physics teaching will incorporate lessons on the utilisation of the given equation sheet rather than having to remember the equations themselves.
- All students will have a copy of the equation sheet to stick into their Physics book.
- Revision will be focussed on specific topics for each paper.

WHAT STUDENTS SHOULD DO

- The following information is split between Paper 1 and Paper 2 for each subject.
- All page numbers given refer to *the **CGP GCSE AQA Combined Science Revision books*** which students were given in year 10.
- For each paper there is a list for the **main focus** of each exam, students should ensure they have revised these areas thoroughly.
- For each paper, there is a list of topics **not assessed** in the exams, the revision page numbers are listed so students know to skip those pages during their revision.
- **Any topics not identified on either of these lists could appear in 1-2 mark questions, multiple choice questions or via questions which link with other topics. Students therefore need to ensure they have a good understanding of all topics.**
- The required practical activities which will be assessed are also listed, along with a page of the revision guide.
- Attend Period 6 Science revision sessions every Tuesday (Lab 2) or Thursday (Lab 3). Teachers will be delivering specific topics focussed on the GCSE exam. Alternatively, you could attend the Wednesday lunchtime revision session at 1:25 until 1:50pm (Lab 4). Miss Cassidy is available in Lab 2 on Monday, Wednesday and Thursday lunchtimes for any other specific queries.

Biology Paper 1

Major Focus		Not assessed	
Topic	Pages	Topic	Pages
<i>Chromosomes, mitosis and the cell cycle</i>	15	<i>Osmosis</i>	18
<i>Stem cells</i>	16	<i>Active transport</i>	19
<i>The human digestive system</i>	27	<i>Coronary heart disease</i>	33-34
<i>The heart and blood vessels</i>	30-31	<i>Uses of glucose from photosynthesis</i>	50
<i>Blood</i>	32	<i>Aerobic and anaerobic respiration</i>	54
<i>Health issues</i>	35	<i>Response to exercise</i>	55
<i>Risk factors for non-communicable diseases</i>	36	<i>Metabolism</i>	53
<i>Cancer</i>	37		
<i>Communicable diseases</i>	42		
<i>Diseases caused by pathogens</i>	43-45		
<i>Human defence systems</i>	46		
<i>Vaccination</i>	47		
<i>Antibiotics and painkillers</i>	48		
<i>Discovery and development of drugs</i>	49		
<i>Photosynthesis and rates</i>	50-52		
Required practical activity 1: use of a light microscope - Page 13 Required practical activity 3: test for a range of carbohydrates, lipids and proteins - Page 28 Required practical activity 5: investigate the effect of light on the rate of photosynthesis of pondweed - p52			

Biology Paper 2

Major Focus		Not assessed	
Topic	Pages	Topic	Pages
<i>The endocrine system</i>	61	<i>The nervous system</i>	58-59
<i>Control of blood glucose concentration</i>	62	<i>Hormones in human reproduction</i>	63
<i>DNA and the genome</i>	66	<i>Contraception</i>	64-65
<i>Genetic inheritance</i>	70	<i>Sexual and asexual reproduction</i>	67
<i>Inherited disorders</i>	71	<i>Meiosis</i>	68
<i>Communities</i>	83	<i>Sex determination</i>	69
<i>Abiotic and biotic factors</i>	84	<i>Variation</i>	73
<i>Levels or organisation in an ecosystem</i>	86	<i>Evolution</i>	74
<i>How materials are cycled</i>	89-90	<i>Selective breeding</i>	77
		<i>Resistant bacteria</i>	75-76
		<i>Adaptations</i>	85
		<i>Biodiversity and maintaining biodiversity</i>	94
		<i>Land use and deforestation</i>	93
		<i>Global warming</i>	92
Required practical activity 7: use sampling techniques to measure the population size of a common species in a habitat - Pages 87-88			

Chemistry Paper 1

Major Focus		Not assessed	
Topic	Pages	Topic	Pages
<i>The Periodic table</i>	107	N/A	N/A
<i>Development of the periodic table</i>	106		
<i>Metals and non-metals</i>	108		
<i>Group 1, 7, 0</i>	109-111		
<i>States of matter</i>	121		
<i>Properties of ionic compounds</i>	115		
<i>Properties of simple molecules</i>	117		
<i>Polymers and giant covalent structures</i>	118		
<i>Metallic bonding and alloys</i>	120		
<i>Diamond, graphite, graphene, fullerenes</i>	119		
<i>Reactivity series and extraction of metals</i>	130		
<i>Reactions of metals and acids</i>	131		
<i>The pH scale and neutralisation</i>	128		
<i>Electrolysis</i>	132-3		
<p>Required practical activity 8: preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate - Page 129</p> <p>Required practical activity 9: investigate what happens when aqueous solutions are electrolysed using inert electrodes - Page 133</p> <p>Required practical activity 10: investigate the variables that affect temperature changes in reacting solutions such as, eg, acid plus metals, acid plus carbonates, neutralisations, displacement of metals - Page 135</p>			

Chemistry Paper 2

Major Focus		Not assessed	
Topic	Pages	Topic	Pages
<i>Factors affecting rate of reaction</i>	139	<i>Greenhouse gases and climate change</i>	156
<i>Collision theory and activation energy</i>	138	<i>Carbon footprint</i>	157
<i>Reversible reactions</i>	144		
<i>Crude oil, hydrocarbons and alkanes</i>	147		
<i>Fractional distillation and petrochemicals</i>	148		
<i>Properties of hydrocarbons</i>	146		
<i>Cracking and alkenes</i>	149		
<i>Pure substances and formulations</i>	150		
<i>Paper chromatography</i>	151		
<i>Tests for gases</i>	153		
<i>The Earth's atmosphere</i>	155		
<i>Atmospheric pollutants from fuels</i>	158		
<i>Sustainable development</i>	161		
<i>Potable water</i>	163		
<i>Waste water treatment</i>	164-5		
<p>Required practical activity 11: investigate how changes in concentration affect the rates of reactions - Page 140</p> <p>Required practical activity 12: investigate how paper chromatography can be used to separate and tell the difference between coloured substances and calculate R_f values - Page 152</p>			

Physics Paper 1

Major Focus		Not assessed	
Topic	Pages	Topic	Pages
<i>Energy stores and systems</i>	167	<i>Electricity in the home</i>	188
<i>Energy transfers by heating</i>	170	<i>The structure of the atom</i>	197
<i>Kinetic and potential energy stores</i>	169		
<i>Power</i>	172		
<i>Energy resources</i>	175-8		
<i>Circuit symbols and current</i>	180		
<i>Current, resistance and p.d</i>	181		
<i>Current and I-V graphs</i>	183		
<i>Density</i>	194		
<i>The three states of matter</i>	193		
<i>Nuclear radiation</i>	198		
<i>Nuclear equations</i>	199		
<i>Half-life</i>	200		
<i>Radioactive contamination</i>	201		
<p>Required practical activity 14: an investigation to determine the specific heat capacity of one or more materials - Page 171</p> <p>Required practical activity 16: use circuit diagrams to construct appropriate circuits to investigate the I–V characteristics of a variety of circuit elements, including a filament lamp, a diode and a resistor at constant temperature - Page 184</p>			

Physics Paper 2

Major Focus		Not assessed	
Topic	Pages	Topic	Pages
<i>Vector/scalar, contact/non-contact forces</i>	203	<i>Forces and elasticity</i>	206-7
<i>Gravity</i>	204		
<i>Resultant forces</i>	205		
<i>Distance, displacement, speed, velocity</i>	208		
<i>Distance-time graphs</i>	210		
<i>Acceleration and velocity-time graphs</i>	209		
<i>Newtons 1st, 2nd and 3rd laws</i>	212-3		
<i>Stopping distance</i>	215		
<i>Reaction time</i>	217		
<i>Factors affecting braking distance</i>	216		
<i>Types of electromagnetic wave</i>	223		
<i>Refraction of waves</i>	222		
<i>Uses of electromagnetic waves</i>	224		
<i>Dangers of electromagnetic waves</i>	228		
<i>Magnets and magnetic fields</i>	229		
<i>Current and magnetic fields</i>	230		
<p>Required practical activity 21: investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface - Pages 226-7</p>			

Physics Equations Sheet

GCSE Combined Science: Trilogy (8464) and GCSE Combined Science: Synergy (8465)

FOR USE IN JUNE 2022 ONLY

HT = Higher Tier only equations

kinetic energy = $0.5 \times \text{mass} \times (\text{speed})^2$	$E_k = \frac{1}{2} m v^2$
elastic potential energy = $0.5 \times \text{spring constant} \times (\text{extension})^2$	$E_e = \frac{1}{2} k e^2$
gravitational potential energy = $\text{mass} \times \text{gravitational field strength} \times \text{height}$	$E_p = m g h$
change in thermal energy = $\text{mass} \times \text{specific heat capacity} \times \text{temperature change}$	$\Delta E = m c \Delta \theta$
power = $\frac{\text{energy transferred}}{\text{time}}$	$P = \frac{E}{t}$
power = $\frac{\text{work done}}{\text{time}}$	$P = \frac{W}{t}$
efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$	
efficiency = $\frac{\text{useful power output}}{\text{total power input}}$	
charge flow = $\text{current} \times \text{time}$	$Q = I t$
potential difference = $\text{current} \times \text{resistance}$	$V = I R$
power = $\text{potential difference} \times \text{current}$	$P = V I$
power = $(\text{current})^2 \times \text{resistance}$	$P = I^2 R$
energy transferred = $\text{power} \times \text{time}$	$E = P t$

	energy transferred = charge flow × potential difference	$E = Q V$
HT	potential difference across primary coil × current in primary coil = potential difference across secondary coil × current in secondary coil	$V_p I_p = V_s I_s$
	density = $\frac{\text{mass}}{\text{volume}}$	$\rho = \frac{m}{V}$
	thermal energy for a change of state = mass × specific latent heat	$E = m L$
	weight = mass × gravitational field strength	$W = m g$
	work done = force × distance (along the line of action of the force)	$W = F s$
	force = spring constant × extension	$F = k e$
	distance travelled = speed × time	$s = v t$
	acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$	$a = \frac{\Delta v}{t}$
	(final velocity) ² – (initial velocity) ² = 2 × acceleration × distance	$v^2 - u^2 = 2 a s$
	resultant force = mass × acceleration	$F = m a$
HT	momentum = mass × velocity	$p = m v$
	period = $\frac{1}{\text{frequency}}$	$T = \frac{1}{f}$
	wave speed = frequency × wavelength	$v = f \lambda$
HT	force on a conductor (at right angles to a magnetic field) carrying a current = magnetic flux density × current × length	$F = B I l$

The Periodic Table of Elements

1	2	3	4	5	6	7	0									
7 Li lithium 3	9 Be beryllium 4	11 Na sodium 11	12 Mg magnesium 12	13 Al aluminium 13	14 N nitrogen 7	15 P phosphorus 15	16 O oxygen 8	17 F fluorine 9	18 Ar argon 18							
19 K potassium 19	20 Ca calcium 20	23 Sc scandium 21	24 Ti titanium 22	25 V vanadium 23	26 Cr chromium 24	27 Mn manganese 25	28 Fe iron 26	29 Ni nickel 28	30 Cu copper 29	31 Zn zinc 30	32 Ga gallium 31	33 Ge germanium 32	34 As arsenic 33	35 Se selenium 34	36 Br bromine 35	37 Kr krypton 36
39 Rb rubidium 37	40 Sr strontium 38	45 Y yttrium 39	48 Zr zirconium 40	51 Nb niobium 41	52 Mo molybdenum 42	55 Tc technetium 43	56 Ru ruthenium 44	59 Rh rhodium 45	63.5 Pd palladium 46	65 Cd cadmium 48	70 In indium 49	73 Sn tin 50	75 Sb antimony 51	79 Te tellurium 52	80 I iodine 53	84 Xe xenon 54
133 Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	197 Pt platinum 78	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	210 Po polonium 84	210 At astatine 85	222 Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[267] Rf rutherfordium 104	[270] Db dubnium 105	[269] Sg seaborgium 106	[270] Bh bohrium 107	[270] Hs hassium 108	[278] Mt meitnerium 109	[281] Ds darmstadtium 110	[285] Cn copernicium 112	[286] Nh nihonium 113	[289] Fl flerovium 114	[289] Mc moscovium 115	[293] Lv livermorium 116	[293] Ts tennessine 117	[294] Og oganeson 118

1 H hydrogen 1

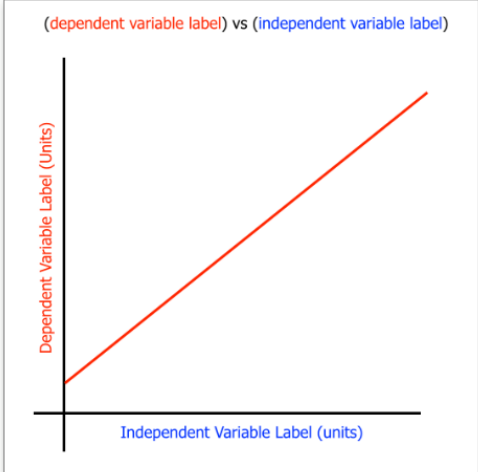
Key

relative atomic mass
atomic symbol
name
atomic (proton) number

* The Lanthanides (atomic numbers 58 – 71) and the Actinides (atomic numbers 90 – 103) have been omitted. Relative atomic masses for **Cu** and **Cl** have not been rounded to the nearest whole number.

Top 10 Tips for Students

Maths in Science

1	Learn equations with look, cover, say, write . Use them in lessons where appropriate & with homework.	<h3 style="margin: 0;">9 Think SUCCESS!</h3> <p>Search for what to find</p> <p>Underline values</p> <p>Copy values and units</p> <p>Convert values</p> <p>Equations – <i>rearrange if necessary</i></p> <p>Substitute values</p> <p>Solve the equation</p>
2	Revise maths based questions – look for a maths based question for each topic.	
3	Know your units . Most calculations expect you to put a unit after the number. Can you recall units? e.g. Time – seconds, minutes, hours. Distance – millimetres, centimetres, metres, Make a set of flashcards to help you learn them.	
4	<p>Calculate a mean. e.g.</p> $\text{Mean} = \frac{\text{try 1} + \text{try 2} + \text{try 3}}{\text{number of tries}}$ <p>Check the data first – look for ‘weird tries’ and take those out first.</p>	
5	Quoting an appropriate number of significant figures. If each result is quoted to 2 significant figures – <i>your answer should also be 2 significant figures</i>	<h3 style="margin: 0;">10 Know your graphs</h3> <p>Bar chart = categoric & discrete data</p> <p>Line graph = continuous data</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="font-size: small; color: blue;">(dependent variable label) vs (independent variable label)</p>  </div> <p>Always check your plots for accuracy.</p>
6	<p>Make your calculator your friend: Practice using the brackets, fraction button and settings. Do you get the right answer each time? Can you use your calculator to convert between fractions and percentages?</p>	
7	<p>Work it out in Science <u>in exactly the same way</u> as you do in Maths! Round in the same way. Estimate in the same way Write in standard form in the same way</p>	
8	Bring the equipment you need to lessons and exams. You will need in every lesson <i>and</i> exam a black pen, a 2B pencil, a ruler and a calculator.	