SPECA REVISION CHECKLIST

AQA GCSE Combined Science: Trilogy

Rate each topic: tick **R** if you are not there yet, **A** if you are getting there, **G** if you are confident. Start with the reds. Every topic links to free worked examples and notes.

HT marks content that is for the Higher tier only. If you sit Foundation, you can leave those lines blank.

Scan for every topic, free

TOPIC AND WHAT I CAN DO | RED, AMBER, GREEN

Biology

Cell Biology
speca.co.uk/resources/gcse-combined-science/cell-biology/ R A G

- I can compare animal, plant and bacterial cells, and calculate magnification
- I can explain diffusion, osmosis and active transport, and what stem cells and mitosis do

Organisation
speca.co.uk/resources/gcse-combined-science/organisation/ R A G

- I can explain how the digestive system, enzymes and bile break down food
- I can describe the heart, blood vessels and blood, and how heart disease and cancer arise

Infection and Response
speca.co.uk/resources/gcse-combined-science/infection-and-response/ R A G

- I can describe how pathogens cause disease, using the named diseases in the course
- I can explain how the body defends itself, and how vaccines, antibiotics and new medicines work

Bioenergetics
speca.co.uk/resources/gcse-combined-science/bioenergetics/ R A G

- I can write the equation for photosynthesis and explain what limits its rate
- I can compare aerobic and anaerobic respiration, and how the body responds to exercise
- HT I can explain how limiting factors interact, and what oxygen debt is

Homeostasis and Response
speca.co.uk/resources/gcse-combined-science/homeostasis-and-response/ R A G

- I can explain how nerves, reflexes and hormones coordinate the body, including insulin and diabetes
- I can describe puberty and the menstrual cycle hormones, and compare contraceptive methods
- HT I can explain glucagon, adrenaline and thyroxine, and how hormones interact in the menstrual cycle

Inheritance, Variation and Evolution
speca.co.uk/resources/gcse-combined-science/inheritance-variation-and-evolution/ R A G

- I can explain DNA, genes, alleles, dominant and recessive, and read a Punnett square
- I can explain natural selection, selective breeding, genetic engineering and the evidence for evolution
- HT I can draw my own Punnett square to predict probabilities, and describe the steps of genetic engineering

Ecology
speca.co.uk/resources/gcse-combined-science/ecology/ R A G

- I can describe food chains, competition and how a change in one factor affects a community
- I can describe quadrat and transect sampling, how materials cycle, and how people affect biodiversity

Chemistry

Atomic Structure and the Periodic Table
speca.co.uk/resources/gcse-combined-science/atomic-structure-and-the-periodic-table/ R A G

- I can describe atoms, compounds and mixtures, and how the model of the atom has changed
- I can write electronic structures, and explain the patterns in Groups 0, 1 and 7
- HT I can write balanced half equations and ionic equations

Bonding, Structure and the Properties of Matter
speca.co.uk/resources/gcse-combined-science/bonding-structure-and-properties-of-matter/ R A G

- I can explain ionic, covalent and metallic bonding, and how each affects melting point and conductivity
- I can describe diamond, graphite, graphene, fullerenes and polymers, and use state symbols
- HT I can explain the limits of the simple particle model of matter

Quantitative Chemistry
speca.co.uk/resources/gcse-combined-science/quantitative-chemistry/ R A G

- I can use conservation of mass and relative formula mass, and explain apparent changes in mass
- I can work out the mass of solute in a solution of known concentration
- HT I can use moles, balance an equation from masses, and find the limiting reactant

Chemical Changes
speca.co.uk/resources/gcse-combined-science/chemical-changes/ R A G

- I can use the reactivity series, and explain acids with metals and bases, making salts and pH
- I can predict the products of electrolysis for molten and aqueous compounds
- HT I can explain oxidation and reduction as electron transfer, strong and weak acids, and write half equations

Energy Changes
speca.co.uk/resources/gcse-combined-science/energy-changes/ R A G

- I can describe exothermic and endothermic reactions and give examples of each
- I can explain activation energy and why only some collisions lead to a reaction
- HT I can use bond energies to work out the energy change of a reaction

TOPIC AND WHAT I CAN DO		RED, AMBER, GREEN
The Rate and Extent of Chemical Change	speca.co.uk/resources/gcse-combined-science/rate-and-extent-of-chemical-change/	R A G
• I can calculate a mean rate of reaction, and draw and read rate graphs		
• I can use collision theory to explain how concentration, pressure, surface area, temperature and catalysts change the rate		
• I can describe reversible reactions and equilibrium		
HT I can use Le Chatelier's Principle to predict how a change in conditions shifts an equilibrium		
Organic Chemistry	speca.co.uk/resources/gcse-combined-science/organic-chemistry/	R A G
• I can describe crude oil, alkanes and fractional distillation, and how properties change with chain length		
• I can explain combustion and cracking, and test for alkenes with bromine water		
Chemical Analysis	speca.co.uk/resources/gcse-combined-science/chemical-analysis/	R A G
• I can explain what a pure substance and a formulation are, and use paper chromatography		
• I can carry out the gas tests for hydrogen, oxygen, carbon dioxide and chlorine		
Chemistry of the Atmosphere	speca.co.uk/resources/gcse-combined-science/chemistry-of-the-atmosphere/	R A G
• I can describe how the atmosphere has changed over time and what it is made of today		
• I can explain the greenhouse effect, carbon footprints, and the harm caused by air pollutants		
Using Resources	speca.co.uk/resources/gcse-combined-science/using-resources/	R A G
• I can explain how drinking water is made and how waste water is treated		
• I can carry out a life cycle assessment, and explain reduce, reuse and recycle		
HT I can describe phytomining and bioleaching as ways to obtain metals		
Physics		
Energy	speca.co.uk/resources/gcse-combined-science/energy/	R A G
• I can use the equations for kinetic, elastic and gravitational potential energy, and for heating		
• I can calculate power and efficiency, and compare energy resources		
HT I can describe ways to make an energy transfer more efficient		
Electricity	speca.co.uk/resources/gcse-combined-science/electricity/	R A G
• I can draw circuit diagrams, and use the current, potential difference, resistance and power equations		
• I can compare series and parallel circuits, and describe mains electricity, plugs and the National Grid		
HT I can use the transformer equation		
Particle Model of Matter	speca.co.uk/resources/gcse-combined-science/particle-model-of-matter/	R A G
• I can calculate density, and explain changes of state, latent heat and internal energy		
• I can use specific heat capacity, and explain the behaviour of gases using particle motion		
Atomic Structure (Physics)	speca.co.uk/resources/gcse-combined-science/atomic-structure-physics/	R A G
• I can describe the structure of the atom and how ideas about it have changed		
• I can explain radioactive decay, write decay equations, and use half-life and contamination		
HT I can work out the ratio by which a radioactive emission falls after a number of half-lives		
Forces: Interactions, Work Done and Elasticity	speca.co.uk/resources/gcse-combined-science/forces-interactions-work-and-elasticity/	R A G
• I can tell scalars from vectors, find a resultant force, and calculate weight and work done		
• I can use extension, spring constant and stored elastic energy for a stretched spring		
HT I can draw free body diagrams, and split a force into two components at right angles		
Forces and Motion	speca.co.uk/resources/gcse-combined-science/forces-and-motion/	R A G
• I can use distance-time graphs, speed, velocity, acceleration and Newton's three laws		
• I can explain thinking, braking and stopping distance, and what changes them		
HT I can use momentum and its conservation, and find distance from the area under a velocity-time graph		
Waves	speca.co.uk/resources/gcse-combined-science/waves/	R A G
• I can describe transverse and longitudinal waves, and how to measure wave speed		
• I can draw refraction ray diagrams, and describe the electromagnetic spectrum and its uses		
HT I can explain why each type of wave suits its use, and how radio waves can create a current		
Magnetism and Electromagnetism	speca.co.uk/resources/gcse-combined-science/magnetism-and-electromagnetism/	R A G
• I can describe poles and magnetic fields, how a compass works, and the field around a current-carrying wire		
HT I can explain the motor effect, use F = BIl, and explain how an electric motor turns		