GCSE Physics Revision Guide

Combined Science & Triple Award

GCSE Physics is the most equation-heavy of the sciences, and the students who do best are the ones who treat the equation sheet as a starting point, not a crutch — you need to know which equation applies to which situation instantly, and be comfortable rearranging it before you even reach for a calculator. Energy is the unifying idea of the whole course: energy stores, transfers, conservation, and efficiency reappear inside electricity, particles, and forces, so understanding energy properly early on makes every later topic easier.

Electricity covers circuits, current, potential difference and resistance, and the difference between series and parallel circuits — a topic best revised by actually sketching circuit diagrams and predicting what an ammeter or voltmeter would read, rather than memorising rules in the abstract. The particle model of matter links density, changes of state, and pressure, while atomic structure covers radioactive decay, half-life, and the difference between alpha, beta and gamma radiation — a favourite source of "explain the hazard" style questions.

Forces is typically the highest-weighted topic and the one where students most often lose marks on units and vectors. You need to distinguish scalar and vector quantities, resolve forces, and be fluent with Newton's three laws, momentum, and the equations linking force, mass, acceleration, and stopping distance. Triple Award students also cover moments, circular motion in more depth, and Hooke's law extension calculations, all of which reward careful, labelled working.

Waves covers the electromagnetic spectrum, wave speed calculations, and reflection/refraction, while magnetism and electromagnetism (Triple) covers motors, generators, and transformers. Space physics closes out the Triple specification with the life cycle of stars and orbital motion. Across every topic, required practicals reappear as exam questions, so revising the method, variables, and typical sources of error for each one is high-value time. Physics questions are also unusually strict on significant figures and units — an otherwise perfect calculation can lose its final mark for an answer given without the correct unit.

Topics that come up most

- Energy stores, transfers & efficiency
- Electrical circuits (series & parallel)
- Forces, motion & Newton's laws
- Radioactivity & half-life
- Waves & the electromagnetic spectrum
- Required practicals
- Momentum & stopping distances

Exam technique

Write the equation, substitute numbers with units, then solve — never skip straight to a decimal answer. Double-check whether the question wants magnitude only or a full vector (direction included).

Common mistakes

Mixing up mass and weight, dropping units, using the wrong equation for a similar-looking scenario, and misreading circuit diagrams under time pressure.