JRA Tutors
Private tuition and small online Study Pods

KS3 Maths and Science Topic Guide

Years 7–9: what we cover

How to read this guide

Key Stage 3 covers **Years 7–9**. It isn't examined, but it builds the foundations for GCSE. This guide follows the national curriculum programmes of study for Maths and Science. Orange cards are Maths; green cards are Science.

Schools teach topics in different orders, so we match sessions to what your child's school is covering, while closing the gaps that would hold them back at GCSE.

Maths: Number

Years 7–9

- Place value and ordering, including negative numbers
- The four operations and order of operations
- Fractions, decimals and percentages, and moving between them
- Factors, multiples, primes, HCF and LCM
- Powers, roots and standard form
- Rounding, estimating and checking answers

Maths: Algebra

Years 7–9

- Algebra notation, substitution and simplifying
- Expanding and factorising
- Solving linear equations and inequalities
- Using and rearranging formulae
- Sequences: term-to-term rules and the nth term
- Coordinates and straight-line graphs (gradient and y = mx + c)
- Plotting quadratic graphs; simultaneous equations and quadratics introduced

Maths: Ratio, proportion and rates of change

Years 7–9

- Ratio and sharing in a ratio
- Direct and inverse proportion
- Percentage change
- Converting units; scale drawings and maps
- Speed, density and other compound measures

Maths: Geometry and measures

Years 7–9

- Angles in parallel lines, triangles and polygons
- Constructions, loci and bearings
- Perimeter, area and volume, including circles, prisms and cylinders
- Transformations: reflection, rotation, translation and enlargement
- Congruence and similarity
- Pythagoras' theorem and right-angled trigonometry

Maths: Probability and statistics

Years 7–9

- The probability scale and relative frequency
- Listing outcomes, sample spaces, Venn and tree diagrams
- Averages and range
- Bar charts, pie charts, line graphs and scatter graphs
- Frequency tables and comparing data sets
- Sampling and spotting misleading graphs

Science: Biology

Years 7–9

- Cells and organisation, and using a microscope
- The skeletal and muscular systems
- Nutrition and digestion
- Gas exchange and breathing
- Human reproduction and health
- Photosynthesis and respiration
- Ecosystems, food webs and interdependence
- Variation, inheritance, DNA and evolution

Science: Chemistry

Years 7–9

- The particle model and states of matter
- Atoms, elements, compounds and the periodic table
- Pure and impure substances; separating mixtures
- Chemical reactions, word equations and conservation of mass
- Acids, alkalis and neutralisation
- Exothermic and endothermic reactions
- Metals and the reactivity series
- The Earth and atmosphere: rock cycle, carbon cycle, climate

Science: Physics

Years 7–9

- Energy: stores, transfers, resources and power
- Motion and forces: speed, balanced forces, gravity, pressure
- Waves: sound and light, reflection and refraction
- Electricity and electromagnetism: circuits, static, magnets
- Matter: density and the particle model
- Space: the Solar System, seasons, stars and galaxies

Working scientifically

Across all three sciences

- Planning investigations and controlling variables
- Measuring accurately and recording results
- Drawing graphs and spotting patterns
- Analysing, evaluating and drawing conclusions
- Using scientific language and units

Not sure what your child needs?

We start with a short diagnostic to find where your child is secure and where the gaps are, then build a plan around their school's teaching.

To book a free 15-minute diagnostic call:
jratutors.co.uk or WhatsApp +44 7943 204223.