

WJEC GCSE Mathematics
Higher Student's Book
(9781444114836)

Mapping Grid to WJEC 2010 Unitised Course

WJEC GCSE Mathematics Student's Book mapping grid to Unitised Course

Foundation Tier

Number

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 1 – Integers, powers and roots			
Prime numbers and factors		√	
Writing a number as a product of its prime factors		√	
Highest common factors and lowest common multiples		√	
Multiplying and dividing by negative numbers	√	√	√
Powers and roots		√	
Reciprocals		√	
Chapter 2 – Fractions, decimals and percentages			
Comparing fractions	√	√	
Adding and subtracting fractions and mixed numbers	√	√	√
Multiplying and dividing fractions and mixed numbers	√	√	√
Fractions on your calculator	√		√
Changing fractions to decimals		√	
Mental arithmetic with decimals	√	√	
Multiplying and dividing decimals	√	√	√
Percentage increase and decrease	√	√	
Chapter 3 – Ratio and proportion			
What is a ratio?			√
Writing a ratio in the form 1 : n			√
Using ratios			√
Dividing a quantity in a given ratio			√
Best value	√	√	√
Chapter 4 – Mental method			
Mental strategies		√	
Rounding to 1 significant figure	√	√	√
Rounding to a given number of significant figures	√	√	√
Using π without a calculator		√	
Deriving unknown facts from those you know			

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 5 – Solving problems			
Order of operations	√	√	√
Estimating and checking		√	
Compound measures	√		√
Time	√	√	√
Solving problems	√	√	√
Chapter 6 – Further percentages			
Repeated percentage change	√		
Repeated fractional change	√		
Reverse percentage and fraction problems	√		
Chapter 7 – Indices and standard form			
Raising a power to another power		√	
Other powers		√	
Using a calculator	√		√
Using the rules of indices with numbers and letters		√	
Standard form		√	
Calculating with numbers in standard form		√	
Chapter 8 – Using a calculator			
The efficient use of a calculator	√		√
Exponential growth and decay	√		
Bounds of measurement	√		
Further calculations involving bounds of measurement	√		
Chapter 9 – Decimals and surds			
Terminating and recurring decimals		√	
Surds		√	

Algebra

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 10 – Algebraic manipulation 1			
Expanding brackets		√	
Combining terms		√	
Factorising		√	√
Expanding pairs of brackets		√	
Index notation		√	

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 11 – Algebraic manipulation 2			
Simplifying algebraic fractions		√	
Factorising quadratic expressions			√
Difference of two squares			√
Simplifying algebraic fractions involving indices		√	
Factorising quadratic expressions where the coefficient of $x^2 \neq 1$			√
Simplifying fractions involving quadratic expressions		√	√
Chapter 12 – Equations and inequalities 1			
Solving equations		√	√
Solving equations with brackets		√	√
Equations with x on both sides		√	√
Fractions in equations		√	√
Inequalities		√	
Chapter 13 – Equations and inequalities 2			
Equations		√	
Inequalities		√	
Solving inequalities with two unknowns		√	
Chapter 14 – Graphs 1			
Drawing straight-line graphs		√	
Harder straight-line graphs		√	
Distance–time graphs	√		√
Real-life graphs	√		√
Quadratic graphs		√	
Chapter 15 – Graphs 2			
Finding the gradient of a straight-line graph		√	
Finding the equation of a straight-line graph		√	
Solving simultaneous equations graphically		√	
Solving simultaneous equations algebraically		√	
Solving harder simultaneous equations algebraically		√	
Chapter 16 – Graph 3			
Velocity–time graphs			√
Gradient of a curve			√
Tangents to estimate rates of change			√
Area under a curve			√
Area under a velocity–time graph			√
Solving simultaneous equations graphically		√	√
Using graphs to solve quadratic equations			√
Drawing and recognising other curves			√

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 17 – Proportion and variation			
Direct proportion	√		√
Inverse proportion	√		√
Finding formulae	√		√
Other types of proportion	√		√
Chapter 18 – Linear equations			
Finding the equation of a straight line in the form $y = mx + c$		√	
Exploring gradients		√	
Chapter 19 – Quadratic equations			
Solving quadratic equations			√
Solving quadratic equations by factorising			√
Equations that need rearranging first			√
Completing the square			√
Solving quadratic equations by completing the square			√
Solving quadratic equations by using the formula			√
Chapter 20 – Simultaneous equations			
Solving simultaneous equations using the method of elimination		√	
Solving simultaneous equations by substitution		√	
Chapter 21 - Sequences			
Using rules to find terms of sequences		√	
Finding the n th term of a linear sequence		√	
Some special sequences		√	
Chapter 22 – Formulae 1			
Using formulae	√		
Rearranging formulae		√	
Solving equations by trial and improvement			√
Chapter 23 – Formulae 2			
Formulae where the new subject occurs more than once		√	
Formulae where the new subject is raised to a power		√	
Chapter 24 – Functions			
Function notation		√	
Transforming graphs		√	
Chapter 25 – Algebraic fractions			
Adding and subtracting algebraic fractions		√	√
Adding and subtracting more complex algebraic fractions		√	√
Solving equations involving algebraic fractions		√	√

Geometry and measure

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 26 – Properties of shapes			
The area of a triangle	√		√
The area of a parallelogram	√		√
Angles made with parallel lines		√	
The angles in a triangle		√	
The angles in a quadrilateral		√	
Special quadrilaterals		√	
The angles in a polygon			√
Chapter 27 – Pythagoras' theorem			
Pythagoras' theorem			√
Using Pythagoras' theorem			√
Pythagorean triples			√
Coordinates and midpoints		√	
Three-dimensional (3-D) coordinates			√
Chapter 28 – Transformations			
Reflections		√	
Rotations		√	
Translations		√	
Enlargements		√	
Chapter 29 – Measures			
Converting between measures	√		
Accuracy in measurement	√		√
Working to a sensible degree of accuracy	√		√
Compound measures	√		√
Chapter 30 – Constructions and loci			
Constructions			√
Loci			√
Chapter 31 – Area, volumes and 2-D representation			
Circles	√		√
Area of complex shapes	√		√
Volume of complex shapes	√		√
Volume of a prism	√		√
Volume of a cylinder	√		√
Surface area of a cylinder	√		√
Plans and elevations	√		

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 32 – Trigonometry 1			
Labelling sides			√
Using the ratios 1			√
Using the ratios 2			√
Using the ratios 3			√
Chapter 33 – Trigonometry 2			
The area of a triangle			√
The sine rule			√
The cosine rule			√
Graphs of trigonometrical functions			√
Transforming graphs of trigonometrical functions			√
Chapter 34 – Length, area and volume			
Dimension analysis	√		√
Arcs and sectors	√		√
Pyramids, cones and spheres	√		√
Compound shapes and problems	√		√
Chapter 35 – Similarity and enlargement			
Similarity of triangles and other plane shapes			√
Enlargement			√
The area and volume of similar figures			√
Chapter 36 – Three-dimensional geometry			
Finding lengths and angles in three dimensions			√
Chapter 37 – Congruence and proof			
Angle properties of triangles		√	
Chapter 39 – Circle theorems			
The perpendicular from the centre to a chord bisects the chord		√	
The angle subtended by an arc at the centre of a circle is twice the angle it subtends at any point on the circumference		√	
The angle subtended at the circumference in a semicircle is a right angle		√	
Angles in the same segment of a circle are equal		√	
The opposite angles of a cyclic quadrilateral add up to 180°		√	
The two tangents to a circle from an external point are equal in length		√	
The angle between a tangent and a chord is equal to the angle subtended by the chord in the alternate segment		√	

Statistics

Contents of Student's Book	Unit 1	Unit 2	Unit 3
Chapter 39 – Statistical diagrams			
Frequency diagrams			√
Frequency polygons			√
Scatter diagrams			√
Chapter 40 – Statistical calculations			
The mean from a frequency table			√
Grouped data			√
Continuous data			√
Chapter 41 – Probability 1			
The probability of an event not happening		√	
Probability involving a given number of different outcomes		√	
Expected frequency		√	
Relative frequency		√	
Chapter 42 – Probability 2			
The addition rule for mutually exclusive events		√	
The multiplication rule for independent events		√	
Probability tree diagrams		√	
Dependent events		√	
Chapter 43 – Planning and collecting			
Statistical questions	√		
Chapter 44 – Representing and interpreting data			
Cumulative frequency diagrams			√
Histograms			√
Misleading graphs and diagrams	√		