

Year 9 Overview 2024-25 – Mathematics

Date	Wk	Week	Units Studied & Learning Outcomes
2-Sep	A	1	<p>Calculating with Fractions (2)</p> <p>Learning Outcomes: GW: Know that division is the same as a multiplicative inverse BI: Know how to perform all four operations with fractions, EW: Know when, and which, strategies to apply to solve problems</p>
9-Sep	B	2	<p>Expanding brackets (3)</p> <p>Learning Outcomes: GW: Know that the distributive property applies to algebraic terms as well as numerical ones BI: Know how to expand two sets of brackets with and simplify the resulting expression EW: Know how to factorise by a common algebraic factor and apply the index laws to algebraic terms</p>
16-Sep	A	3	<p>Fraction, Decimal and Percentage equivalence and Calculations (4)</p> <p>Learning Outcomes: GW: Know that fractions, decimals, and percentages are different representations of the same value. BI: Know how to convert between different representations and compare them. Calculate with mixed representations of FDP EW: Know how to order sets of fractions, decimals, and percentages. Divide by decimals and choose efficient calculation strategies.</p>
23-Sep	B	4 RQ	<p>Lengths in Right-Angled Triangles (4)</p> <p>Learning Outcomes: GW: Know that the longest side of a right-angled triangle is the hypotenuse, and its relationship to $a^2 + b^2 = c^2$ BI: Know how to use Pythagoras' Theorem to find missing side lengths EW: Know when to apply Pythagoras' Theorem to solve a problem</p>
30-Sep	A	5	<p>Probability of Combined Events (4)</p> <p>Learning Outcomes: GW: Know that frequency trees help us to organise sets of data, probability trees help us to organise combinations of outcomes BI: Know how to complete frequency trees and probability trees EW: Know how to complete frequency trees given proportional information (percentages or ratio), use probability trees to combine probabilities</p>
7-Oct	B	6	<p>Percentage change (4)</p> <p>Learning Outcomes: GW: Know that a percentage represents a proportion of an original amount BI: Know how to calculate the original amount after a multiple of 5%. Calculate percentage change using a multiplier EW: Know how to calculate percentages in real contexts including profit and loss</p>

14-Oct	A	7 RQ	<p>Solve equations involving unknowns on both sides (4)</p> <p><u>Learning Outcomes:</u> GW: Know that equations can be solved by performing inverse operations BI: Know how to solve equations involving brackets or unknowns on both sides EW: Know when equations can be formed and solved to solve a problem.</p>
21-Oct	B	8	<p>Transformations (4)</p> <p><u>Learning Outcomes:</u> GW: Know that combined transformations can result in a single transformation BI: Know how to enlarge a shape by a fractional scale factor EW: Know how to describe a given enlargement</p>
4-Nov	A	9	<p>Dividing into Ratio (3)</p> <p><u>Learning Outcomes:</u> GW: Know that ratios compare parts of a whole with each other, rather than as a proportion of the whole BI: Know how to divide an amount in a given ratio given one part EW: Know when to use which approach to solving ratio</p>
11-Nov	B	10 RQ	<p>Angles & Polygons (4)</p> <p><u>Learning Outcomes:</u> GW: Know that the angle sum of any polygon must be a multiple of 180° BI: Know how to prove the angle sum of a polygon and use it. EW: Know multiple proofs of the angle sum of a polygon</p>
18-Nov	A	11	<p>Rules of indices (3)</p> <p><u>Learning Outcomes:</u> GW: Know that a negative power indicates a reciprocal (multiplicative inverse) BI: Know how to write a number as a power of a given base, including with negative powers EW: Know that a square rooted power will have half the index</p>
25-Nov	B	12	<p>Higher Order Formulae (3)</p> <p><u>Learning Outcomes:</u> GW: Know that a formula shows a connection between variables, and that a negative squared is a positive BI: Know how to substitute values into equations involving powers and roots EW: Know when to apply which formula to solve a problem</p>
2-Dec	A	13 RQ	<p>Standard form (4)</p> <p><u>Learning Outcomes:</u> GW: Know that standard form notation indicates a shift in place value BI: Know how to convert numbers into standard form and vice versa EW: Know how to change numbers in 'near' standard form into true standard form</p>
9-Dec	B	14	<p>Equations of Linear Graphs (4)</p> <p><u>Learning Outcomes:</u> GW: Know that lines represent pairs of solutions to the equation, the gradient is the rate of change in y BI: Know how to plot linear graphs, find the gradient of a line from two pairs of coordinates EW: Know how to find the equation of a line from two pairs of coordinates</p>

16-Dec	A	15	<p>Similarity (3)</p> <p><u>Learning Outcomes:</u> GW: Know that <i>corresponding</i> lengths in similar shapes have a common scale factor BI: Know how to calculate missing sides, scale factors. Identify similar shapes. EW: Know when two sides are corresponding (using congruency facts)</p>
6-Jan	B	16 RQ	<p>Set notation (4)</p> <p><u>Learning Outcomes:</u> GW: Know that Venn diagrams can be used to organise sets of information, know the symbols used. BI: Know how to calculate the probability of an outcome, or combination of outcomes, from a Venn diagram EW: Know how to complete a Venn diagram given probabilities</p>
13-Jan	A	ST1	
20-Jan	B	ST1	
27-Jan	A	19	<p>Metric Units for Volume (4)</p> <p><u>Learning Outcomes:</u> GW: Know that conversions for area and volume measures are different from linear measures. Know that $1\text{cm}^3 = 1\text{ml}$. BI: Know how to convert between measures of area and between measures of volume EW: Know when to apply a conversion in solving a problem</p>
3-Feb	B	20	EBI Response
10-Feb	A	21 RQ	<p>Accuracy (4)</p> <p><u>Learning Outcomes:</u> GW: Know that estimation is used to find an easier, similar calculation BI: Know how to find upper and lower bounds EW: Know what effect rounded values will have on the estimation</p>
25-Feb	B	22	<p style="text-align: center;">INSET 24th Feb</p> <p>Direct proportion (3)</p> <p><u>Learning Outcomes:</u> GW: Know that variables in direct proportion have a multiplicative link between them, for inverse proportion variables multiply to give a constant. BI: Know how to use unit ratio to make comparisons and solve problems EW: Know when a problem is direct or inverse and solve accordingly</p>
3-Mar	A	23	<p>Nth term of Quadratic Sequence (4)</p> <p><u>Learning Outcomes:</u> GW: Know that quadratic sequences have a common 'second difference' BI: Know how to generate from, and describe sequences as nth terms relating to n^2 EW: Know how to describe sequences of the form an^2</p>
10-Mar	B	24 RQ	<p>3D Shapes Volume & Surface Area (3)</p> <p><u>Learning Outcomes:</u></p>

			<p>GW: Know that the surface area of an object is the combined area of every face.</p> <p>BI: Know how to calculate surface areas of prisms and pyramids</p> <p>EW: Know how to calculate volumes of cylinders</p>
17-Mar	A	25	<p>Relative Frequency (4)</p> <p><u>Learning Outcomes:</u></p> <p>GW: Know that the relative frequency of an event gives an estimate of its true probability, and therefore more data yields a better estimate.</p> <p>BI: Know how to calculate the relative frequency of an event and use it to make predictions of future results</p> <p>EW: Know when relative frequency estimations may indicate unfairness or bias</p>
24-Mar	B	26	<p>Use of a calculator (3)</p> <p><u>Learning Outcomes:</u></p> <p>GW: Know the functions of the calculator keys</p> <p>BI: Know how to combine operations efficiently on a calculator</p> <p>EW: Know how to interpret the calculator display</p>
31-Mar	A	27 RQ	<p>Speed and rate of change (4)</p> <p><u>Learning Outcomes:</u></p> <p>GW: Know that average speed is the rate of a change of distance with regards to time</p> <p>BI: Know how to calculate (both with the speed formula and using proportion) speeds etc.</p> <p>EW: Know how to calculate speeds etc. with, for example, multiples of 12 minutes</p>
22-Apr	B	28	<p style="text-align: center;">Easter Monday 21st</p> <p>Simultaneous Equations Graphically (3)</p> <p><u>Learning Outcomes:</u></p> <p>GW: Know that linear simultaneous equations (that are not parallel) have exactly one solution</p> <p>BI: Know how to plot functions and find the simultaneous solution</p> <p>EW: Solve simultaneous equations algebraically by identifying value of differences between equations</p>
28-Apr	A	29	<p>Construction & Loci (4)</p> <p><u>Learning Outcomes:</u></p> <p>GW: Know that the locus is the set of all points that satisfy a given condition</p> <p>BI: Know how to combine constructions to find more complex loci</p> <p>EW: Know how to describe a region with loci</p>
5-May	B	30 RQ	<p style="text-align: center;">Early May Bank Holiday 5th May</p> <p>Grouped Frequency Tables & Averages (4)</p> <p><u>Learning Outcomes:</u></p> <p>GW: Know that continuous data can be grouped and organise data in that format.</p> <p>BI: Know how to calculate an estimate of the mean from grouped data.</p> <p>EW: Know the limits of using grouped continuous data in this way.</p>
12-May	A	31	<p>Non-linear graphs (3)</p> <p><u>Learning Outcomes:</u></p> <p>GW: Know that squaring a negative value makes a positive. Quadratic graphs have a parabolic shape.</p> <p>BI: Know how to plot simple quadratics and cubics [$y = x^2 + c$, $y = ax^3$]</p> <p>EW: Know how to use graphs to find approximate solutions to equations.</p>

19-May	B	32	<p>Arcs and Sectors (4)</p> <p><u>Learning Outcomes:</u> GW: Know that an arc or sector is a fraction of the full turn at the centre of the circle BI: Know how to calculate arc length or sector area for half and quarter circles EW: Know how to calculate arc length and sector area for angles that are factors of 360°. Calculate perimeters of sectors.</p>
2-Jun	A	33 RQ	<p>Solve & Represent Inequalities (3)</p> <p><u>Learning Outcomes:</u> GW: Know that inequalities have a range of values for which they are true BI: Know how to solve inequalities including fractions and brackets EW: Know how to solve inequalities with negative coefficients of x</p>
9-Jun	B	ST2	
16-Jun	A	ST2	
23-Jun	B	36	<p>Scatter Graphs (3)</p> <p><u>Learning Outcomes:</u> GW: Know that stem-and-leaf diagrams represent values by the position of the 'leaf' and its value. Know how to plot bivariate data. BI: Know how to interpret back-to-back stem and leaf diagrams. Know how to interpret scatter graphs. EW: Know the limits of scatter graphs with regards to causation and extrapolation</p>
30-Jun	A	37	<p>EBI Response Select 3 topics identified from ST1 analysis as areas for improvement.</p>
7-Jul	B	38	<p>Prime Factor Form (3)</p> <p><u>Learning Outcomes:</u> GW: Know that every natural number has a unique prime factor form BI: Know how to write a number as a product of its prime factors EW: Know how to identify factors from the prime factor form</p>
14-Jul	A	39 RQ	<p>Proportion Graphs (4)</p> <p><u>Learning Outcomes:</u> GW: Know that direct proportion graphs are straight lines that intersect the origin BI: Know how to calculate the rate of change from a graph EW: Know how the effect of a translation in the y direction affects a direct proportion graph.</p>

* Bank Holidays