

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Reasoning with Algebra						Constructing in 2 and 3 Dimensions					
	Straight line graphs		Forming and solving equations		Testing conjectures		Three-dimensional shapes			Constructions and congruency		
Spring	Reasoning with Number						Reasoning with Geometry					
	Numbers		Using percentages		Maths and money		Deduction		Rotation and translation		Pythagoras' Theorem	
Summer	Reasoning with Proportion						Representations and Revision					
	Enlargement and similarity		Solving ratio & proportion problems		Rates		Probability		Algebraic representation		Revision	

Straight line graphs

Small Steps

- ▶ Lines parallel to the axes, $y = x$ and $y = -x$ R
- ▶ Using tables of values R
- ▶ Compare gradients
- ▶ Compare intercepts
- ▶ Understand and use $y = mx + c$
- ▶ **Write an equation in the form $y = mx + c$** H
- ▶ Find the equation of a line from a graph
- ▶ Interpret gradient and intercepts of real-life graphs

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Straight line graphs

Small Steps

- ▶ Model real-life graphs involving inverse proportion
- ▶ Explore perpendicular lines

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Forming and solving equations

Small Steps

- ▶ Solve one- and two-step equations and inequalities R
- ▶ Solve one- and two-step equations and inequalities with brackets R
- ▶ Inequalities with negative numbers
- ▶ Solve equations with unknowns on both sides
- ▶ Solve inequalities with unknowns on both sides
- ▶ Solving equations and inequalities in context
- ▶ Substituting into formulae and equations
- ▶ Rearrange formulae (one-step)

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Forming and Solving Equations

Small Steps

- ▶ Rearrange formulae (two-step)
- ▶ Rearrange complex formulae including brackets and squares

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Testing conjectures

Small Steps

Factors, Multiples and Primes

R

True or False?

Always, Sometimes, Never true

Show that

Conjectures about number

Expand a pair of binomials

Conjectures with algebra

Explore the 100 grid

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Testing conjectures

Small Steps

◀ Expand three binomials

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Three-dimensional shapes

Small Steps

- ▶ Know names of 2-D and 3-D shapes
- ▶ Recognise prisms
- ▶ Accurate nets of cuboids and other 3-D shapes
- ▶ Sketch and recognise nets of cuboids and other 3-D shapes
- ▶ Plans and elevations
- ▶ Find area of 2-D shapes R
- ▶ Surface area of cubes and cuboids
- ▶ Surface area of triangular prisms

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Three-dimensional shapes

Small Steps

- ▶ Surface area of a cylinder
- ▶ Volume of cubes and cuboids
- ▶ Volume of other 3-D shapes – prisms and cylinders
- ▶ **Explore volumes of cones, pyramids and spheres**

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Constructions & congruency

Small Steps

- ▶ Draw and measure angles R
- ▶ Construct and interpret scale drawings R
- ▶ Locus of distance from a point
- ▶ Locus of distance from a straight line/shape
- ▶ Locus equidistant from two points
- ▶ Construct a perpendicular bisector
- ▶ Construct a perpendicular from a point
- ▶ Construct a perpendicular to a point

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Constructions & congruency

Small Steps

- ▶ Locus of distance from two lines
- ▶ Construct an angle bisector
- ▶ Construct triangles from given information
- ▶ Identify congruent figures
- ▶ Explore congruent triangles
- ▶ Identify congruent triangles

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Numbers

Small Steps

- Integers, real and rational numbers
- Understand and use surds** H
- Work with directed number R
- Solve problems with integers
- Solve problems with decimals
- HCF and LCM R
- Adding and subtracting fractions R
- Multiplying and dividing fractions R

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Numbers

Small Steps

- ▶ Solving problems with fractions
- ▶ Numbers in standard form



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Using percentages

Small Steps

- ▶ Use the equivalence of fractions, decimals and percentages R
- ▶ Calculate percentage increase and decrease R
- ▶ Express a change as a percentage R
- ▶ Solve 'reverse' percentage problems
- ▶ Recognise and solve percentage problems (non-calculator)
- ▶ Recognise and solve percentage problems (calculator) R
- ▶ **Solve problems with repeated percentage change** H

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Maths and Money

Small Steps

- ▶ Solve problems with bills and bank statements
- ▶ Calculate simple interest
- ▶ Calculate compound interest
- ▶ Solve problems with Value Added Tax
- ▶ Calculate wages and taxes
- ▶ Solve problems with exchange rates
- ▶ Solve unit pricing problems

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Deduction

Small Steps

- ▶ Angles in parallel lines R
- ▶ Solving angles problems (using chains of reasoning)
- ▶ Angles problems with algebra
- ▶ Conjectures with angles
- ▶ Conjectures with shapes
- ▶ **Link constructions and geometrical reasoning** H

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Rotation and Translation

Small Steps

- Identify the order of rotational symmetry of a shape
- Compare and contrast rotational symmetry with line symmetry
- Rotate a shape about a point on a shape
- Rotate a shape about a point not on a shape
- Translate points and shapes by a given vector
- Compare rotation and reflection of shapes
- Find the result of a series of transformations**

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Pythagoras' Theorem

Small Steps

- ▶ Squares and square roots R
- ▶ Identify the hypotenuse of a right-angled triangle
- ▶ Determine whether a triangle is right-angled
- ▶ Calculate the hypotenuse of a right-angled triangle
- ▶ Calculate missing sides in right-angled triangles
- ▶ Use Pythagoras theorem on coordinate axes
- ▶ Explore proofs of Pythagoras' theorem
- ▶ **Use Pythagoras' theorem in 3-D shapes** H

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Enlargement and Similarity

Small Steps

- ▶ Recognise enlargement and similarity
- ▶ Enlarge a shape by a positive integer scale factor
- ▶ Enlarge a shape by a positive integer scale factor from a point
- ▶ Enlarge a shape by a positive fractional scale factor
- ▶ **Enlarge a shape by a negative scale factor** H
- ▶ Work out missing sides and angles in a pair of given similar shapes
- ▶ **Solve problems with similar triangles** H
- ▶ **Explore ratios in right-angled triangles** H

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Ratio and Proportion

Small Steps

- ▶ Solve problems with direct proportion R
- ▶ Direct proportion and conversion graphs R
- ▶ Solve problems with inverse proportion
- ▶ **Graphs of inverse relationships** H
- ▶ Solve ratio problems given the whole or a part R
- ▶ Solve 'best buy' problems
- ▶ **Solve problems ratio and algebra** H

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Rates

Small Steps

- ▶ Solve speed, distance and time problems without a calculator
- ▶ Solve speed, distance and time problems with a calculator
- ▶ Use distance/time graphs
- ▶ Solve problems with density, mass and volume
- ▶ Solve flow problems and their graphs
- ▶ Rates of change and their units
- ▶ **Convert compound units** H

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Probability

Small Steps

- ▶ Single event probability R
- ▶ Relative frequency – include convergence
- ▶ Expected outcomes
- ▶ Independent events
- ▶ **Use tree diagrams** H
- ▶ **Use tree diagrams to solve ‘without replacement’ problems** H
- ▶ Use diagrams to work out probabilities

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Algebraic representation

Small Steps

- ▶ Draw and interpret quadratic graphs
- ▶ Interpret graphs, including reciprocal and piece-wise
- ▶ **Investigate graphs of simultaneous equations**
- ▶ Represent inequalities

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Revision

Suggestions

The content for the last three weeks of Year 9 is not specified.

You can use their assessment of students' progress over Key Stage to identify any key areas that need to be addressed and focus on these before embarking on KS4.

Below are some suggestions of topic areas that might be useful to revise as some of the content has not been covered for some time, but this list is neither intended as prescriptive nor exhaustive.

Representing Number	Representing Data	Algebraic Representations	Representing Problems
<ul style="list-style-type: none">• Standard form• Product of primes• Error intervals	<ul style="list-style-type: none">• Scatter graphs• Statistical graphs• Measures• Tables and timetables• Data handling project	<ul style="list-style-type: none">• Find the rule for the n^{th} term of a sequence• Investigating algebraic proof	<ul style="list-style-type: none">• Using graphs, equations, tables etc. to solve complex word problems