

Year 9 Curriculum Plan

Maths



	Term 1	Term 2	Term 3
PRIOR LEARNING	<p>From Year 7 and Year 8 pupils should have learnt:</p> <ul style="list-style-type: none"> • Arithmetic strategies. • Order of operations. • Negative numbers. • Algebraic expressions. • Solving equations. • Number lines. • Substitution. • Writing expressions, equations and formulae. • Reading tables. • Interpreting graphs and charts. • Averages. • Solving linear equations. • Formulae. • Linear graphs. • Scatter graphs. • Sequences. • Linear inequalities. • Standard form. • Real life graphs. • Conversion graphs. • Introduction to probability. • Two-way tables. • Sample space. • Frequency trees. • Venn diagrams. • Simultaneous equations. • Sketch linear graphs. • Congruency. • Similar shapes. • Transformations. • Pythagoras. • Trigonometry. 	<p>From Year 7, Year 8 and Year 9 term 1 pupils should have learnt:</p> <ul style="list-style-type: none"> • Linear inequalities. • Standard form. • Real life graphs. • Conversion graphs. • Introduction to probability. • Two-way tables. • Sample space. • Frequency trees. • Venn diagrams. 	<p>From Year 7, Year 8, Year 9 term 1 and 2 pupils should have learnt:</p> <ul style="list-style-type: none"> • Simultaneous equations. • Sketch linear graphs. • Parallel / perpendicular lines. • Congruency. • Similar shapes. • Transformations. • Pythagoras. • Trigonometry.

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<p>KNOWING WHAT..</p>	<p><u>Algebra unit 8 -</u> Representing linear inequalities on a number line. Solve linear inequalities. Solve compound linear inequalities. Setting up inequalities from contexts. Represent inequalities involving only x or y by shading on a graph.</p> <p><u>Number unit 12 -</u> Write any integer in a range of form. Large and small numbers in standard form. Converting from 'almost standard' form to standard form. Comparing numbers in standard form (and "almost standard" form). Adding and subtracting in standard form. Multiplying and dividing in standard form.</p> <p><u>Algebra unit 9</u> General "real-life" graphs. Conversion graphs. Introduction to speed, distance, time. Distance-time graphs. Velocity-time graphs.</p> <p><u>Statistics/Probability unit 3 -</u> Product rule for counting. Introduce language of probability. Theoretical probability. Mutually exclusive events = 1. Sample spaces. Listing of combinations and outcomes. Frequency trees. Two-way tables. Venn diagrams.</p>	<p><u>Algebra unit 10 -</u> Find the gradient of a line. Sketching linear graphs. Identify equations of parallel and perpendicular lines. Finding equations given two points or a point and gradient. Solve equations in two variables graphically. Simultaneous equations. Write and solve simultaneous equations from contexts. Find regional solutions to linear inequalities in two variables on a Cartesian grid.</p> <p><u>Geometry/Measure unit 4 -</u> Congruence – introduction. Tessellating congruent shapes to fill the plane. Isometries: translation (as a vector), reflection and rotation, including rotational and reflective symmetry, combinations of transformations, including successive translations. Similar shapes. Enlargement. Conditions for congruent triangles.</p> <p><u>Geometry/Measure unit 5 -</u> Pythagoras' Theorem. Trigonometry. Exact Trig values. Problems involving Pythagoras and trigonometry (including bearings), method selection practice.</p>	<p><u>Number unit 13 -</u> Percentage increase and decrease, decimal multipliers. Finding a percentage change. Reverse percentages. Simple interest. Direct / inverse proportion - first numerically, then graphically, then algebraically. Compound units. Ratio - combining ratios, finding parts, differences, and wholes; mixing ratios with fractions.</p> <p><u>Geometry/Measure unit 6 -</u> Circle parts and properties. Circumference of a circle (and semi/quarter circles). Area of a circle (recap) and semi/quarter circles. Problems with circumference and area of a circle, inc area of composite shapes. Length of an arc and area of a sector. Identifying and using the circle theorems.</p> <p><u>Geometry/Measure unit 7 -</u> Interior and exterior angles in polygons. Converting between 2D and 3D units of measurement. Naming and recognising polyhedra. Labelling conventions. Drawing 3D shapes: normal and isometric. 2D representations of 3D shapes: constructing and interpreting nets, plans and elevations. Planes of symmetry. Loci - fixed distance from a point, fixed distance from a line, equidistant from two points, equidistant from two lines.</p>
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KNOWING HOW...	<ul style="list-style-type: none">• Read and write with inequalities.• Solve inequalities.• Graph inequalities.• Convert / compare standard form.• Arithmetic with standard form.• Construct / read real life, graphs, conversion graphs, distance time, velocity time.• Probability language.• Construct; sample space, frequency tree, two-way tables, Venn diagrams.	<ul style="list-style-type: none">• Sketch linear graphs.• Understand parallel/perpendicular lines.• Solve equations graphically.• Simultaneous equation graphically.• Describe congruency.• Carry out and describe transformations.• Use ratio table to derive similar shapes.• Reason for congruent triangles.	<ul style="list-style-type: none">• Use calculator and non-calculator for percentage increase.• Convert multipliers.• Ratio tables for proportion.• Construct graph for proportion.• Form algebraic expressions.• Bar models.• Ratio tables for problem solving with ratio.• Substitute into formula.• Rearrange and solve formula.• Reason with angle facts.• Draw on isometric paper.• Use mathematical equipment.• Name and label shapes.
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After each unit pupils complete a short assessment based on each bullet point from above. The test is split into 3 parts.

Part 1 - skill questions and key definitions/literacy.

Part 2 - more difficult reasoning questions.

Part 3 - problem solving questions which also link to prior knowledge from other units.

Pupils also sit two larger assessments; one is at the halfway point for the year and the other is during whole school exam week in June.

ASSESSMENT ...

Assessment 1

- Plotting 2D coordinates in four quadrants.
- Finding the midpoint of a line segment.
- Expressing number relationships algebraically and graphically.
- Plotting quadratic number relationships on a Cartesian grid.
- Reading values of variables from a graph.
- Drawing and recognising graphs of $y=n$ and $x=n$.
- Finding integer gradients.
- Identify parallel lines from their equations.
- Draw a scatter graph.
- Time series tables / graphs.
- Generate terms of a sequence.
- Find and use the n th term of a sequence.
- Recognise common sequences.
- Representing single and double linear inequalities on a number line.
- Solve single and compound linear inequalities.
- Solve systems of multiple linear inequalities in a single. variable using number lines.
- Setting up inequalities from contexts.
- Represent inequalities by shading on a graph.
- Standard form.
- General "real-life" graphs.
- Conversion graphs.
- Introduction to speed, distance, time.
- Distance-time graphs.
- Velocity-time graphs.
- Product rule for counting.
- Theoretical probability.
- Generate theoretical sample spaces.
- Recording outcomes and possibilities using frequency trees, two-way tables and simple Venn diagrams.

Assessment 2

- Find the gradient of a line.
- Use the form $y=mx+c$ to draw lines without plotting points.
- Identify equations of parallel and perpendicular lines.
- Solve equations in two variables graphically.
- Simultaneous equations.
- Write and solve simultaneous equations from contexts.
- Find regional solutions to linear inequalities.
- Congruence – introduction.
- Tessellating congruent shapes to fill the plane.
- Transformation; Enlargement, Translation, Reflection and Rotation.
- Similar Shapes.
- Conditions for congruent triangles.
- Pythagoras' Theorem.
- Trigonometry.
- Exact Trig values.
- Reverse percentages.
- Simple interest.
- Direct (linear) / Inverse proportion - first numerically, then graphically, then algebraically.
- Compound units - density, pressure, speed, including conversions between compound unit.
- Ratio - combining ratios, finding parts, differences and wholes; mixing ratios with fractions.
- Circumference of a circle (and semi/quarter circles), in terms of pi and rounded.
- Area of a circle (recap) and semi/quarter circles, in terms of pi and rounded.
- Length of an arc and area of a sector.
- Identifying and using the circle theorems.
- Interior and exterior angles in polygons.
- Converting between 2D and 3D units of measurement.
- Naming and recognising and drawing 3D shapes: normal and isometric.
- Constructing and interpreting nets, plans and elevations.
- Planes of symmetry.
- Loci.