Subject: Mathematics

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| Cycle/Cohort | Year 7 | Year 8 | Year 9 | Year 10 | Year 11 |
|---|---|---|---|---|---|
| **Autumn 1** Topics and Opportunities | **Algebraic Thinking: Sequences, Understand and use algebraic notation, Equality and equivalence.** | **Proportional Reasoning: Ratio and scale, Multiplicative Change, Multiplying and dividing fractions** | **Reasoning with Algebra: Straight line graphs, Forming and solving equations, Testing conjectures.** | **1.1 Calculations<br>1.2 Decimal numbers<br>1.3 Place value<br>1.4 Factors and multiples<br>1.5 Squares, cubes and roots<br>1.6 Index notations<br>1.7 Prime factors<br>4.1 Working with fractions<br>4.2 Operations with fractions<br>4.3 Multiplying fractions<br>4.4 Dividing fractions<br>4.5 Fractions and decimals<br>4.6 Fractions and percentages<br>4.7 Calculating percentages 1<br>4.8 Calculating percentages 2<br>2.1 Algebraic expressions<br>2.2 Simplifying expressions<br>2.3 Substitutions** | **1.1 Number problems<br>1.2 Place value and estimating<br>1.3 HCF and LCM<br>1.4 Calculating with powers<br>1.5 Zero, negative and fractional indices<br>2.1 Algebraic indices<br>1.6 Powers of 10 and standard form<br>1.7 Surds<br>4.1 Fractions<br>4.2 Ratios<br>4.3 Ratios and proportions<br>4.4 Percentages<br>4.5 Fractions, decimals and percentages<br>2.2 Expanding and factorising<br>2.7 More expanding and factorising** |
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| **Autumn 2** Topics and Opportunities | **Place value and proportion: place value and ordering integers and decimals, Fractions, decimal and percentages equivalence,** | **Representations: Working in the Cartesian plane, Representing Data, Tables & Probability** | **Constructing in 2 & 3 dimensions: Three dimensional shapes, Constructions & congruency** | **5.1 Solving equations 1<br>5.2 Solving equations<br>5.3 Solving equations with brackets<br>5.4 Introducing inequalities<br>5.5 More inequalities<br>5.6 Using formulae<br>5.7 Generating sequences<br>5.8 Using the nth term of a sequence<br>3.1 Frequency tables<br>3.2 Two-way tables<br>3.3 Representing data<br>3.4 Time series<br>3.5 Stem and leaf diagrams<br>3.6 Pie charts** | **2.3 Equations<br>2.4 Formulae<br>2.5 Linear sequences<br>2.6 Non-linear sequences<br>3.1 Statistical diagrams 1<br>3.2 Time series<br>3.3 Scatter graphs<br>3.4 Line of best fit<br>3.5 Averages and range<br>3.6 Statistical diagrams 2<br>5.1 Angle properties of triangles and quadrilaterals<br>5.2 Interior angles of a polygon<br>5.3 Exterior angles of a polygon** |
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| **Spring 1** Topics and Opportunities | **Application of number: solving problems with addition and subtraction, Fraction and percentages of an amount.** | **Algebraic techniques: Brackets, Equations & inequalities, Indices. Developing Number: Fractions & percentages** | **Reasoning with number: Numbers, Using percentages, Maths and Money** | **3.7 Scatter graphs<br>3.8 Line of best fit<br>6.1 Properties of shapes<br>6.2 Angles in parallel lines<br>6.3 Angles in triangles** | **5.4 Pythagoras' theorem 1<br>5.5 Pythagoras' theorem 2<br>5.6 Trigonometry 1<br>5.7 Trigonometry 2<br>6.1 Linear graphs<br>6.2 More linear graphs** |

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| | | | | 6.4 Exterior and interior angles<br>6.5 More exterior and interior angles<br>6.6 Geometrical problems<br>7.1 Mean and range<br>7.2 Mode, median and range<br>7.3 Types of average<br>7.4 Estimating the mean<br>7.5 Sampling<br>8.1 Rectangles, parallelograms and triangles<br>8.2 Trapezia and changing units<br>8.3 Area of compound shapes (inc circles) | 6.6 Quadratic graphs<br>6.7 Cubic and reciprocal graphs<br>6.8 More graphs<br>7.1 Perimeter and area<br>7.2 Units and accuracy<br>7.3 Prisms<br>7.4 Circles<br>7.5 Sectors of circles<br>7.6 Cylinders and spheres |
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| **Spring 2** Topics and Opportunities | Application of number: Solving problems with multiplication and division.<br>Directed number: Operations and equations with directed number | Developing Number: Standard index form, Number sense | Reasoning with geometry: Deduction, Rotation & translation, Pythagoras theorem. | 8.4 Surface area of 3D solids<br>8.5 Volume of prisms<br>8.6 More volume and surface area (problem solving)<br>9.1 Coordinates<br>9.2 Linear graphs<br>9.3 Gradient<br>9.4 y=mx+c | 7.7 Pyramids and cones<br>8.1 3D solids<br>8.2 Reflections and rotations<br>8.3 Enlargement<br>8.4 Transformations and combinations of transformation<br>8.5 Bearings and scale drawings<br>8.6 Constructions<br>8.7 Constructions 2<br>8.8Loci |
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| **Summer 1** Topics and Opportunities | Fractional thinking: Addition and subtraction of fractions.<br>lines and angles: Constructing, measuring and using geometric notation, Developing geometric reasoning. | Developing Geometry: Angles in parallel lines & polygons<br>Area of trapezia & circles<br>Line symmetry & reflection | Reasoning with proportion: Enlargement & similarity, Solving ration & proportion problems | 9.5 Real-life graphs<br>9.6 Distance-time graphs<br>9.7 More real-life graphs<br>10.1 Translation<br>10.2 Reflection<br>10.3 Rotation<br>10.4 Enlargement<br>10.5 Describing enlargements<br>10.6 Combining transformations | 9.1 Solving quadratic equations 1<br>9.2 Solving quadratic equations 1<br>9.3 Completing the square<br>9.4 Solving simple simultaneous equations<br>9.5 More simultaneous equations<br>9.6 Solving linear and quadratic simultaneous equations.<br>9.7 Solving linear inequalities |
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| **Summer 2** Topics and Opportunities | Lines and angles: Developing geometric reasoning.<br>Reasoning with number: Sets and probability<br>Reasoning with number: Prime numbers and proof. | Reasoning with data: The data handling cycle<br>Measures of location | Reasoning with proportion: Rates<br>Representations: Probability<br>Algebraic Representation. | 11.1 Writing ratios<br>11.2 Using ratios 1<br>11.3 Ratios and measures<br>11.4 Using ratios 2<br>11.5 Comparing using ratios<br>11.6 Using proportions<br>11.7 Proportions and graphs<br>11.8 Proportions problems | 10.1 Combine events<br>10.2 Mutually exclusive events<br>10.3 Experimental probability<br>10.4 Independent events tree diagrams<br>10.5 Conditional probability<br>10.6 Venn diagram and set notations<br>11.1 Growth and decay |

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| | | | | **12.1 Pythagoras' theorem 1**<br>**12.2 Pythagoras' theorem 2**<br>**12.3 Trigonometry: the sine ratio 1**<br>**12.4 Trigonometry: the sine ratio 2**<br>**12.5 Trigonometry: the cosine ratio**<br>**12.6 Trigonometry: the tangent ratio**<br>**12.7 Trigonometry: finding lengths and angles, worded problems, mixed pythag and trig and exact values** | **11.2 Compound measures**<br>**11.3 More compound measures**<br>**11.4 Ratio and Proportion** |
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