

<b>Subject</b>	Maths
<b>Term</b>	Cycle 1
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Whole Numbers and Decimals

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Powers of 10  
 Rounding  
 Order of operations  
 Multiples, factors, divisibility and prime numbers  
 Prime factors, the HCF and the LCM  
 Ordering decimals  
 Estimating and approximating  
 Significant figures  
 Upper and lower bounds  
 Using numbers in index form

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property. Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures].  
 Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.  
 Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation  $a < x \leq b$ .

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key Marking task.

**Summative Assessment**

1 hour written assessment based upon modules 1-5 during Autumn 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

Sound times table knowledge.  
 Knowledge of the number line. including negative numbers, fractions and decimals.  
 Knowledge of special numbers.  
 Identifying factors and multiples.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Number topics are built upon throughout the year. Each half term a different aspect of number is revisited and extended.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 1
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Measures, perimeter and area

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Metric and Imperial measures  
 Area of a triangle and of a parallelogram  
 Circumference of a circle  
 Area of a circle  
 Compound measures  
 Dimensions  
 Length and area

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Use standard units of mass, length, time, money and other measures, including with decimal quantities.  
 Change freely between related standard units [for example time, length, area, volume/ capacity, mass].  
 Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders).  
 Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes.  
 Use compound units such as speed, unit pricing and density to solve problems.

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.

**Summative Assessment**

1 hour written assessment based upon modules 1-5 during Autumn 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

Knowledge of conversions between common metric measures.  
 Knowledge of perimeter and area and knowing when to use them.  
 Finding perimeter and area of complex shapes.  
 Reading scales of varying complexity.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Geometry and measure topics are built upon throughout the year. There is another geometric topic during this cycle.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 1
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Expressions and formulae

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Simplifying expressions.  
 Using brackets  
 Making expressions  
 Index laws  
 Multiplying and factorising linear expressions  
 Identities  
 Formulae  
 Changing the subject of a formula  
 Factors in algebra  
 Algebraic fractions  
 Formulae in context  
 Deriving and graphing formulae

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Simplify and manipulate algebraic expressions to maintain equivalence by: collecting like terms, multiplying a single term over a bracket, taking out common factors or expanding products of 2 or more binomials.  
 Substitute numerical values into formulae and expressions, including scientific formulae.  
 Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs.  
 Understand and use standard mathematical formulae; rearrange formulae to change the subject.  
 Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs.  
 Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships.  
 Use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative.  
 Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors.  
 Use language and properties precisely to

analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. Understand and use standard mathematical formulae; rearrange formulae to change the subject.  
 Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key Marking Task

**Summative Assessment**

1 hour written assessment based upon modules 1-5 during Autumn 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

This topic builds upon Year 8 algebra skills.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Algebra topics are built upon throughout the year.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 1
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Fractions, decimals and percentages

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Adding, subtracting, multiplying and dividing fractions  
 Fraction of a quantity  
 Fractions and decimals  
 Percentage of a quantity  
 Percentage problems  
 Repeated percentage change  
 Financial Maths  
 Calculating with fractions  
 Recurring decimals and reciprocals  
 Percentage increase and decrease  
 Reverse percentages

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1.  
 Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and  $\frac{7}{2}$  or 0.375 and  $\frac{3}{8}$ ).  
 Use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative.  
 Interpret fractions and percentages as operators.  
 Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express 1 quantity as a percentage of another, compare 2 quantities using percentages, and work with percentages greater than 100%.  
 Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics.  
 Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems.

Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics.

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key Marking Task

**Summative Assessment**

1 hour written assessment based upon modules 1-5 during Autumn 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

Addition and subtraction skills  
 Understanding of dividing an amount into smaller, equal parts.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Number topics are built upon throughout the year. Each half term a different aspect of number is revisited and extended.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 1
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Angles and 2D shapes

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Angles and lines  
 Angles in a triangle and a quadrilateral  
 Properties of triangles and quadrilaterals  
 Angle properties of a triangle and a quadrilateral  
 Angle properties of a polygon  
 Congruent shapes  
 Angle problems  
 Circle properties  
 Arcs and sectors

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles.  
 Understand and use the relationship between parallel lines and alternate and corresponding angles  
 Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies.  
 Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric.  
 Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons.  
 Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs.  
 Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids.  
 Make and test conjectures about patterns and relationships; look for proofs or counter-

examples. Understand and use the relationship between parallel lines and alternate and corresponding angles. Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons.

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.

**Summative Assessment**

1 hour written assessment based upon modules 1-5 during Autumn 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

Use of mathematical equipment to draw and measure.  
 Recognising common quadrilaterals and triangles.  
 Knowing the names of all polygons up to 10 sides.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Geometry and measure topics are built upon throughout the year. Each half term a different aspect of geometry and measure is revisited and extended.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 2
<b>Duration (approx.)</b>	3 weeks
<b>Module</b>	Graphs

## Formative Assessment/key piece of work prior to end of unit:

Questioning in class.  
Paired work.  
Independent completion of exercises.  
Use of homework.

## Summative Assessment

1 hour written assessment based upon modules 6-10 during Spring 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

## Building Retention: What prior learning must be built upon/revisited and how will it be assessed?

Basic algebra substitution skills.  
Plotting coordinates in the first quadrant.  
A basic understanding of linear graphs.

## Spelling-Punctuation-Grammar How will you promote high standards within this module?

Emphasis given to key words.  
Definitions provided.  
Spellings corrected where necessary when marking.  
Develop the ability to communicate mathematically.

## Link forward: where next for the learning?

Algebra topics are revisited and extended throughout the year. The next related topic is in the Spring term.

## Factual knowledge to be taught and assessed (including subject specific vocabulary)

Horizontal and vertical lines  
Tables of values  
Drawing straight line graphs  
Problems solving using straight line graphs  
Straight line rules  
Interpreting real-life graphs  
Time-series graphs  
Gradient of a straight-line graph  
y-intercept of a straight-line graph  
The equation  $y=mx+c$   
Equations given implicitly  
Distance-time graphs  
Graphs of linear functions  
Parallel and perpendicular lines  
Quadratic graphs  
Cubic graphs  
Exponential and reciprocal graphs

## Skills and concepts to be developed and assessed (linking to identified AOs)

Recognise, sketch and produce graphs of linear and quadratic functions  
Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions.  
Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs.  
Find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs.  
Identify variables and express relations between variables algebraically and graphically.  
Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 2
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Whole Number Calculations

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Order of operations  
 Addition and subtraction including decimals  
 Mental multiplication and division  
 Written multiplication and division including decimals  
 Estimating and approximating  
 Using a calculator  
 Interpreting the calculator display

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals.  
 Select and use appropriate calculation strategies to solve increasingly complex problems.  
 Understand and use place value for decimals, measures and integers of any size.  
 Use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative.  
 Select and use appropriate calculation strategies to solve increasingly complex problems.  
 Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation  $a < x \leq b$ .  
 Begin to model situations mathematically and express the results using a range of formal mathematical representations.  
 Select and use appropriate calculation strategies to solve increasingly complex problems.  
 Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems.  
 Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.

Use standard units of mass, length, time, money and other measures, including with decimal quantities.

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key Marking task

**Summative Assessment**

1 hour written assessment in Spring 2 based on modules 6-10.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

Number bonds  
 4 operations with numbers.  
 Addition and subtraction of simple decimals.  
 Ski slope/grid method  
 Chunking.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Number topics are built upon throughout the year. The next related topic is taught in Spring 2.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 2
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Statistics

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

- Designing a survey
- Collecting data
- Frequency tables
- Bar charts and Pie charts
- Calculating averages including grouped data
- Scatter graphs
- Stem-and-leaf diagrams
- Writing a statistical report
- Planning a project
- Data collection
- Statistical diagrams
- Interpreting graphs
- Correlation
- Comparing distributions
- Moving averages
- Cumulative frequency
- Comparing distributions
- Box plots

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally.

Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data.

Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers).

**Formative Assessment/key piece of work prior to end of unit:**

- Questioning in class.
- Paired work.
- Independent completion of exercises.
- Use of homework.

**Summative Assessment**

1 hour written assessment based upon modules 6-10 during Spring 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

This topic will build upon the statistics module in Year 8.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

- Emphasis given to key words.
- Definitions provided.
- Spellings corrected where necessary when marking.
- Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Data topics are built upon throughout the year. The next data topic will be taught in the summer term.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 2
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Transformations and Symmetry

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Reflection and rotation symmetry  
 Translation  
 Enlargement  
 Enlargement through a centre  
 Scale drawings  
 Combinations of transformations  
 Maps and scale drawings  
 Bearings  
 Similar shapes

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures.  
 Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric.  
 Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids.

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key Marking task

**Summative Assessment**

1 hour written assessment in Spring 2 based on modules 6-10.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

This topic will be revisit and extend transformations taught in year 8.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Geometry and Measure topics are built upon throughout the year with the next related topic being at the end of the Spring term.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 2
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Equations

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Equality and inequality  
 Solving equations  
 Balancing, solving and writing equations  
 Equations with brackets  
 Unknown on both sides  
 Trial and improvement  
 Consolidating linear equations  
 Simultaneous equations  
 Constructing simultaneous equations  
 Solving simultaneous equations with graphs  
 Introducing and solving inequalities  
 Solving equations using trial-and-improvement

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Use algebraic methods to solve linear equations in 1 variable (including all forms that require rearrangement).  
 Substitute values in expressions, rearrange and simplify expressions, and solve equations.  
 Interpret mathematical relationships both algebraically and geometrically.  
 Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors.  
 Use algebraic methods to solve linear equations in 1 variable (including all forms that require rearrangement).

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key Marking task.

**Summative Assessment**

1 hour written assessment based upon modules 6-10 during Spring 2.

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

This topic builds upon basic algebra skills.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

The next algebra topic is taught in the summer term.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 3
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Factors and multiples

## Formative Assessment/key piece of work prior to end of unit:

Questioning in class.  
Paired work.  
Independent completion of exercises.  
Use of homework.

## Summative Assessment

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

### Factual knowledge to be taught and assessed (including subject specific vocabulary)

Using square and cube numbers and roots  
Indices  
Standard form  
Indices and surds  
Standard form for small/large numbers  
Powers and operations

### Skills and concepts to be developed and assessed (linking to identified AOs)

Make and test conjectures about patterns and relationships; look for proofs or counter-examples.

Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations.

Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships.

Use and interpret algebraic notation, including:

- $ab$  in place of  $a \times b$
- $3y$  in place of  $y + y + y$  and  $3 \times y$
- $a^2$  in place of  $a \times a$ ,  $a^3$  in place of  $a \times a \times a$ ;
- $a^2b$  in place of  $a \times a \times b$
- $a/b$  in place of  $a \div b$
- coefficients written as fractions rather than as decimals
- brackets

Interpret and compare numbers in standard form  $A \times 10^n$   $1 \leq A < 10$ , where  $n$  is a positive or negative integer or 0.

Use standard units of mass, length, time, money and other measures, including with decimal quantities.

### Building Retention: What prior learning must be built upon/revisited and how will it be assessed?

This topic will revisit and extend basic number skills.  
Knowledge of special numbers  
Correct use of a calculator

### Spelling-Punctuation-Grammar How will you promote high standards within this module?

Emphasis given to key words.  
Definitions provided.  
Spellings corrected where necessary when marking.  
Develop the ability to communicate mathematically.

### Link forward: where next for the learning?

Number topics are built upon throughout the year.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 3
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Constructions and 3D shapes

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Using a protractor  
 Perpendicular lines  
 Perpendicular bisectors  
 Angle bisectors  
 Constructing triangles  
 Bearings  
 Loci and constructions  
 Pythagoras' theorem  
 Applications of Pythagoras' theorem

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Draw and measure line segments and angles in geometric figures, including interpreting scale drawings.  
 Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids  
 Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric.  
 Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line.  
 Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs.  
 Use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles.  
 Use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles.

Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids.

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key Marking task.

**Summative Assessment**

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

This topic will build upon construction techniques taught in Year 8.  
 The ability to use mathematical equipment to measure and draw correctly.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

Geometry and Measure topics are built upon throughout the 5 year scheme of work.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 3
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Sequences

## Summative Assessment

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

### Factual knowledge to be taught and assessed (including subject specific vocabulary)

Term-to-term rules  
 Position-to-term rules  
 The nth term formula  
 Recursive sequences  
 Real life sequences  
 Quadratic sequences  
 Behaviour of a sequence

### Skills and concepts to be developed and assessed (linking to identified AOs)

Generate terms of a sequence from either a term-to-term or a position-to-term rule.  
 Recognise arithmetic sequences and find the nth term.  
 Recognise geometric sequences and appreciate other sequences that arise.  
 Generate terms of a sequence from either a term-to-term or a position-to-term rule.  
 Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships.  
 Recognise geometric sequences and appreciate other sequences that arise.  
 Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs.

### Formative Assessment/key piece of work prior to end of unit:

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key marking task.

### Building Retention: What prior learning must be built upon/revisited and how will it be assessed?

This topic will build upon the basic sequence skills taught in year 8.

### Spelling-Punctuation-Grammar How will you promote high standards within this module?

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

### Link forward: where next for the learning?

Algebra topics are built upon throughout the 5 year scheme of work.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 3
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	3D shapes and trigonometry

## Formative Assessment/key piece of work prior to end of unit:

Questioning in class.  
Paired work.  
Independent completion of exercises.  
Use of homework.

## Summative Assessment

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

## Building Retention: What prior learning must be built upon/revisited and how will it be assessed?

This topic builds upon knowledge of 2D shapes.

## Spelling-Punctuation-Grammar How will you promote high standards within this module?

Emphasis given to key words.  
Definitions provided.  
Spellings corrected where necessary when marking.  
Develop the ability to communicate mathematically.

## Link forward: where next for the learning?

This topic is extended in module 7.

## Factual knowledge to be taught and assessed (including subject specific vocabulary)

Three-dimensional shapes  
Nets  
Plans and elevations  
Volume of a cuboid  
Shapes made from cuboids  
Surface area of a cuboid  
Plans and elevations  
Symmetry of a 3-D shape  
Surface area of a prism  
Volume of a prism  
3D Geometry  
Trigonometry  
Bearings

## Skills and concepts to be developed and assessed (linking to identified AOs)

Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D.  
Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics.  
Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders).  
Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes.  
Use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles.  
Draw and measure line segments and angles in geometric figures, including interpreting scale drawings.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 3
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Ratio and proportion

**Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Dividing in a given ratio  
 Ratio and proportion  
 Percentages and proportion  
 Proportional reasoning  
 Living on a budget  
 Direct proportion  
 Comparing proportions  
 Uses of ratio  
 Financial maths  
 Fractions and proportion  
 Proportion and scale

**Skills and concepts to be developed and assessed (linking to identified AOs)**

Use ratio notation, including reduction to simplest form.  
 Divide a given quantity into 2 parts in a given part:part or part:whole ratio; express the division of a quantity into 2 parts as a ratio.  
 Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically.  
 Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express 1 quantity as a percentage of another, compare 2 quantities using percentages, and work with percentages greater than 100%  
 Describe simple mathematical relationships between 2 variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.  
 Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.  
 Solve problems involving direct and inverse proportion, including graphical and algebraic representations.  
 Use scale factors, scale diagrams and maps.  
 Express 1 quantity as a fraction of another, where the fraction is less than 1 and greater than 1.  
 Understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction.  
 Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics  
 Extend and formalise their knowledge of ratio and

proportion in working with measures and geometry, and in formulating proportional relations algebraically.  
 Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.  
 Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics.  
 Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions.  
 Draw and measure line segments and angles in geometric figures, including interpreting scale drawings.  
 Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions.  
 Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.  
 Begin to model situations mathematically and express the results using a range of formal mathematical representations.

**Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key marking task.

**Summative Assessment**

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

**Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

This module extends the ratio and proportion work done in year 8.

**Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
 Definitions provided.  
 Spellings corrected where necessary when marking.  
 Develop the ability to communicate mathematically.

**Link forward: where next for the learning?**

This topic will be revisited in key stage 4.

<b>Subject</b>	Maths
<b>Term</b>	Cycle 3
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Probability

## Summative Assessment

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

### Factual knowledge to be taught and assessed (including subject specific vocabulary)

Probability  
 Mutually exclusive events  
 Theoretical probability  
 Counting outcomes  
 Two events  
 Probability experiments  
 Venn diagrams  
 Prediction and uncertainty  
 Calculating probabilities  
 The outcomes of two trials  
 Experimental probability  
 Independent events  
 Tree diagrams  
 Probability of combined events  
 Simulations

### Skills and concepts to be developed and assessed (linking to identified AOs)

Understand that the probabilities of all possible outcomes sum to 1.  
 Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.  
 Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale.  
 Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally.

### Formative Assessment/key piece of work prior to end of unit:

Questioning in class.  
 Paired work.  
 Independent completion of exercises.  
 Use of homework.  
 Key marking task.

### Building Retention: What prior learning must be built upon/revisited and how will it be assessed?

This is an extension of the probability taught in year 8.

Words associated with probability

### Spelling-Punctuation-Grammar How will you promote high standards within this module?

Emphasis given to key words.

Definitions provided.

Spellings corrected where necessary when marking.

Develop the ability to communicate mathematically.

### Link forward: where next for the learning?

Probability topics are built upon throughout the 5 year scheme of work and will be revisited in key stage 4

<b>Subject</b>	Maths
<b>Term</b>	Cycle 3
<b>Duration (approx.)</b>	2 weeks
<b>Module</b>	Everyday mathematics

## **Formative Assessment/key piece of work prior to end of unit:**

Questioning in class.  
Paired work.  
Independent completion of exercises.  
Use of homework.  
Key marking task.

## **Summative Assessment**

All skills are tested again during the summer term with 2 written papers and a mental arithmetic test. The written papers each last for an hour. One paper is non calculator, one paper requires the use of calculator. The mental arithmetic tests takes approximately 20 minutes.

## **Building Retention: What prior learning must be built upon/revisited and how will it be assessed?**

This module draws upon all of the skills learned throughout Year 8.

## **Spelling-Punctuation-Grammar How will you promote high standards within this module?**

Emphasis given to key words.  
Definitions provided.  
Spellings corrected where necessary when marking.  
Develop the ability to communicate mathematically.

## **Link forward: where next for the learning?**

Everyday mathematical skills are built upon throughout the 5 year scheme of work.

## **Factual knowledge to be taught and assessed (including subject specific vocabulary)**

Reasoning deductively in geometry, number and algebra.  
Select appropriate concepts, methods and techniques.  
Use of formal mathematical knowledge to interpret and solve problems.  
Model situations mathematically. Move freely between different representations.  
Make and test conjectures about patterns and relationships  
Consolidate numerical and mathematical capability.  
Use algebra to generalise the structure of arithmetic.  
Extend understanding of the number system.

## **Skills and concepts to be developed and assessed (linking to identified AOs)**

Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically.  
Select and use appropriate calculation strategies to solve increasingly complex problems  
Extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations.  
Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems.  
Begin to reason deductively in geometry, number and algebra, including using geometrical constructions.