

Year 9

Number and Algebra

Real numbers

Content Descriptor	Lesson Names
Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems	<ul style="list-style-type: none"> • Direct Proportion • Introduction to Graphs • Analysing Graphs
Apply index laws to numerical expressions with integer indices	<ul style="list-style-type: none"> • Applying Index Laws • Dividing Indices • Multiplying Indices • Positive and Negative Integer Indices • Powers of Multiplied Terms • Powers of Powers • The Power of Zero
Express numbers in scientific notation	<ul style="list-style-type: none"> • Introduction to Scientific Notation (Standard Form) - Small Numbers • Introduction to Scientific Notation (Standard Form) - Large Numbers

Money and financial mathematics

Content Descriptor	Lesson Names
Solve problems involving simple interest	<ul style="list-style-type: none"> • Introduction to Interest • Calculating Simple Interest • Rearranging the Simple Interest Formula

Patterns and algebra

Content Descriptor	Lesson Names
Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate	<ul style="list-style-type: none"> • Expanding and the Distributive Law • Expanding Binomial Products • Expanding Differences of Two Squares • Expanding Perfect Squares

Linear and non-linear relationships

Content Descriptor	Lesson Names
Find the distance between two points located on the Cartesian plane using a range of strategies, including	<ul style="list-style-type: none"> • Line Segments on Cartesian Planes • Distance and Pythagoras' Theorem

graphing software	
Find the midpoint and gradient of a line segment (interval) on the Cartesian plane using a range of strategies, including graphing software	<ul style="list-style-type: none"> • Midpoint of a Line Segment • Gradient of a Line Segment
Sketch linear graphs using the coordinates of two points and solve linear equations	<ul style="list-style-type: none"> • Graphing Using Technology – Casio Calculators • Drawing Linear Graphs Using the Gradient • Plotting Linear Graphs • Determining Linear Rules
Graph simple non-linear relations with and without the use of digital technologies and solve simple related equations	<ul style="list-style-type: none"> • Circles • Parabolas • Solving Non-Linear Equations • Transforming Parabolas

Measurement and Geometry

Using units of measurement

Content Descriptor	Lesson Names
Calculate areas of composite shapes	<ul style="list-style-type: none"> • Area of Composite Shapes
Calculate the surface area and volume of cylinders and solve related problems	<ul style="list-style-type: none"> • Surface Area of Cylinders • Calculating Volume of Cylinders
Solve problems involving the surface area and volume of right prisms	<ul style="list-style-type: none"> • Surface Area of Prisms • Volume of Rectangular Prisms • Calculating Volume of Rectangular Prisms • Calculating Volume of Triangular Prisms • Calculating Volume of Other Regular and Irregular Prisms
Investigate very small and very large time scales and intervals	<ul style="list-style-type: none"> • Scientific Notation • Time Scales

Geometric reasoning

Content Descriptor	Lesson Names
Use the enlargement transformation to explain similarity and develop the conditions for triangles to be similar	<ul style="list-style-type: none"> • Introduction to Similarity • Similarity and Angles • Similarity and Multiple Triangles • Similarity Tests
Solve problems using ratio and scale factors in similar figures	<ul style="list-style-type: none"> • Introduction to Scaling • Magnitude • Magnitude as a Ratio

Pythagoras and trigonometry

Content Descriptor	Lesson Names
Investigate Pythagoras' Theorem and its application to solving simple problems involving right angled triangles	<ul style="list-style-type: none"> Parts of a Triangle and the Hypotenuse Pythagoras' Theorem
Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles	<ul style="list-style-type: none"> Introduction to Trigonometry
Apply trigonometry to solve right-angled triangle problems	<ul style="list-style-type: none"> Finding Angles Using Trigonometry Finding Side Lengths Using Trigonometry

Statistics and Probability

Chance

Content Descriptor	Lesson Names
List all outcomes for two-step chance experiments, both with and without replacement using tree diagrams or arrays. Assign probabilities to outcomes and determine probabilities for events	<ul style="list-style-type: none"> Introduction to Two-Step Experiments Arrays Using Arrays Tree Diagrams Using Tree Diagrams
Calculate relative frequencies from given or collected data to estimate probabilities of events involving 'and' or 'or'	<ul style="list-style-type: none"> Two-Way Tables Using Two-Way Tables Venn Diagrams Using Venn Diagrams Advanced Venn Diagrams and Two-Way Tables Relative Frequencies Using Relative Frequencies
Investigate reports of surveys in digital media and elsewhere for information on how data were obtained to estimate population means and medians	<i>Further development planned</i>

Data representation and interpretation

Content Descriptor	Lesson Names
Identify everyday questions and issues involving at least one numerical and at least one categorical variable, and collect data directly and from secondary sources	<ul style="list-style-type: none"> Primary and Secondary Data Types of Data
Construct back-to-back stem-and-leaf plots and histograms and describe data, using terms including 'skewed', 'symmetric' and 'bi modal'	<ul style="list-style-type: none"> Back-to-Back Stem and Leaf Plots Comparing Data Sets Comparing Dot Plots Comparing Histograms Symmetry and Skew in Data

Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread

- Comparing Data Sets
- Effect of Shape on Mean and Median
- Shape and Mode
- Measures of Centre in Grouped Data