



Year 11

- Solve applied problems with surds or fractional indices
- Simplify and manipulate algebraic expressions including algebraic fractions
- Use algebra to support and construct proofs
- Construct and solve quadratic equations in a variety of situations including probability
- Solve quadratic inequalities with one variable
- Apply formulae to solve algebraic and numerical problems
- Transform functions including trigonometric functions
- Apply trigonometry to 3d shapes, scalene triangles and segments with/without a calculator
- Use vectors to construct geometric proofs
- Calculate probabilities from 3 or more combined events

Year 10

- Solve two simultaneous equations (linear/quadratic) algebraically
- Solve quadratic equations algebraically and graphically including using completing the square
- Rearrange the subject of a formula when the subject appears more than once
- Plot or sketch quadratic, cubic, reciprocal and trigonometric graphs
- Plot, interpret and calculate with graphs involving distance, speed and acceleration
- Apply and prove the circle theorems
- Apply trigonometry and Pythagoras Theorem to 3d shapes and scalene triangles
- Calculate exact arc lengths, angles and areas of sectors of circles
- Calculate exact values for volume and surface area of cones and spheres
- Use vectors to construct geometric arguments

Year 9

- Find the HCF and LCM of two numbers using product of prime factors
- Calculate with upper and lower bounds
- Use index laws including negative indices and standard form
- Calculate and manipulate with fractional indices and surds
- Set up, solve and interpret the answers in growth and decay problems, including compound interest
- Factorise quadratic expressions of the form $ax^2 + bx + c$, including difference of two squares
- Use $y = mx + c$ to identify parallel/perpendicular lines, find equations of lines through 2 points
- Know and apply the trigonometric ratios to find angles and lengths
- Calculate volume and surface area of pyramids and prisms
- Find lengths in similar shapes



Heathfield Community College

Pathway 8

Year 8

- Calculate percentage change and the solve reverse percentage problems
- Rearrange subject of formula including those with fractions
- Substitute fractions and decimals into formulae
- Form and solve linear equations including those with fractions
- Use the form $y = mx + c$ to draw linear graphs and solve simultaneous equations graphically
- Understand and use alternate and corresponding angles on parallel lines and angles in polygons
- Know and apply Pythagoras' theorem to find lengths in 2d shapes
- Calculate the area and perimeter of compound shapes including those made from parts of circles
- Calculate the volume and surface area of prisms including cylinders
- Calculate the probability of independent and dependent events using tree diagrams

Year 7

- Estimate roots and powers and express numbers in index form
- Find percentages of an amount including using a multiplier
- Perform all 4 operations with fractions and mixed numbers
- Expand and simplify expressions by multiplying out single or double brackets
- Solve linear equations including those with division and unknowns on both sides
- Substitute positive and negative values into expressions including those with indices
- Find the n th term of a linear and a simple quadratic sequence and generate terms
- Find angles around a point, on a line, in a triangle/quadrilateral and vertically opposite angles
- Calculate area and perimeter of 2d shapes including circles and compound shapes
- Find probability of combined events and use set notation and Venn Diagrams