Heathfield Community College

Mathematics Pathway 6 7 8

Year 11

- Calculate and manipulate with fractional indices and surds
- Calculate with upper and lower bounds
- Simplify and manipulate algebraic expressions including algebraic fractions
- Solve two simultaneous equations (linear/quadratic) algebraically
- Construct equations that describe direct and inverse proportion
- Construct and solve quadratic equations in a variety of situations including probability
- 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
- Calculate probabilities from 3 or more combined events

Year 10

- Solve linear simultaneous equations
- Solve quadratic equations algebraically and graphically
- 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 the standard 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
- Use index laws including negative indices and standard form
- Calculate and manipulate simple expressions with surds
- Set up, solve and interpret the answers in growth and decay problems, including compound interest
- Factorise quadratic expressions of the form $x^2 + bx + c$, including difference of two squares
- Form and solve linear equations
- Use y = mx + c to identify parallel lines and find the equation of the line 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

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Pathway 7

Year 8

- Calculate the result of a percentage change and the original amount
- Rearrange the subject of formula
- Substitute integers and non-integers into formulae
- Solve equations with fractions
- Use the form y = mx + c to draw linear graphs and determine values of m and c from a graph
- Understand and use angles on parallel lines and angles in polygons
- Know and apply Pythagoras' theorem in right-angled triangles
- Calculate the area and perimeter of composite shapes including those made from parts of circles
- Calculate the volume 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
- Find the nth term of a linear 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 composite shapes
- Find probability of combined events and use set notation and Venn Diagrams