Benchmarks for Mathematics at My High School

Year 7

<u>Pervading themes</u>
- 🟣 Multiplication
- 🔵 Inversing
- 🟠 Checking

<u>Benchmarks</u>

- 🟣🔵🟠 Use positive integer powers and associated real roots
- 🟣🔵 Apply the order of operations including brackets
- 🔵🟠 Convert between terminating decimals and fractions
- 🟣 Write a quantity as a fraction or percentage of another
- 🟣🔵 Use multiplicative reasoning to interpret percentage change
- 🟣🔵🟠 *Understand how to multiply with fractions and mixed numbers*
- 🔵🟠 Check calculations using inverse operations
- 🟠 Select and use checking strategies in a range of contexts
- 🟣 Simplify and manipulate expressions by collecting like terms
- 🟣 Simplify and manipulate expressions by multiplying a single term over a bracket
- 🟣🟠 Substitute numbers into formulae
- 🔵🟠 Solve linear equations in one unknown
- 🟣🟠 Calculate surface area of cubes and cuboids

Existing 7   Existing 8   *Modified 7*   New

Year 8

<u>Pervading themes</u>
- 🟣 Algebra: the big picture
- 🔵 Making connections
- 🟠 Scaling up

<u>Benchmarks</u>

- 🔵 Apply the four operations with negative numbers
- 🔵🟠 Convert numbers into standard form and vice versa
- 🔵🟠 Apply the multiplication, division and power laws of indices
- 🔵🟠 Find a relevant multiplier when solving problems involving proportion
- 🔵🟠 *Solve problems involving percentage change*
- 🔵🟠 Factorise an expression by taking out common factors
- 🟣🔵 Change the subject of a formula when two steps are required
- 🟣🔵 Find and use the nth term for a linear sequence
- 🔵 Solve linear equations with unknowns on both sides
- 🟣 Understand and use lines parallel to the axes, y = x and y = -x
- 🟣🔵 Plot and interpret graphs of linear functions
- 🔵🟠 Apply the formulae for circumference and area of a circle
- 🔵 Calculate theoretical probabilities for single events

Existing 7   Existing 8   *Modified 8*

Year 9

<u>Pervading themes</u>
- 🟣 Your mathematics toolkit
- 🔵 The scientific connection
- 🟠 Visualising

<u>Benchmarks</u>

- 🔵 Calculate with roots and integer indices
- 🟣🟠 Manipulate algebraic expressions by expanding the product of two binomials
- 🟣🟠 Manipulate algebraic expressions by factorising a quadratic expression of the form $x^2 + bx + c$
- 🟣🔵🟠 Understand and use the gradient of a straight line to solve problems
- 🟣🔵🟠 Solve two linear simultaneous equations algebraically and graphically
- 🟣🔵🟠 Plot and interpret graphs of quadratic functions
- 🔵 Change freely between compound units
- 🟣🟠 *Use ruler and compass methods to construct perpendicular bisectors and angle bisectors*
- 🟠 Solve problems involving similar shapes
- 🟣 Calculate exactly with multiples of π
- 🟣🔵 Apply Pythagoras' Theorem in two dimensions
- 🟠 Use geometrical reasoning to construct simple proofs
- 🟣 Use tree diagrams to list outcomes

Existing 9   *Modified 9*

Entry to Key Stage 3

<u>Benchmarks</u>

- 🟣 Multiply and divide numbers with up to three decimal places by 10, 100, and 1000
- 🟣 *Round to the nearest whole number, 10, 100, 1000 and to one decimal place*
- ⚪ *Add and subtract numbers of any size*
- 🔵 Recall multiplication facts up to 12 × 12
- 🟣 Use known and derived facts to multiply and divide mentally
- ⚪ *Multiply a three-digit number by a two-digit number*
- ⚪ *Divide numbers up to four-digits by a single-digit number*
- 🟠 Know common equivalences between fractions, decimals and percentages
- 🟠 *Identify and find equivalent fractions*
- 🟠 *Find percentages of quantities using mental methods*
- ⚪ *Measure and draw lengths and angles*
- 🟢 *Calculate the area of rectangles and triangles*
- 🟢 Use coordinates in all four quadrants

Many changes and joining of BAMs, but colour gives closest approximation to original

- 🟣 The Number System
- 🔵 Calculating
- 🟠 FDPRP
- 🟢 Geometry