

Key Performance Indicators	Year 7 Milestones - Maths (Knowledge)
Number: Structure	I can order positive and negative integers, decimals and fractions.
	I can recognise the symbols =, ≠, <, >, ≤, ≥.
	I can apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers. Add, subtract, multiply and divide with fractions.
	I can understand and use place value (e.g. when working with very large or very small numbers, and when calculating with decimals).
	I can recognise and use relationships between operations, including inverse operations.
	I can use the order of operation, including brackets.
	I can use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor and lowest common multiple.
	I can use positive integer powers and associated real roots (square, cube and higher), and recognise powers of 2, 3, 4, 5. I can understand the first 6 cube numbers.
Number: Measures and Accuracy	I can use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate.
	I can check calculations using approximations, estimations or inverse operations.
Algebra: Notation, Vocabulary and Manipulation	I can 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/b in place of $a \div b$, brackets. Know basic algebraic notation.
	I can substitute numbers into formulae.
	I can understand and use the concepts and vocabulary of expressions, equations, formulae and terms.
	I can simplify and manipulate expressions by collecting like terms and by multiplying a single term over a bracket.
	I can understand and use standard mathematical formulae.
I can interpret simple expressions as functions with inputs and outputs.	

Algebra: Graphs	I can work with coordinates in all four quadrants. I can understand and use lines parallel to the axes $y = x$ and $y = -x$.
Algebra: Solving Equations	I can solve linear equations in one unknown.
Algebra: Sequences	I can generate terms of a sequence from a term-to-term rule.
	I can recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions. I can understand the first 12 triangular numbers.
Ratio, Proportion and Rates Of Change	I can change freely between related standard units (e.g. time, length, area, volume/capacity, mass) in numerical contexts).
	I can express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1. I can write a quantity as a fraction or percentage of another.
	I can use ratio notation, including reduction to simplest form.
	I can divide a given quantity into two parts in a given part : part or part : whole ratio.
	I can define percentage as 'number of parts per hundred'.
	I can interpret percentages and percentage changes as a fraction or a decimal, and interpret these multiplicatively. I can use multiplicative reasoning to interpret percentage change.
	I can express one quantity as a percentage of another.
	I can compare two quantities using percentages.
I can solve problems involving percentage change, including percentage increase/decrease.	
	I can use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries. I can understand and use geometric notation for labelling angles, lengths, equal lengths and parallel lines.
	I can use the standard conventions for labelling and referring to the sides and angles of triangles.
	I can draw diagrams from a written description.
	I can apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles.

<p>Geometry and Measures: Properties and Structures</p>	<p>I can derive and apply the properties and definitions of: special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus; and triangles and other plane figures using appropriate language. I can understand the names of special triangles and quadrilaterals.</p>
	<p>I can identify, describe and construct congruent shapes including on coordinate axes, by considering rotation, reflection and translation.</p>
	<p>I can solve geometrical problems on coordinate axes.</p>
	<p>I can identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference.</p>
	<p>I can identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres. I can understand the meaning of faces, edges and vertices.</p>
<p>Geometry and Measures: Mensuration and Calculation</p>	<p>I can use standard units of measure and related concepts (length, area, volume/capacity, mass, time, money, etc.) I can understand how to work out measures of central tendency.</p>
	<p>I can measure line segments and angles in geometric figures.</p>
	<p>I can understand that the area of a rectangle = $l \times w$. I can understand that the area of a triangle = $b \times h \div 2$. I can understand that the area of a parallelogram = $b \times h$. I can understand that the area of a trapezium = $(a+b) \div 2) \times h$.</p>
	<p>I can calculate perimeters of 2D shapes.</p>
	<p>I can calculate the surface area of cubes and cuboids.</p>
<p>Statistics</p>	<p>I can understand that the volume of a cuboid = $l \times w \times h$.</p>
	<p>I can interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data and know their appropriate use.</p>
	<p>I can interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (median, mean, mode and modal class) and spread (range.) I can understand how to calculate the range.</p>
	<p>I can record describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees.</p>

Probability

I can apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments.

I can relate relative expected frequencies to theoretical probability, using appropriate language and the 0 - 1 probability scale.

I can construct theoretical possibility spaces for single experiments with equally likely outcomes and use these to calculate theoretical probabilities.