



Year 8 Maths

Age Related Expectations



All children are assessed against the Age Related Expectations (ARE) within the different curriculum subjects. The ARE's are taken from the National Curriculum but are consolidated to reflect what we expect of a child. For example, three or four national curriculum targets might be summarised in one ARE. Judgements are generally based on a variety of different sources but will generally be a combination of on-going formative assessment in class, book work and formal summative testing.

Intro: The curriculum in Key Stage 3 is more diverse and varied than Key Stage 2. The focus moves from number and calculation and broadens to include; algebra, ratio & proportion and probability. Whilst all the elements of calculation, place value and fractions are still covered within Key Stage 3, it is instead under the heading, number.

	Key Performance Indicators	Age Related Expectations
Number	<ul style="list-style-type: none"> - Order, sort and interpret any number (including decimals and negatives). - Understand and apply the concept of multiples, factors and primes individual, pairs or groups of numbers. - Explore and understand rules for calculating with negative numbers. - Use and apply BIDMAS to the number system, ensuring the calculations are carried out in order including using powers and roots. - Round any number to any specified degree of accuracy, including decimals and measures. - Understand how to round to any given number of significant figures and use approximation to check and verify answers. - Work with percentages below and above 100% solving problems that involve percentage increase, percentage change over time and reverse percentages. For example $120\% = 40$ what was 100%? - Understand the interrelated nature of fractions, decimals and percentages, converting between them and ordering with increasing fluency. - Add, subtract and multiply fractions fluently including working with mixed and improper fractions. - Divide fractions by multiplying by the reciprocal with proper and improper fractions. 	<p>By the end of year 8 a child should be increasingly fluent in making meaningful connections between different mathematical concepts and apply them readily.</p> <p>A child should understand and solve a variety of algebraic equations; understanding how to manipulate expressions and equations fluently.</p>
Algebra	<ul style="list-style-type: none"> - Work with, rearrange and solve increasing complex algebraic equations involving brackets and variables and constants and both sides of the equals sign. - Use and interpret bracket notation with algebraic equations, multiplying out double brackets and factorising a single bracket. - Plot a linear function on a graph from an equation and interpret mathematically in relation to the equation of a straight line $y = mx + c$. - Understand linear sequences and finding a formula to solve the next and nth terms. 	<p>A child is applying formulas and known rules to geometry and measures problems to find information.</p>
Geometry and Measures	<ul style="list-style-type: none"> - Use the properties and vocabulary of 3D shapes and their nets to solve problems. - Calculate the area of a parallelogram and trapezium using a formula. - Represent 3D shapes in 2D - Use a formula to calculate the volume of a prism (derived from the area of a surface multiplied by the length). - Work with shapes on a 4 quadrant grid to translate, reflect and rotate in any direction or plane. - Enlarge a shape by a given scale factor and identify congruent shapes - Use a ruler, protractor and compass to draw accurately including constructing triangles, perpendicular bisectors and scale drawings. - Work with and apply circle geometry to find the circumference and area of a circle using Pi. - Derive Pythagoras theorem by modelling it and use the formula to work out the length of a side in a simple right angled triangle. - Know and apply corresponding, alternate and allied rules for angles and use them to problem solve. 	
Statistics	<ul style="list-style-type: none"> - Create, use and interpret a variety of different tables and graphs to observe and analyse statistical information including; stem and leaf diagrams, vertical line charts, pie charts and scatter graphs; including information that has been grouped. - Use the mode, median, mean and range fluently to compare, describe and analyse groups of data. - Use and interpret grouped frequency tables. 	
Ratio, Proportion and Rate of Change*	<ul style="list-style-type: none"> - Understand and use ratio notation, including reducing it to its simplest form. - Understand a relationship between two quantities and use this information to solve problems involving direct and inverse proportion; including algebraic representations. 	
Probability*	<ul style="list-style-type: none"> - Record, describe and analyse the frequency of outcomes of probability experiments with more than one factor; representing this in two way tables and tree diagrams. 	

*These strands will not be formally reported on but might be discussed by the teacher at parents evening.