

MATHEMATICS

BROCKINGTON COLLEGE

ABILITY BAND AND ASSESSMENT POINT DESCRIPTORS

Mathematics Year 8 AP1

Ability Band 3	Ability Band 2	Ability Band 1
<ul style="list-style-type: none"> • Add, subtract, multiply, divide and apply powers with any integers using the correct order of operations in increasingly complex calculations. • Use index laws. • Use prime factor decompositions in a variety of contexts. • Use multiple conversion graphs (i.e. \$ to £ then £ to €) to solve problems. • Find conversion factors given a conversion graph. • Calculate with decimal time. • Use timetables and distance tables to solve real life problems. • Calculate speed, distance and time. • Find speeds from distance time graphs, including speeds of different sections and average speed. • Combine diagrams with parallel lines with other angle properties to find missing angles in increasingly complicated diagrams. • Prove that the sum of angles in a triangle adds to 180 using corresponding and alternate angles. • Use triangles to show why exterior angles of 	<ul style="list-style-type: none"> • Multiply and divide with positive and negative numbers. • Apply powers to any integer. • Find roots as the inverse of powers. • Use indices and roots as part of order of operations calculations. • Solve problems with HCF, LCM and prime factorisation. • Draw conversion graphs given a conversion factor or other suitable information. • Draw and interpret graphs from other real life situations. • Calculate time intervals, start times and end times. • Plan journeys using a timetable. • Calculate speed given distance and time. • Draw and interpret distance-time graphs. • Identify corresponding and alternate angles. • Use angle properties with algebra. • Understand the relationship between sides and angles in a polygon. • Find missing angles inside polygons and regular polygons. • Solve problems involving polygons and angles. 	<ul style="list-style-type: none"> • Add and subtract with positive and negative numbers. • Find squares and square roots that have integer results. • Use the correct order of operations. • Evaluate the HCF and LCM of any two numbers. • Write a number as a product of primes. • Use a conversion graph to convert between 2 quantities. • Read basic information from a graph drawn from a real life situation. • Read time from 12 and 24 hour clocks. • Read information from a timetable. • Read basic information from a distance-time graph (i.e. number of stops, distance from start to end etc). • Draw reflex angles using a 180° protractor by calculating the acute or obtuse angle that forms the full turn. • Calculate missing angles in diagrams showing full turns, straight lines, right angles and vertically opposite angles. • Calculate missing angles in triangles. • Measure bearings.

<p>polygons sum to 360.</p> <ul style="list-style-type: none">• Work with combinations of bearings and scale drawings.• Calculate return bearings.	<ul style="list-style-type: none">• Convert between real life and scale drawings, including maps.• Draw and measure bearings.	<ul style="list-style-type: none">• Measure distances on a scale drawing and use them to find real life distances.
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Mathematics Year 8 AP2

Ability Band 3	Ability Band 2	Ability Band 1
<ul style="list-style-type: none"> • Multiply and divide algebraic terms using index laws. • Expand any bracket with a single term factor. • Expand and simplify the sums and differences of factorised expressions. • Factorise an expression into a bracket and a single term factor. • Write and substitute into expressions and formulae from a variety of real life and scientific/mathematical situations. • Understand mutually exclusive events and their links to summation of probabilities. • Understand exhaustive lists of mutually exclusive events and their lists to summation of probabilities. • Solve increasingly complicated problems using theoretical probabilities and relative frequency. • Use a range of imperial and metric conversion factors to convert between measures not normally directly related. 	<ul style="list-style-type: none"> • Simplify any algebraic expression through multiplication and division by an integer or simple algebraic term. • Expand a bracket with a numerical factor. • Substitute into any algebraic expression, including substituting negative and fractional values. • Write expressions from worded problems. • Use real life formulae to solve problems. • Write probabilities from situations based on proportional reasoning (i.e. from ratio). • Use probability scales to exactly represent probabilities that have different numbers of outcomes. • Use the language of relative frequency in relation to experiments that result in estimates of probability. • Judge bias in experiments using expected outcomes or relative frequency. • Use sample space diagrams to show the outcomes of two combined events. • Convert between metric units of length, mass, capacity, area and volume. • Use standard metric to imperial conversions. 	<ul style="list-style-type: none"> • Simplify any linear algebraic expression through addition and subtraction of like terms. • Substitute positive integers into linear expressions, including those with negative coefficients (i.e. $5a - 7b$) and where the result may be negative. • Write simple expressions from worded problems. • Write probabilities using fractions, decimals or percentages. • Use probability scales to show probabilities given as fractions, decimals or percentages. • Understand the difference between probability written based on theoretical outcomes and estimates of probability based on experimental data. • Judge bias in experiments by comparing theoretical probability with experimental data. • Convert between metric units of length, mass and capacity.