MATHEMATICS
BROCKINGTON COLLEGE

ABILITY BAND AND ASSESSMENT POINT DESCRIPTORS

Mathematics Year 7 AP1

Ability Band 3	Ability Band 2	Ability Band 1
• Generate sequences from a wide variety of stimuli, including practical situations, experiments and spatial patterns. • Use patterns to make long term predictions about specific values or behaviour of sequences. • Decide whether values will or will not be part of a sequence. • 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. • Simplify any algebraic expression through multiplication and division by an integer or simple algebraic term. • Substitute into any algebraic expression, including substituting negative and fractional values. • Convert between metric units of length, mass, capacity, area and volume. • Apply ideas of perimeter and area to linear algebraic expressions and equations.	• Use a function machine to generate sequence. • Use a position-to-term rule to generate a sequence. • Find the nth term of a linear sequence. • 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. • 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. • Convert between metric units of length, mass and capacity. • Find perimeters of shapes by measuring and calculation. • Find areas of simple shapes by calculation.	• Find values in a sequence given a term-to-term rule. • Write down a simple term to term rule. • Add a positive value to a negative value. • Subtract a positive value from a positive value where the answer is negative. • Square any single digit number. • Identify factors and multiples of a number. • Identify a prime number. • Write an expression from a basic description (i.e. "2 more than p"). • Simplify single letter expressions (i.e. $a + a + a + b + b$). • Convert between cm, mm, km and metres. • Find perimeters of shapes by measuring.

Mathematics Year 7 AP2

Ability Band 3	Ability Band 2	Ability Band 1
• 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. • Multiply and divide any number by any power of 10 (including 0.1, 0.01, 0.001 etc). • Solve problems involving the four operations with whole numbers and decimals. • Find all values that fit a given algebraic rule or describe a general approach for finding values if the list is infinite. • Use function machines with any rational number to generate outputs. • Find missing operations in function machines given suitable input and output pairs. • Understand why there are always at least two function machines that will create a given output from a given input (i.e. 2 to 5 could be x 2 + 1, or +½ then x 2). • Solve linear and simple quadratic equations (single occurrence of *x*) using function machines or balancing. • Simplify fractions where the numerator and denominator are any rational numbers. • Describe algebraically the sequence that produces equivalent fractions to a given fraction. • Calculate fractions of a whole number where the	• 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. • Multiply any number by 10, 100, 1000. • Order decimals that have a differing numbers of decimal places. • Choose appropriate mental techniques to complete simple multiplication and division calculations. • Use efficient written approaches for calculating with the four operations and whole numbers. • Solve problems involving the four operations and whole numbers. • Add and subtract with decimals. • Multiply and divide decimals by whole numbers. • Choose positive and negative integers that fit a variety of algebraic rules. • Use function machines with integer and decimal inputs to generate outputs. • Solve simple equations using an inverse function machine. • Give both positive and negative solutions for equations solved using square roots. • Simplify fractions involving positive and negative integers.	• Use words to describe probability. • Place words on a probability scale. • Write probability from simple situations using fractions. • Write probabilities from experiment using fractions. • Identify whole number columns of given digits in numbers. • Add 10, 100, 1000 to given whole numbers. • Use place value to order whole numbers and decimals with equal numbers of decimal places. • Choose appropriate mental techniques to complete simple addition and subtraction calculations. • Complete simple calculations and solve simple problems involving the four basic operations and whole numbers. • Choose single digit numbers that fit simple algebraic rules. • Use function machines with positive whole number inputs to generate outputs. • Create inverse function machines from a given function machine. • Use simple fractional representations (parts of shapes, bar models, number lines etc). • Find equivalent fractions using simple numerical factors and multiples. • Use counting and number lines to convert between mixed and improper fractions. • Multiply a whole number by a unit fraction and recognise the relationship with division. • Add and subtract fractions with the same

- result is a fraction or mixed number.
- Calculate with fractions and mixed numbers.
- Interpret data given in dual or composite bar charts, and convert between bar charts and pie charts.
- Interpret pie charts, including comparing pie charts.
- Interpolate from scattergraphs using line of best fit.
- Critique surveys.
- 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.

- Describe generally (although not necessarily using algebra) how to form equivalent fractions of a given fraction.
- Convert any improper fraction into a mixed number and vice versa.
- Calculate a fraction of a given whole number that results in an integer result.
- Add and subtract proper fractions.
- Multiply proper fractions.
- Collect data using a tally chart or two-way table.
- Interpret simple bar charts and dual bar charts.
- Draw a pie chart from a given frequency table.
- Use a Venn diagram to sort information and solve problems.
- Plot points on a scattergraph.
- Criticise questions in a survey that could bias data.
- 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.
- Apply multiple angle properties to a single diagram to solve problems.

- denominator.
- Add and subtract proper fractions from whole numbers.
- Collect data using a tally chart.
- Draw a pictogram or barchart to represent tallied data.
- Use a Carroll diagram to sort information.
- Design a simple survey.
- Understand angle as a measure of turn and degrees as the unit of measure.
- Know that there are 360 degrees in a full turn.
- Measure angles using a protractor.
- Draw angles using a protractor.