

## Maths Grade Descriptors

YEAR 7 ASSESSMENT	Working Towards	1	2	3	4/4+
<b>Algebra</b>	<p>Describe &amp; continue sequences                      Predict and check next term                      Sequences in a table and graphically                      Linear &amp; non linear sequences                      Continue linear sequences                      Explain term to term rule                      Find the output using function machines                      Use diagrams &amp; letters with single function machines                      find the function machine given a simple expression                      Substitute values into single operations                      Understand the meaning of equality                      Understand &amp; use fact families numerically and algebraically</p>	<p>Continue non linear sequences                      Find missing terms                      Use inverse to find input given output                      Diagrams &amp; letters to generalise number operations                      Use diagrams &amp; letters with single function machines                      Find numerical inputs and outputs of two function machines                      Use diagrams &amp; letters with a series of two function machines                      Find the function machines given a two step expression                      Solve one step equations using +/-                      Solve one step equations using X/                      Understand the meaning of equivalence                      Simplify algebraic expressions by collecting like terms using the identity                      Evaluate algebraic expressions with directed number</p>	<p>Substitute values into two step expressions                      generate sequences given an algebraic rule                      Represent one and two step functions graphically                      Introduction to two-step equations                      Solve two-step equations                      Solving 2 step equations unknowns on one side                      Use known algebraic facts to derive other facts</p>	<p>Solving 2 step equations unknowns on both sides                      Solving 2 step equations including brackets                      continue a linear sequence with algebra                      continue a geometric sequence with algebra                      Explore multiplication and division in algebraic expressions (H)</p>	<p>Solving 2 step equations including fractions</p>
<b>Fractions, Decimals and Percentages</b>	<p>Represent tenths and hundredths on number line                      Interchange between fractional and decimal number lines                      Convert between fractions and decimals - tenths and hundredths                      Understand the meaning of percentage using a hundred square                      Represent any fraction as a diagram                      Represent fractions on number lines                      Identify and use simple equivalent fractions                      Understand fractions as division                      Understand representations of fractions</p>	<p>understand place value for decimals                      position decimals on a number line                      understand place value for decimals                      position decimals on a number line                      Find a fraction of a given amount                      Use a given fraction to find the whole and/or other fractions                      Add and subtract unit fractions with the same denominator                      Add and subtract fractions with the same denominator                      Add and subtract fractions from integers expressing the answer as a single fraction                      Understand and use equivalent fractions                      Add and subtract fractions where denominators share a simple common multiple                      Know and use mental arithmetic strategies for fractions</p>	<p>convert fluently between fractions, decimals and percentages                      convert between fractions and decimals - fifths and quarters                      Add and subtract fractions with any denominator                      Add and subtract improper fractions and mixed numbers                      Use equivalence to add and subtract decimals and fractions</p>	<p>convert between fractions and decimals - eighths and Thousandths (H)                      Use and interpret pie charts                      Solve problems with fractions greater than 1 and percentages greater than 100% (H)                      Add and subtract simple algebraic fractions (H)</p>	<p>Explore fractions above one, decimals and percentages (H)                      Use fractions in algebraic contexts</p>
<b>Number</b>	<p>Recognise the place value of any number in an integer up to one billion                      Understand and write integers up to one billion in words and figures                      Work out intervals on a number line                      Position integers on a number line                      Find the range of a set of numbers                      Compare and order any number up to one billion                      Understand and use representations of directed numbers                      Order directed numbers using lines and appropriate symbols</p>	<p>Round integers to the nearest power of ten                      Compare two numbers using =, ≠, &lt;, &gt;, ≤, ≥                      Order a list of integers                      Find the median of a set of numbers                      Use formal methods for addition of integers                      Use formal methods for addition of decimals                      Use formal methods for subtraction of integers                      Use formal methods for subtraction of decimals                      Choose the most appropriate method: mental strategies, formal written or calculator                      Properties of multiplication &amp; division                      Understand and use factors                      Understand and use multiples                      Use formal methods to multiply integer                      Use formal methods to divide integers                      Perform calculations that cross zero                      Add directed numbers                      Subtract directed numbers                      Multiplication of directed numbers                      Multiplication and division of directed numbers                      Use a calculator for directed number calculations</p>	<p>Find common factors of a set of numbers including the HCF                      Find common multiples of a set of numbers including the LCM                      Write a number as a product of its prime factors                      Multiply and divide integers and decimals by powers of 10                      Convert metric units                      Use formal methods to multiply decimals                      Use formal methods to divide decimals                      Understand and use order of operations                      Solve problems using the mean</p>	<p>Roots of positive numbers (H)                      Explore higher powers and roots (H)                      Round a number to 1 significant figure                      Write 10, 100, 1000 etc. as powers of 10 (H)                      Multiply by 0.1 and 0.01 (H)</p>	<p>Write positive integers in the form <math>A \times 10^n</math> (H)                      Investigate negative powers of ten (H)                      Add and subtract numbers given in standard form (H)                      Write decimals in the form <math>A \times 10^n</math> (H)</p>

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		<p>Use order of operations with directed numbers</p> <p>Convert between mixed numbers and fractions</p> <p>Known and use mental multiplication and division strategies for integers</p> <p>Know and use mental arithmetic strategies for decimals</p> <p>Use factors to simplify calculations</p> <p>Use estimation as a method for checking mental calculations</p> <p>Use known number facts to derive other facts</p> <p>Know when to use a mental strategy, formal written method or a calculator</p> <p>Find and use multiples</p> <p>Identify factors of numbers and expressions</p> <p>Recognise and identify prime numbers</p> <p>Recognise square and triangular numbers</p>			
<b>Geometry</b>	<p>Understand and use letter and labelling conventions including those for geometric figures</p> <p>Draw and measure line segments including geometric figures</p> <p>Understand angles as a measure of turn</p> <p>Classify angles</p> <p>Measure angles up to <math>180^\circ</math></p> <p>Draw angles up to <math>180^\circ</math></p> <p>Draw and measure angles between <math>180^\circ</math> and <math>360^\circ</math></p> <p>Recognise types of triangle</p> <p>Identify polygons up to a decagon</p>	<p>Identify perpendicular and parallel lines</p> <p>Understand and use the sum of angles at a point</p> <p>Understand and use the sum of angles on a straight line</p> <p>Understand and use the equality of vertically opposite angles</p> <p>Know and apply the sum of angles in a triangle</p>	<p>Know and apply the sum of angles in a quadrilateral</p> <p>Solve angle problems using properties of triangles and quadrilaterals</p> <p>Solve problems using the area of rectangles and parallelograms</p> <p>Solve problems using the area of triangles</p>	<p>Construct triangles using SSS</p> <p>Construct triangles using SSS, SAS and ASA</p> <p>Construct more complex polygons</p> <p>Interpret simple pie charts using proportion</p> <p>Draw pie charts</p> <p>Investigate angles in parallel lines (H)</p> <p>Understand and use parallel line angles rules (H)</p> <p>Solve problems using the area of trapezia (H)</p>	Solve complex angle problems
<b>Statistics</b>		<p>Solve problems with bar charts and line charts</p> <p>Solve problems with bar charts and line charts</p> <p>Calculate the probability of a single event</p> <p>Know that the sum of probabilities for all possible outcomes is 1</p> <p>Identify and represent sets</p> <p>Understand and use the probability scale</p> <p>Know that the sum of probabilities for all possible outcomes is 1</p>	<p>Solve problems with bar charts and line charts</p> <p>Solve problems involving tables and timetables</p> <p>Solve problems with frequency trees</p>	<p>Generate sample spaces for single events</p> <p>Use a Venn diagram to calculate the HCF and LCM (H)</p>	Understand and use the complement of a set (H) Make and test conjectures Use counter examples to disprove a conjecture