

Year 7 Assessment Rubric - Maths

	Number 1	Algebra	Geometry & Measures	Statistics	Number 2	Ratio & Proportion and Probability
Mastered	Solve problems within mathematics and in other contexts by making and using connections between different parts of mathematics					
Skilled	Solve problems within mathematics and in other contexts by interpreting results in the context of the given problem					
Confident	Add and subtract numbers given in standard form		Calculate the area of a parts of a circle without a calculator	Compare distributions	Adding and subtracting expressions with indices Simplifying algebraic expressions by multiplying indices Simplifying algebraic expressions by dividing indices Using the addition law for indices Using the addition and subtraction law for indices Exploring powers of powers	
Secure	Explore higher powers and roots Investigate negative powers of 10 Write decimals in the form $A \times 10^n$ Multiply and divide by 0.1 and 0.01 Use formal methods to multiply decimals Use formal methods to divide decimals Understand and use representations of directed numbers Order directed numbers using lines and appropriate symbols 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 Use order of operations with directed numbers Roots of positive numbers	Substitute values into single operation expressions Use diagrams and letters with a series of two function machines Find the function machines given a two-step expression Substitute values into two-step expressions Generate sequences given an algebraic rule Solve one-step linear equations involving +/- using inverse operations Solve one-step linear equations involving x and / using inverse operations	Metric Units Convert metric units Calculate with metric units Miles and kilometres Imperial measures What is volume? Compare volume Estimate volume Estimate capacity Volume of a cuboid Investigate the area of a circle Calculate the area of a circle without a calculator Calculate the area of a circle and parts of a circle with a calculator Calculate the perimeter and area of compound shapes (2)	Calculate the averages and range from graphs and charts Mean from an ungrouped frequency table Calculate the median from a frequency table Identify Outliers Choose an appropriate average.	Use estimation as a method for checking mental calculations Use known algebraic facts to derive other facts Recognise square and triangular numbers Find common factors of a set of numbers including the HCF Find common multiples of a set of numbers including LCM Write a number as a product of its prime factors. Use a Venn diagram to calculate the HCF and LCM	Ratio and fractions Calculating ratio Ratio and proportion problems Solve problems involving ratios in the form 1:n (or n:1) Solve proportional problems involving the ratio m:n Express ratios in the form 1:n Compare ratios and related fractions Understand Pi as the ratio between diameter and circumference Understand gradient of a line as a ratio Identify and represent sets Interpret and create Venn diagrams Understand and use the intersection of sets Understand and use the union of sets Understand and use the complement of a set Generate sample spaces for single events
Developing	Round integers to the nearest power of 10. Compare two numbers using inequality notation Position decimals on a number line Round a number to 1 significant figure Write 10, 100, 1000 etc as a power of 10 Properties of addition and subtraction Mental strategies for addition and subtraction 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	Give a numerical input, find the output of a single function machine Use inverse operations to find the input given the output Use diagrams and letters with single function machines Find the function machine given a simple expression Find numerical inputs and outputs for a series of two function machines Understand the meaning of equality Understand and use fact families, numerically and algebraically Understand the meaning of like and unlike terms Understand the meaning of equivalence Simplify algebraic expressions by collecting like terms	Measure perimeter Perimeter of rectangles Perimeter of rectilinear shapes Calculate perimeter Area of rectangles Area of compound shapes Area of irregular shapes Area and perimeter Area of a triangle (1) Area of a parallelogram Volume counting cubes Calculate the area of triangles, rectangles and parallelograms Calculate the area of a trapezium Calculate the perimeter and area of compound shapes (1)	Identify different types of data. Two-way tables Represent data in two-way tables. read and interpret tables ungrouped frequency tables. read and interpret grouped tables Represent grouped discrete data Introducing line graphs Read and Interpret line graphs Draw line graphs Problems with line graphs The mean Mean, median and mode Find the range, mode and median from a list of numbers.	Know and use mental addition and subtraction strategies for integers Know and use mental multiplication and division strategies for integers Know and use mental arithmetic strategies for decimals Know and use mental arithmetic strategies for fractions Use factors to simplify calculations Use known number facts to derive other facts Know when to use a mental strategy, formal written method or calculator Find and use multiples Identify factors of numbers and expressions Recognise and identify prime numbers	Using ratio language Introducing the ratio symbol Using scale factors Understand the meaning and representation of ratio Understand and use ratio notation Express ratios in their simplest form Calculate the probability of a single event Know that the sum of probabilities of all possible outcomes is 1

	<p>Choose the most appropriate method: mental strategies, formal written or calculator</p> <p>Solve problems in the context of perimeter</p> <p>Solve financial maths problems</p> <p>Properties of multiplication and division</p> <p>Understand and use factors</p> <p>Understand and use multiples</p> <p>Multiply and divide integers and decimals by powers of 10</p> <p>Convert metric units</p> <p>Use formal methods to multiply integers</p> <p>Use formal methods to divide integers</p> <p>Understand and use order of operations</p>					
Emerging	<p>Recognise the place value of any number in an integer up to one billion</p> <p>Understand and write integers up to one billion in words and figures.</p> <p>Work out intervals on a number line.</p> <p>Position integers on a number line.</p> <p>Order a list of integers</p> <p>Understand place value for decimals</p> <p>Compare and order any number up to one billion</p>	<p>Use diagrams and letters to generalise number operations</p>	<p>Perimeter on a grid</p> <p>Counting squares</p>	<p>Make tally charts</p> <p>set up a statistical enquiry</p> <p>Design and criticise questionnaires</p> <p>Draw pictograms</p> <p>Interpret pictograms</p> <p>Timetables</p> <p>Bar charts</p> <p>Multiple bar charts</p>		<p>Know and use the vocabulary of probability</p> <p>Understand and use the probability scale</p>

Year 8 Assessment Rubric - Maths

	Number 1	Algebra	Geometry & Measures	Statistics	Algebra 2	Ratio & Proportion and Probability
Mastered	Solve problems within mathematics and in other contexts by making and using connections between different parts of mathematics					
Skilled	Choose appropriate methods to solve complex percentage problems	Form and solve inequalities Form and solve equations and inequalities with unknowns on both sides				Find the area and volume of similar shapes
Confident	Convert between fractions and decimals - eighths and thousandths Convert fluently between fractions, decimals and percentages Add and subtract improper fractions and mixed numbers Use equivalence to add and subtract decimals and fractions Multiply and divide improper and mixed fractions Convert between decimals and percentages greater than 100% Calculate percentage increase and decrease using a multiplier Express one number as a fraction or a percentage of another without a calculator Express one number as a fraction or a percentage of another using calculator methods Work with percentage change Choose appropriate methods to solve percentage problems Find the original amount given the percentage less than 100% Find the original amount given the percentage greater than 100%	Expand single brackets and simplify Expand a pair of double brackets Solve equations, including with brackets Form and solve equations with brackets Understand and solve simple inequalities	Solve angle problems using properties of triangles and quadrilaterals Solve complex angle problems Solve complex problems with parallel line angles Prove simple geometric facts Understand and use the sum of exterior angles of any polygon Calculate and use the sum of the interior angles in any polygon Calculate missing interior angles in regular polygons	Mean of grouped data from a table	Find the midpoint of a line segment Generate sequences given a complex algebraic rule	Explore relationships between similar shapes
Secure	Interchange between fractional and decimal number lines Convert between fractions and decimals - tenths and hundredths Convert between fractions and decimals - fifths and quarters Convert fluently between simple fractions, decimals and percentages Represent fractions on number lines Explore fractions above one, decimals and percentages Find a fraction of a given amount Use a given fraction to find the whole and/or other fractions Find a percentage of a given amount using mental methods Find a percentage of a given amount using a calculator Solve problems with fractions greater than 1 and percentages greater than 100% Convert between mixed numbers and fractions	Form algebraic expressions Use directed number with algebra Expand a single bracket Factorise into a single bracket Identify and use formulae, expressions, identities and equations	Understand and use the equality of vertically opposite angles Know and apply the sum of angles in a triangle Know and apply the sum of angles in a quadrilateral Find and use the angle sum of any polygon Investigate angles in parallel lines Understand and use parallel line angle rules Use known facts to obtain simple proofs Investigate angles between parallel lines and the transversal Identify and calculate with alternate and corresponding angles Identify and calculate with co-interior, alternate and corresponding angles Investigate the properties of special quadrilaterals Identify and calculate with sides and angles in special quadrilaterals	Mean from an ungrouped frequency table Median of grouped data from a table Choose an appropriate average Compare distributions using charts Identify misleading graphs Read and Interpret Pie Charts Use and Interpret simple pie charts Pie Charts with percentages Draw Pie Charts Stem and Leaf Diagrams Draw and interpret scatter graphs Linear correlation Draw and use a line of best fit (1) Draw and use a line of best fit (2) Identify non-linear relationship	Recognise and use lines of the form $y = kx$ Link $y = kx$ to direct proportion problems Explore the gradient of the line $y = kx$ Recognise and use lines of the form $y = x + a$ Explore graphs with negative gradient ($y = -kx$, $y = a - x$, $x + y = a$) Link graphs to linear sequences Plot graphs of the form $y = mx + c$ Explore non-linear graphs Recognise the difference between linear and non-linear sequences Continue numerical linear sequences Continue numerical non-linear sequences Find missing numbers within sequences Generate sequences given a rule in words Generate sequences given a simple algebraic rule	Explore conversion graphs Convert between currencies Explore direct proportion graphs Understand scale factors as multiplicative representations Draw and interpret scale diagrams Interpret maps using scale factors and ratios Construct sample spaces for 1 or more events Find probabilities from a sample space Find probabilities from Venn diagrams Use the product rule for finding the total number of possible outcomes

	<p>Add and subtract unit fractions with the same denominator</p> <p>Add and subtract fractions with the same denominator</p> <p>Add and subtract fractions from integers expressing the answer as a single fraction</p> <p>Add and subtract fractions where denominators share a simple common multiple</p> <p>Add and subtract fractions with any denominator</p> <p>Represent multiplication of fraction</p> <p>Multiply a fraction by an integer</p> <p>Find the product of a pair of unit fractions</p> <p>Find the product of a pair of any fractions</p> <p>Divide an integer by a fraction</p> <p>Divide a fraction by a unit fraction</p> <p>Understand and use the reciprocal</p> <p>Divide any pair of fractions</p> <p>Calculate key fractions, decimals and percentages of an amount without a calculator</p> <p>Calculate fractions, decimals and percentages of an amount using calculator methods</p>		<p>Understand and use the properties of diagonals of quadrilaterals</p>		<p>Find the rule for the nth term of a linear sequence</p>	
Developing	<p>Represent tenths and hundredths as diagrams</p> <p>Understand the meaning of percentage using a hundred square</p> <p>Represent any fraction as a diagram</p> <p>Identify and use simple equivalent fractions</p> <p>Understand fractions as division</p> <p>Understand representations of fractions</p> <p>Understand and use equivalent fractions</p>		<p>Measure angles up to 180</p> <p>Draw angles up to 180</p> <p>Draw and measure angles between 180 and 360</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 basic angles rules and notation</p>	<p>Ungrouped frequency tables.</p> <p>Represent Continuous Data</p> <p>Grouped Quantitative data</p> <p>Mean, median and mode</p> <p>Find and Interpret the range</p>	<p>Identify and draw lines that are parallel to the axes</p> <p>Recognise and use the line $y = x$</p> <p>Describe and continue a sequence given diagrammatically</p> <p>Predict and check the next term(s) of a sequence</p> <p>Represent sequences in tabular and graphical forms</p> <p>Explain the term-to-term rule of numerical sequences in words</p>	
Emerging	<p>Represent tenths and hundredths on number lines</p>		<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>Identify perpendicular and parallel lines</p> <p>Recognise types of triangle</p> <p>Recognise types of quadrilateral</p>	<p>Pictograms, bar and vertical line charts.</p>	<p>Work with coordinates in all four quadrants</p>	<p>Solve problems involving direct proportion</p> <p>Find probabilities from two-way tables</p>

Year 9 Assessment Rubric - Maths

	Number 1	Algebra	Geometry & Measures	Statistics	Geometry & Measures 2	Ratio & Proportion and Probability
Mastered	Understand and use fractional indices	Explore perpendicular lines			Use Pythagoras' theorem in 3D shapes	
Skilled	Understand and use error interval notation Understand and use negative indices	Solving equations and inequalities in context Conjectures with algebra Find the equation of a line from a graph Interpret gradient and intercepts of real-life graphs	Explore volumes of cones, pyramids and spheres Construct more complex polygons Locus of distance from a point Locus of distance from a straight line/shape Locus equidistant from two points Locus of distance from two lines Explore congruent triangles Identify congruent triangles Construct a perpendicular bisector from a point		Explore proofs of Pythagoras' theorem Enlarge a shape by a negative scale factor Use Pythagoras' theorem on coordinate axes	Use tree diagrams to solve 'without replacement' problems
Confident	Convert metric units of area Convert metric units of volume Use a Venn diagram to calculate the HCF and LCM Make and test conjectures Use counterexamples to disprove a conjecture Compare and order numbers in standard form Mentally calculate with numbers in standard form Add and subtract numbers in standard form Multiply and divide numbers in standard form Use a calculator to work with numbers in standard form Calculate higher powers and roots The addition and subtraction rules for indices Understand and use the power zero and negative indices Work with powers of powers	Solve one- and two-step equations and inequalities with brackets Solve equations with unknowns on both sides Solve inequalities with unknowns on both sides Rearrange complex formulae including brackets and squares Conjectures about number	Surface area of a cylinder Construct triangles using SSS, SAS and ASA Construct a perpendicular bisector Construct a perpendicular to a point Identify congruent figures	Population and samples Construct and interpret time series graphs	Determine whether a triangle is right-angled Calculate the hypotenuse of a right-angled triangle Calculate missing sides in right-angled triangles Recognise enlargement and similarity Enlarge a shape by a positive integer scale factor Enlarge a shape by a positive integer scale factor from a point Enlarge a shape by a positive fractional scale factor	Solve problems with inverse proportion Graphs of inverse relationships Solve problems ratio and algebra Use distance/time graphs Solve flow problems and their graphs Rates of change and their units Convert compound units Use tree diagrams
Secure	Estimate the answer to a calculation Calculate using the order of operations Convert metric measures of length Convert metric units of weight and capacity Recognise square and triangular numbers Find common factors of a set of numbers including the HCF Find common multiples of a set of numbers including LCM Write a number as a product of its prime factors. Work with numbers greater than 1 in standard form Work with numbers between 0 and 1 in standard form Investigate negative powers of 10 Square and Cube numbers	Solve one- and two-step equations and inequalities Inequalities with negative numbers Rearrange formulae (two-step) Expand a pair of binomials Using tables of values Compare gradients Compare intercepts Understand and use $y = mx + c$ Write an equation in the form $y = mx + c$ Model real-life graphs involving inverse proportion	Investigate the area of a circle Calculate the area of a circle and parts of a circle without a calculator Calculate the area of a circle and parts of a circle with a calculator Calculate the perimeter and area of compound shapes (2) Surface area of cubes and cuboids Surface area of triangular prisms Volume of cubes and cuboids Volume of other 3D shapes - prisms and cylinders Construct and interpret scale drawings Construct an angle bisector Construct triangles from given information	Draw and Interpret pie charts Choose the most appropriate diagram for given set of data Criticise charts and graphs Find and interpret averages from a table	Squares and roots Compare rotation and reflection of shapes Find the result of a series of transformations Work out missing sides and angles in a pair of given similar shapes Solve problems with similar triangles Explore ratios in right-angled triangles Identify the hypotenuse of a right-angled triangle Reflect a shape in a diagonal line 1 (shapes touching the line) Reflect a shape in a diagonal line 2 (shapes not touching the line)	Direct proportion with conversion graphs Solve speed, distance and time problems without a calculator Solve speed, distance and time problems with a calculator Solve problems with density, mass and volume Expected outcomes Independent events Use diagrams to work out probabilities

Developing	<p>Round numbers to powers of 10, and 1 significant figure</p> <p>Round numbers to a given number of decimal places</p> <p>Calculate with money</p> <p>Find and use multiples</p> <p>Identify factors of numbers</p> <p>Recognise and identify prime numbers</p> <p>Investigate positive powers of 10</p>	<p>Substituting into formulae and equations</p> <p>Rearrange formulae (one-step)</p> <p>Lines parallel to the axes, $y = x$ and $y = -x$</p>	<p>Calculate the area of triangles, rectangles and parallelograms</p> <p>Calculate the area of a trapezium</p> <p>Calculate the perimeter and area of compound shapes (1)</p> <p>Recognise prisms</p> <p>Sketch and recognise nets of cuboids and other 3D shapes</p> <p>Plans and Elevations</p> <p>Draw and measure angles</p>	<p>Draw and interpret line graphs</p> <p>Primary and secondary data</p> <p>Construct and interpret frequency tables and frequency polygons</p> <p>Construct and interpret line and bar charts (including composite bar charts)</p> <p>Construct and interpret two-way tables</p> <p>Find and interpret averages from a list</p>	<p>Reflect a shape in a horizontal or vertical line 1 (shapes touching the line)</p> <p>Reflect a shape in a horizontal or vertical line 2 (shapes not touching the line)</p> <p>Identify the order of rotational symmetry of a shape</p> <p>Compare and contrast rotational symmetry with line symmetry</p> <p>Rotate a shape about a point on a shape</p> <p>Rotate a shape about a point not on a shape</p> <p>Translate points and shapes by a given vector</p>	<p>Solve problems with direct proportion</p> <p>Solve 'best buy' problems</p> <p>Solve ratio problems given the whole or a part</p> <p>Single event probability</p> <p>Relative frequency - include convergence</p>
Emerging	Solve problems involving time and the calendar		<p>Know names of 2D and 3D shapes</p> <p>Identify polygons up to a decagon</p>		Recognise line symmetry	