



KS3 Maths Assessment Criteria (Year 7)

Statistics			
Acquiring	Developing	Securing	Extending
Find information from tables, pictograms, bar and bar-line charts. Display data using bar and bar-line charts. Organise data using a tally chart. Understand and use frequency tables. Find the mode, median and range of a set of data.	Organise grouped on frequency tables. Find the mode and range from a chart or table. Calculate the mean of a set of values. Begin to compare sets of data using their range, mode and median. Read and draw a line graph, a dual bar chart and a compound bar chart.	Read and construct grouped bar charts for discrete and continuous data. Find the modal class from a bar chart or frequency table. Compare two sets of data using an average and the range. Recognise when a graph is misleading. Use two-way tables.	Choose the most appropriate average for a set of data and compare sets of data using averages and the range. Draw and interpret pie charts. Draw scatter graphs and describe the correlation between two sets of data. Draw a line of best fit and use it to estimate values.
Number			
Acquiring	Developing	Securing	Extending
Add and subtract numbers together in different ways. Round to the nearest 10, 100, 1000. Multiply and divide by 10, 100 and 1000. Use simple negative numbers. Multiply 3-digit numbers by a single digit. Decide whether you can divide a number by 2, 5, 9 or 10. Begin to identify factors of numbers. Recognise multiples.	Know and use BIDMAS. Check answers using estimation. Multiply and divide whole numbers using a written method. Round decimals to the nearest whole number. Order positive and negative numbers. Begin to multiply with negative numbers. Identifying and understanding factors, multiples and prime numbers. Recognise square numbers and square roots.	Divide whole numbers using a written method when the divisor is greater than 12. Check answers using inverse operations. Solve problems involving time and money using a calculator. Recognise and use square numbers, square roots and triangle numbers. Begin to use index notation Understand the difference between multiples, factors and primes.	Find all the factor pairs of any whole number. Find the HCF and LCM of two numbers. Use index notation Carry out calculations involving squares, cubes, square roots and cube roots. Solve word problems using square roots and cube roots. Estimate answers to complex calculations. Carry out calculations involving brackets.
Algebra			
Acquiring	Developing	Securing	Extending
Find outputs of simple functions. Describe simple functions using words or symbols. Simplify expressions. Write expressions given a description in words. Begin to substitute integers into simple formulae written in letter symbols.	Use arithmetic operations with algebra. Use brackets with numbers and letters. Write expressions from word descriptions using addition, subtraction and multiplication. Write expressions to represent function machines. Substitute integers into formulae written in letter symbols.	Simplify more complicated expressions by collecting like terms. Write expressions from word descriptions using addition, subtraction and multiplication. Identify variables and use letter symbols. Write simple formulae using letter symbols. Identify formulae and functions. Identify the unknowns in a formula and a function.	Expand expressions involving brackets. Substitute into expressions involving powers. Factorise an algebraic expression. Write and solve problems using equations. Write and solve two-step equations, equations that have brackets and equations with letters on both sides. Solve equations that include x^2 and x^3
Fractions			
Acquiring	Developing	Securing	Extending
Order fractions. Use fractions to describe parts of shapes. Simplify simple fractions by cancelling. Change an improper fraction to a mixed number. Add and subtract simple fractions.	Identify equivalent fractions. Add and subtract fractions with different denominators. Calculate fractions of quantities. Write one number as a fraction of another.	Simplify fractions by cancelling common factors. Begin to add and subtract mixed number fractions. Write an improper fraction as a mixed number. Multiply a fraction by a fraction.	Work with equivalent fractions, decimals and percentages. Use division to write a fraction as a decimal. Multiply and divide a mixed number.
Percentages			
Acquiring	Developing	Securing	Extending

Understand percentage as 'the number of parts per 100'. Write a percentage as a fraction or decimal. Calculate simple percentages.	Work with equivalent percentages, fractions and decimals. Use different strategies to calculate with percentages. Express one number as a percentage of another.	Use different strategies to calculate with percentages. Convert between fractions decimals and percentages. Calculate percentages with and without a calculator.	Compare different proportions using percentages. Calculate percentage increases and decreases. Work backwards to solve a percentage problem.
Decimals			
Acquiring	Developing	Securing	Extending
Measure and draw lines to the nearest millimetre. Write decimals in order of size. Round decimals to the nearest whole number and to one decimal place. Round decimals to make estimates and approximations of calculations. Read scales on a range of measuring equipment.	Compare measurements by converting them into the same units. Solve simple problems involving units of measurement in the context of length. Interpret metric measures displayed on a calculator. Add and subtract decimals. Multiply and divide decimals by single-digit whole numbers.	Solve problems involving units of measurement in the context of length. Convert between metric units of length, mass and capacity. Check a result by considering whether it is of the right order of magnitude. Work with equivalent percentages, fractions and decimals.	Solve more complex problems involving units of measurement in the context of length. Multiply a decimal by an integer. Use place value to multiply decimals. Divide a decimal by a whole number. Divide a number by a decimal.
Angles			
Acquiring	Developing	Securing	Extending
Know a right angle is 90 degrees. Recognise quarter, half and three-quarter turns. Recognise acute and obtuse angles. Measure acute & obtuse angles. Estimate the size of angles. Find missing angles on a straight line. Find missing angles round a point.	Describe and label lines, angles and triangles. Identify angle, side and symmetry properties of triangles. Estimate the size of angles. Use the rule for angles on a straight line, angles around a point and vertically opposite angles. Solve angle problems involving triangles.	Solve more complex problems involving angles and triangles. Calculate interior and exterior angles. Identify and name types of quadrilaterals. Solve angle problems involving quadrilaterals. Describe the line and rotational symmetry of quadrilaterals. Describe the properties of quadrilaterals.	Work out unknown angles when two or more lines meet or cross at a point. Work out unknown angles involving parallel lines. Understand how to prove that a result is true. Work out the interior and exterior angles of a polygon.
Ratio and Proportion			
Acquiring	Developing	Securing	Extending
	Use direct proportion in simple contexts. Solve simple problems involving direct proportion. Use the unitary method to solve simple word problems involving direct proportion. Reduce a two or three-part ratio to its simplest form by cancelling. Divide a quantity into two parts in a ratio given in words. Divide a quantity into two parts in a given ratio.	Solve simple problems involving direct proportion. Use the unitary method to solve simple word problems involving direct proportion. Solve word problems involving ratio. Use ratios and measures. Use fractions to describe and compare proportions. Understand and use the relationship between ratio and proportion. Use percentages to describe proportions.	Simplify a ratio expressed in fractions or decimals. Share a quantity in 2 or more parts in a given ratio. Understand the relationship between ratio and proportion. Solve word problems involving ratio, direct proportion and inverse proportion Write ratios in the form 1 : n Solve best buy problems.
Sequences			
Acquiring	Developing	Securing	Extending
Begin the use of mathematical language to describe sequences. Generate sequences from practical sequences, describing how patterns grow.	Begin to identify and use position-to-term rules. Identify and use position-to-term rules. Begin to write the nth term of a sequence using algebra.	Demonstrate how sequences can be used as a mathematical model to describe patterns. Generate sequences using more complex (two-step) term-to-term rules. Write the nth term of a sequence using algebra.	Generate sequences and predict how they will continue. Recognise geometric sequences and work out the term-to-term rule
Graphs			
Acquiring	Developing	Securing	Extending
Read information from real-life graphs. Draw graphs to show change over time. Write the coordinates of points on a grid.	Recognise, name and plot straight line graphs parallel to the x- or y-axis.	Generate coordinates that satisfy a simple linear rule and plot the graph in all 4 quadrants.	Work out the midpoint of a line segment. Draw straight-line graphs.

Plot points from their coordinates. Plot graphs of simple functions. Read values from graphs. Draw line graphs to show relationships between quantities. Read values from science graphs.	Generate coordinates that satisfy a simple linear rule and plot the graph in the first quadrant. Read values from a graph.	Recognise, name and plot the graphs of $y = x$ and $y = -x$.	Recognise straight-line graphs parallel to the axes. Begin to explore gradients and intercepts of straight-line graphs. Discuss $y = mx + c$
Transformations			
Acquiring	Developing	Securing	Extending
Reflect a shape in a mirror line. Translate a shape. Draw and describe rotations.	Identify congruent shapes. Identify all the symmetries of 2D shapes. Recognise and carry out reflections in a mirror line. Reflect a shape on a coordinate grid. Describe a reflection on a coordinate grid.	Enlarge shapes using given scale factors. Work out the scale factor given an object and its image. Identify reflection symmetry in 3D shapes. Describe and carry out rotations on a coordinate grid. Translate 2D shapes. Combine transformations.	Enlarge a shape using fractional scale factors. Transform 2D shapes using a combination of reflection, rotation, enlargement and translation. Identify planes of reflection symmetry in 3D solids.



KS3 Maths Assessment Criteria (Year 8)

Number			
Acquiring	Developing	Securing	Extending
Add, subtract, multiply and divide negative numbers. Calculate squares and square roots, mentally and using a calculator. Calculate cubes and cube roots, mentally and using a calculator. Use index notation. Find the factor pairs of any whole number	Estimate answers to calculations. Calculate using squares, square roots, cubes and cube roots. Use index notation for powers of numbers. Estimate the square root of a number. Write a number as a product of its prime factors.	Substitute numbers into formulas involving power, roots and brackets. Use index notation. Use prime factor decomposition to find the HCF and LCM.	Show that any number to the power of zero is 1. Use the laws of indices for multiplying and dividing. Calculate with powers. Round to a number of significant figures.
Shapes			
Acquiring	Developing	Securing	Extending
Recognise and name 3D shapes. Count faces, edges and vertices. Deduce properties of 3D shapes from 2D representations. Identify and draw nets of 3D solids.	Find areas of compound shapes. Calculate areas of parallelograms. Calculate the surface area of cubes and cuboids. Calculate the volume of cubes and cuboids.	Find areas of more complex compound shapes. Calculate areas of trapezia. Begin to look at volume and surface area of prisms.	Calculate the area and circumference of a circle. Calculate the radius or diameter when you know the area or circumference. Calculate the volume and surface area of a cylinder.
Graphs			
Acquiring	Developing	Securing	Extending
	Reading values from and plotting conversion graphs from a table of data. Interpreting distance-time graphs. Using distance-time graphs to solve problems. Interpreting line graphs. Reading values from real-life graphs. Plotting graphs and reading values to solve problems. Plot the graphs of linear functions. Find midpoints of line segments.	Describing trends and making predictions based on information presented graphically Plot a straight-line graph and work out its gradient. Plot the graphs of linear functions. Find midpoints of line segments. Write the equations of straight-line graphs in the form $y = mx + c$ Solve problems involving direct proportion with or without a graph.	Understand financial graphs. Interpret graphs that are curved. Understand when graphs are misleading. Find the equation of a straight-line graph. Identify parallel and perpendicular lines. Find the inverse of a linear function. Plot and use non-linear graphs.

Algebra			
Acquiring	Developing	Securing	Extending
<p>Simplify expressions by collecting like terms.</p> <p>Find outputs and inputs of function machines.</p> <p>Solve simple equations and check the solution is correct.</p> <p>Understand the difference between an expression and an equation, and identify the unknown in an equation.</p> <p>Use brackets with numbers and letters.</p>	<p>Understand and simplify algebraic powers.</p> <p>Substitute values into formulas involving powers.</p> <p>Expand brackets.</p> <p>Make and simplify algebraic expressions.</p> <p>Factorise expressions.</p> <p>Solve real life problems using equations.</p>	<p>Understand and simplify algebraic powers.</p> <p>Make and simplify algebraic expressions.</p> <p>Factorise expressions.</p> <p>Find the inverse of a function.</p> <p>Solve real life problems using equations.</p> <p>Solve equations with the unknown number on both sides including those with negative and fractional solutions.</p>	<p>Simplify expressions involving powers and brackets.</p> <p>Understand the meaning of an identity.</p> <p>Use the index laws in algebraic calculations and expressions.</p> <p>Simplify expressions with powers.</p> <p>Write and simplify expressions involving brackets and powers.</p> <p>Factorise an algebraic expression.</p> <p>Substitute integers into expressions.</p> <p>Construct and solve equations.</p> <p>Confidently change the subject of an equation.</p>
Fractions Decimals Percentages			
Acquiring	Developing	Securing	Extending
<p>Add and subtract decimal numbers.</p> <p>Multiply decimals. Round decimals.</p> <p>Order decimals.</p> <p>Solve problems involving decimals.</p> <p>Compare fractions. Simplify fractions.</p> <p>Identify equivalent fractions.</p> <p>Calculate fractions of quantities.</p> <p>Multiply a fraction by a whole number. Add and subtract fractions.</p> <p>Change between fractions and percentages.</p> <p>Calculate percentages.</p>	<p>Adding and subtracting fractions with any size denominator.</p> <p>Multiply integers and fractions by a fraction</p> <p>Use appropriate methods for multiplying fractions.</p> <p>Write one amount as a fraction of another. Find the reciprocal of a number. Divide integers and fractions by a fraction.</p> <p>Use strategies for dividing fractions.</p> <p>Use the four operations with mixed numbers.</p> <p>Order fractions by converting them to decimals or equivalent fractions.</p> <p>Use the equivalence of fractions, decimals and percentages to compare proportions.</p>	<p>Multiply integers and fractions by a fraction</p> <p>Use appropriate methods for multiplying fractions.</p> <p>Write one amount as a fraction of another.</p> <p>Find the reciprocal of a number.</p> <p>Divide integers and fractions by a fraction.</p> <p>Use strategies for dividing fractions.</p> <p>Recognise recurring and terminating decimals.</p> <p>Working out one number as a percentage of another.</p> <p>Working out percentage increase and decrease. Use a multiplier to calculate percentage increase and decrease.</p>	<p>Recognise fractional equivalents to important recurring decimals</p> <p>Recognise which denominators of simple fractions produce recurring decimals</p> <p>Change a recurring decimal into a fraction.</p> <p>Work out an original quantity before a percentage increase or decrease</p> <p>Calculate the effect of repeated percentage changes.</p>

Constructions Scale Drawing			
Acquiring	Developing	Securing	Extending
Draw triangles accurately using a ruler and protractor. Draw diagrams to scale. Draw accurate nets of 3D solids.	Construct triangles using a ruler and compasses. Construct nets of 3D solids using a ruler and compasses.	Bisect a line using a ruler and compasses. Construct perpendicular lines using a ruler and compasses. Bisect angles using a ruler and compasses.	Draw accurate diagrams to solve problems. Draw a locus. Use loci to solve problems.
Statistics			
Acquiring	Developing	Securing	Extending
Design a data collection sheet. Group data into equal class intervals. Interpret complex bar charts. Draw bar charts for more than one set of data. Interpret pie charts.	Calculate angles and draw pie charts. Drawing and interpreting two-way tables. Finding modal class and estimating range. Drawing and interpreting stem and leaf diagrams with different stem values. Finding mode, median and range from stem and leaf diagrams, and comparing them for different data sets.	Decide on the most appropriate average to use. Draw scatter graphs. Describe types of correlation. Draw a line of best fit by eye on a scatter graph. Identify graphs and charts that are misleading because of the scales used and missing axis labels, mainly in financial contexts.	
Angles			
Acquiring	Developing	Securing	Extending
Use a protractor to measure and draw angles and triangles Estimate the size of reflex angles. Use vertically opposite angles. Work out the size of unknown angles in a triangle.	Using known facts about quadrilaterals to solve problems. Using alternate and corresponding angles to find unknown angles. Solving geometrical problems using side and angle properties of triangles and quadrilaterals. Solving problems using properties of angles in parallel and intersecting lines. Finding unknown angles by forming and solving equations.	Using known facts about quadrilaterals to solve problems. Using reasoning to complete mathematical proofs. Solving problems using properties of angles in parallel and intersecting lines. Calculating the sum of the interior and exterior angles of a polygon. Calculating the interior and exterior angles of a polygon. Solving geometrical problems showing reasoning.	



KS3 Maths Assessment Criteria (Year 9)

Number			
Acquiring	Developing	Securing	Extending
Multiply and divide numbers including decimals and negative. Know all positive and negative square roots of first 15 square numbers. Use of index notation and laws for positive powers. Work out the LCM and HCF from prime factor decomposition. Work out calculations involving brackets, squares, cubes and square roots.	Calculate combinations of indices, fractions and brackets. Use index laws to simplify expressions. Estimate answers to calculations. Write large and small numbers using standard form. Enter and read standard form numbers on your calculator. Order numbers written in standard form.	Calculate combinations of indices, fractions and brackets. Calculate combinations of powers, roots, fractions and brackets. Understand negative and 0 indices. Use powers of 10 and their prefixes. Do calculations using standard form.	Find the reciprocal of a number. Work with reciprocals. Use negative indices. Work out powers of fractions. Calculate with numbers written in standard form. Calculate with fractional indices. Use surds. Understand the difference between rational and irrational numbers.
Algebra			
Acquiring	Developing	Securing	Extending
Substitute into complex formulae and solve equations. Construct complex formulae. Use inverse operations in formulae.	Substitute into algebraic expressions involving powers. Write expressions and formulae. Simplify expressions involving brackets, use rules for indices and factorise expressions. Multiply out double brackets and collect like terms.	Change the subject of a formula. Construct and solve equations with the unknown on both sides. Construct and solve equations including brackets, powers and fractions. Convert a recurring decimal to a fraction. Know the difference between equations and identities. Solve linear equalities. Represent solutions to inequalities on a number line. Set up equations to show direct proportion. Solve a pair of simultaneous equations.	Use index laws with zero and negative powers. Construct and solve complex equations. Change the subject of a more complex formula Change algebraic fractions to equivalent fractions. Solve problems with fractions in formulae. Find an expression for the nth term of a quadratic sequence. Factorise quadratic expressions into two brackets. Solve quadratic equations by factorising.

Statistics			
Acquiring	Developing	Securing	Extending
Plan and collect data. Interpret frequency tables. Find the range and mean from a frequency tables. Use the median, mean and range to compare sets of data. Use two-way tables. Group discrete and continuous data. Construct pie charts. Interpret and construct scatter graphs. Understand what makes graphs and charts misleading.	Identify sources of primary and secondary data. Choose a suitable sample size and what data to collect. Design a good questionnaire. Design and use data collection sheets and tables. Find the modal class of a set of grouped data. Construct and use a line of best fit to estimate missing values.	Identify factors that may affect data collection and plan to reduce bias. Estimate the mean from a large set of grouped data. Identify and explain outliers in data. Identify further lines of enquiry. Construct and use frequency polygons. Write a report to show results of a survey.	Draw and interpret box plots. Compare data using box plots. Draw cumulative frequency graphs for grouped data. Interpret cumulative frequency graphs. Construct and interpret histograms.
Fractions			
Acquiring	Developing	Securing	Extending
Convert between fractions, decimals and percentages. Compare fractions, decimals and percentages. Write a fraction as a decimal. Write some familiar recurring decimals as fractions. Add and subtract fractions. Use strategies for multiplying fractions. Divide by fractions.	Adding and subtracting fractions with any size denominator. Multiply integers and fractions by a fraction. Divide integers and fractions by a fraction. Order fractions by converting them to decimals or equivalent fractions. Working out percentage increase and decrease. Use the unitary method to solve percentage problems	Find the reciprocal of a number. Use the four operations with mixed numbers. Recognise recurring and terminating decimals. Use the equivalence of fractions, decimals and percentages to compare proportions. Use a multiplier to calculate percentage increase and decrease.	Recognise fractional equivalents to important recurring decimals Recognise which denominators of simple fractions produce recurring decimals Change a recurring decimal into a fraction. Work out an original quantity before a percentage increase or decrease Calculate the effect of repeated percentage changes.
Sequences & Graphs			
Acquiring	Developing	Securing	Extending
Write expressions given a description in words. Simplify expressions. Use algebra to generate the terms of a sequence. Solve problems involving sequences. Work out the nth term of a linear sequence.	Use the nth term to generate a sequence. Find the nth term of a sequence. Recognise and continue quadratic sequences. Use distance-time graphs to solve problems.	Find the nth term of a sequence. Recognise and continue geometric sequences. Recognise and continue quadratic sequences. Write the equation of a line parallel to another line. Plot graphs with equations like	Understand and draw graphs of quadratic functions Identify quadratic graphs and their features. Solve problems using quadratic graphs. Use quadratic graphs to solve equations.

<p>Solve more complex equations. Read information from graphs. Plot graphs of simple functions. Draw and interpret distance–time graphs. Find the midpoint of a line segment. Work out the y-intercept of a line. Work out the gradient of a line.</p>	<p>Recognise graphs showing constant rates of change. Interpret graphs showing rates of change. Draw a graph from its equation, without working out points. Write the equation of a line parallel to another line. Draw graphs with quadratic equations like $y = x^2$</p>	<p>$ax + by = c$. Rearrange equations of graphs into $y = mx + c$. Find inverse functions and plot their graphs. Solve simultaneous equations by drawing graphs. Find the equation of a line through two points. Draw graphs with quadratic equations like $y = x^2$ Draw graphs of cubic equations like $y = x^3$.</p>	<p>Understand and draw graphs of cubic functions. Identify and draw graphs of reciprocal functions Solve problems using reciprocal graphs Rearrange equations of graphs to find the gradient and the y-intercept. Solve inequalities by graphing straight lines. Solve inequalities that involve quadratic graphs.</p>
Probability			
Acquiring	Developing	Securing	Extending
<p>Compare experimental and theoretical probabilities. List all the possible outcomes of two events in sample space diagrams. Work out the theoretical probability of an outcome from two events. Decide whether a game is fair.</p>	<p>Calculate probabilities from tables. Compare probabilities. Calculate estimates of probability from experiments or survey results. Use experimental probabilities to predict outcomes. List all the possible outcomes of one or two events in Venn diagrams, tables and sample space diagrams.</p>	<p>Compare experimental and theoretical probabilities. You will decide if a game is fair. Calculate the probability of two independent events. Use tree diagrams.</p>	
Geometry			
Acquiring	Developing	Securing	Extending
<p>Identify alternate and corresponding angles. Use scales in maps and plans. Draw diagrams to scale. Use a ruler and compasses to bisect a line segment Use a ruler and compasses to bisect an angle. Use 2D representations of 3D objects. Work out the volume of simple shapes made from cuboids.</p>	<p>Identify alternate and corresponding angles. Work with angles in polygons. Use a ruler and compasses to bisect a line segment Use a ruler and compasses to bisect an angle.</p>	<p>Calculate the circumference of a circle. Estimate calculations involving pi. Solve problems involving the area and circumference of a circle. Calculate the volume and surface area of a right prism. Calculate the volume and surface area of a prism including a cylinder. Find the lower and upper bounds for a measurement. Calculate percentage error intervals.</p>	<p>Use conventions for naming sides of a right angled triangle. Use trigonometry to calculate angles and side lengths on right angled triangles. Plot and sketch graphs of the trigonometric functions. Use the trigonometric ratios with any angle from 0 to 360°</p>

