

MATHEMATICS ASSESSMENT FRAMEWORK

Assessment Grade		Students can understand and apply the following mathematics:
9	a	The general iterative process. Gradient of a curve at a point. Inverse and composite functions. Equation of a tangent to a circle at a point. Estimates of gradient or area under graphs. Turning points by completing the square. Quadratic inequalities.
	b	
	c	
	d	
8	a	Area and volumes of similar shapes. Sine and cosine rules. Vectors. Simplifying, expanding and rationalising surds. Complex upper and lower bounds. Algebraic proof. Factorising quadratics of the form ax^2+bx+c . Linear and quadratic simultaneous equations. Trigonometric and exponential graphs. Rate of change. Exact values of trigonometrical ratios. 3D trigonometry. Algebraic fractions. Transformations of graphs.
	b	
	c	
	d	
7	a	Area of a general triangle. Circle theorems. Probability of independent events: tree and Venn diagrams. Histograms. Enlargements with a negative scale factor. Fractional indices. The equation of a circle with centre at the origin. Gradients of perpendicular lines. Direct and indirect proportion. Recurring decimals. 3D Pythagoras. Expanding three brackets. Quadratic formula. nth term of quadratic sequences. Sketching quadratics.
	b	
	c	
	d	
6	a	Graphical inequalities. Parallel lines. Velocity time graphs. Congruent shapes. Similar shapes. Enlargement with fractional scale factor. Volume of frustums. Probability of combined events. Box and whisker plots. Cumulative frequency. Moving averages. Difference of two squares. Changing the subject of a formula where the required subject appears twice.
	b	
	c	
	d	
5	a	Quadratic factorisation. Linear simultaneous equations. Plotting quadratic graphs. Compound interest. Area of sectors and segments. Surface area including spheres. Volume of a sphere and a cone. Distance between two points and coordinates of the midpoint. Trigonometry of right-angled triangles. Venn diagrams. Means from grouped frequency tables. LCM and HCF. Standard form calculations. Equations with fractions. Changing the subject of a formula. Algebra of inequalities. Parallel lines.
	b	
	c	
	d	
4	a	Loci. Pythagoras' theorem. Means from frequency tables. Scatter diagrams and lines of best fit. Prime factor form. Adding and subtracting fractions. Estimating. Standard index form. Expanding two brackets. Factorising (one bracket). Solving equations including those with brackets. The nth term of a linear sequence. Showing inequalities on a number line. The $y=mx+c$ form of a straight line graph. Dividing an amount in a given ratio.
	b	
	c	
	d	
3	a	Expanding with one bracket. Solving equations. Straight line graphs and gradient. Distance time graphs. Ratio. Direct proportion. Best buy problems. Algebraic substitution. Area and circumference of circles. Transformations. Probability of one event. Exchange rates. Long multiplication. Division with decimals. Areas of compound shapes. Frequency polygons. Volume of a cuboid.
	b	
	c	
	d	
2	a	Long multiplication and division. Rounding to specified decimal places. Factors and multiples. Negative numbers. BODMAS. Estimating. Pie charts. Fractions of an amount. Averages from a list. Percentages of an amount. Fractions to percentages to decimals. Perimeters and areas of simple shapes. Measuring angles. Converting metric units.
	b	
	c	
	d	
1	a	Rounding to the nearest 10, 100, 1000. Names of 2D and 3D shapes. Multiplying and dividing by powers of 10. Pictograms. Bar charts. Function machines. Simple number sequences. Ordering whole and negative numbers. Timetables. Reading scales. Recognising types of angle.
	b	
	c	
	d	
S	a	Two digit addition and subtraction. Multiplication tables up to 10×10 . Tally tables. Odd and even numbers. Number bonds up to 10.
	b	
	c	
	d	