

Y10 Foundation SOW

HT1					
Chapters	Learning Objectives:	Grade	R	A	G
Statistics: Tables and averages	• use tally charts and frequency tables to collect and represent data	2			
	• use grouped frequency tables to collect and represent data.	3			
	• draw pictograms to represent statistical data	2			
	• draw bar charts and vertical line charts to represent statistical data.	2			
	• draw a line graph to show trends in data.	3			
	• work out the mode, median, mean and range of small sets of data (including average pay)	3			
	• decide which is the best average to use to represent a data set.	3			
	• interpret and construct tables and line graphs for time series data and know their appropriate use				
Statistics: Draw and interpret Charts	• To interpret a variety of two-way tables	3			
	• draw and interpret pie charts.	4			
	• draw, interpret and use scatter diagrams	4			
	• draw and use a line of best fit.	4			
	• To work out the mean from a frequency Table	4			
	• calculate an estimate of the mean from a grouped table.	5			
	• identify the modal group	3			
	• Draw and interpret frequency polygons.	5			
FDP and recurring decimals	Recognise terminating decimals and recurring decimals.	5			
	Convert between decimals / percentages / fractions	3			
	Find reciprocals of numbers or fractions.	5			
LCM, HCF and prime numbers	• find and recognise multiples / factors of numbers	2			
	• identify prime numbers and prime factors	3			
	• identify LCM / HCF of two numbers (venn diagrams and listing) including real life problems e.g bus times	4			
	• identify square numbers and use a calculator to find the square / square root of a number.	2			
Surds	How to estimate powers and roots of any given positive number.	4			
	Simplify and manipulate simple surds (cube / square roots)	5			
AP1					

HT2					
Chapters	Learning Objectives:	Grade	R	A	G
Vectors	• apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors	5			
Angles	• recognise and calculate the angles in different sorts of triangle.	3			
	• calculate the sum of the interior angles in a polygon.	5			
	• calculate the exterior angles and the interior angles of a regular polygon (including tiling problems)	5			
	• calculate angles in parallel lines.	4			
	• use angle properties in quadrilaterals.	3			
	• use a bearing to specify a direction.	3			
Linear graphs	• work out the equations of horizontal and vertical lines.	3			
	• To recognise and draw the graph of a linear equation using table of values / using a calculator	5			
	• work out the gradient of a straight line	5			
	• To identify and interpret the gradient / y-intercept from a linear equation	4			
	• To draw linear graphs using the gradient and the y-intercept	5			
	• work out the equation of a line given two points on the line.	5			
	• work out the equation of a linear graph that is parallel to another line	5			
Linear Equations / Inequalities	Solve two step equations	4			
	Solve equations where the variable appears on both sides of the equals sign.	4			
	Set up equations from given information and then solve them.	5			
	• find approximate solutions using a graph				
	• use a number line to represent negative numbers	2			
	• compare and order positive and negative numbers.	2			
	• Solve a simple linear inequality and represent it on a number line.	4			
	Change the subject of a simple formula.	5			
Simultaneous Equations	• solve simultaneous linear equations using the elimination or the substitution method / graphical method	5			
	• solve problems using simultaneous linear equations.	5			

HT3					
Chapters	Learning Objectives:	Grade	R	A	G
Algebra: Expressions and equations	• write an algebraic expression using perimeter, area and volume of shapes	5			
	• expand and simplify brackets such as $2(5x + 3) - 6(x - 5)$	4			
	• factorise an algebraic expression.	4			
	• expand two linear brackets to obtain a quadratic expression.	4			
	• factorise a quadratic expression of the form $x^2 + bx + c$ into two linear brackets.	5			
	• Solve a quadratic expression of the form $x^2 + bx + c$ by factorising	5			
	• find approximate solutions using a graph				
Powers and standard form	• write a number as a power of another number	3			
	• use rules for multiplying and dividing powers	4			
	• multiply and divide numbers by powers of 10.	4			
	• write a number in standard form (including writing mass of atoms,distance between planets - review)	4			
	• comparing numbers in standard form.	5			
	• To multiply and divide numbers in standard form	5			
	• Estimate powers and roots of any given positive number.	4			
Perimeter, area and volume	• calculate the perimeter and area of a compound shapes	3			
	• calculate the area of a triangle/ parallelogram / trapezium	3/4			
	• calculate the circumference of a circle (fencing problems)	4			
	• calculate the area of a circle (cost of a cicular items)	4			
	• calculate the surface area and volume of a cuboid.	4			
	• calculate the volume and surface area of a prism.	5			
	• calculate the volume and surface area of a cylinder (the cost of wrapping paper)	5			
	• calculate the length of an arc	5			
	• calculate the area and angle of a sector.	5			
	• calculate the surface area and volume of spheres, pyramids, cones and composite solids				

HT4					
Chapters	Learning Objectives:	Grade	R	A	G
Sequences	• recognise patterns in number sequences.	2			
	• generate sequences, given the n th term.	3			
	• find the n th term of a linear sequence.	4			
	• recognise and continue some special number sequences	3			
	• understand how prime, odd and even numbers interact in addition, subtraction and multiplication problems.	3			
	• recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences				
	• recognise simple geometric progressions				
Approximations	• multiply and divide with decimals.	3			
	• round a whole number.	2			
	• round decimal numbers to a given accuracy.	2			
	• identify significant figures	2			
	• round numbers to a given number of significant figures	3			
	• use approximation to estimate answers and check calculations including money problems	4			
	• use inequality notation to specify simple error intervals due to truncation or rounding				
	• apply and interpret limits of accuracy including upper and lower bound				
Probability	• use the probability scale and the language of probability	3			
	• calculate the probability of an outcome of an event.	3			
	• calculate the probability of an outcome not happening when you know the probability of that outcome happening.	4			
	• recognise mutually exclusive and exhaustive outcomes.	4			
	• calculate experimental probabilities and relative frequencies from experiments	3			
	• predict the likely number of successful outcomes, given the number of trials and the probability of any one outcome.	4			
	• apply systematic listing and counting strategies to identify all outcomes for a variety of problems.	4			
	• work out the probabilities when two or more events occur at the same time.	4			

Probability: Combined events	• read two-way tables and use them to work out probabilities.	4		
	• use Venn diagrams to solve simple probability questions.	5		
	• understand frequency tree diagrams and probability tree diagrams	4		
	• use probability tree diagrams to work out the probabilities involved in combined events.	5		
AP4				

HT5					
Chapters	Learning Objectives:	Grade	R	A	G
Ratio and proportion	• simplify a ratio	3			
	• express a ratio as a fraction	3			
	• divide amounts into given ratios	4			
	• solve problems involving ratios.	5			
	• convert between currencies and measures.	4			
	• use compound units such as speed, rates of pay, unit pricing, density and pressure	5			
	• use the unitary method to find which product is better value.	3			
	• solve problems involving direct and inverse proportion, including graphical and algebraic representations (decorating)	5			
	• interpret the gradient of a straight line graph as a rate of change				
Distance–time graphs	• interpret distance-time graphs	4			
Velocity–time graph	• read information from a velocity-time graph	5			
Non -Linear Graphs	• To plot quadratic / cubic / reciprocal graphs	4			
	• To solve simple quadratic / cubic equations by drawing graphs	5			
	• To identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically				
Constructions and loci	• read, use and draw scale drawing and make estimates.	3			
	• draw nets of some 3D shapes / identify a 3D shape from its net.	3			
	• read from and draw on isometric grids	4			
	• interpret diagrams to draw plans and elevations.	5			
	• To construct triangles accurately (ASA, SSS, SAS,RHS)	5			
	• construct the bisectors of lines and angles	5			
	• construct angles of 60° and 90°.	5			
	• draw a locus for a given rule.	5			
AP5					

HT6					
Chapters	Learning Objectives:	Grade	R	A	G
Pythagoras' theorem.	• Calculate the length of the hypotenuse or the shorter in a right-angled triangle.	5			
	• Solve problems using Pythagoras' theorem.	5			
Trigonometry in 2D	• Use the three trigonometric ratios to find the missing length or angle	5			
	• know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90° ; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60°	5			
	• solve practical problems using trigonometry	5			
	• solve problems using an angle of elevation or an angle of depression.	5			
	• solve bearing problems using trigonometry.	5			
Percentages	• calculate a percentage of a quantity	3			
	• increase and decrease quantities by a percentage.	4			
	• express one quantity as a percentage of another	3			
	• work out percentage change.	4			
	• recognise and solve problems involving the compound measures of rates of pay, density and pressure.	5			
	• calculate simple interest	3			
	• calculate compound interest	4			
	• solve problems involving repeated percentage change.	4			
	• calculate the original amount, given the final amount, after a known percentage increase or decrease.	5			
Transformations	• translate a 2D shape.	3			
	• reflect a 2D shape in a mirror line.	3			
	• rotate a 2D shape about a point.	3			
	• enlarge a 2D shape by a scale factor.	3			
	• To understand how to enlarge a shape <u>using the centre of enlargement (including fractional scale factors)</u>	5			
	• use more than one transformation.	5			
Similar Shapes	• Work out the scale factor between similar shapes	4			

Y10 Higher SOW

HT1					
Chapters	Learning Objectives:	Grade	R	A	G
Cumulative frequency and box plots	Draw and interpret frequency polygons.	5			
	Draw and interpret cumulative frequency graphs.	6			
	Draw and interpret box plots.	6			
Histograms	Draw and interpret histograms where the bars are of equal width.	6			
	Draw and interpret histograms where the bars are of unequal width.	7			
	Calculate the median, quartiles and interquartile range from a histogram.	7			
Negative / fractional Indices	Apply the rules of powers to negative indices	5			
	Apply the rules of powers to fractional Indices	7			
Recurring decimals.	Recognise rational numbers, terminating decimals and recurring decimals.	5			
	Find reciprocals of numbers or fractions.	5			
	Convert between fractions and recurring decimals.	7			
Surds	How to estimate powers and roots of any given positive number.	4			
	Simplify and manipulate surds	5			
	Rationalise the denominator.	7			
AP1					

HT2

Chapters	Learning Objectives:	Grade	R	A	G
Vector geometry	calculate the resultant of two vectors	5			
	Use the resultant of two vectors to solve vector problems.	8			
	Apply vector methods for simple geometrical proofs	7			
Circle theorems	Solve problems involving chords and radii.	7			
	Give reasons for angle and length calculations involving tangents.	7			
	Understand and use facts about angles subtended at the centre and the circumference of circles.	7			
	Understand and use facts about the angle in a semicircle being a right angle.	7			
	Understand and use facts about angles subtended at the circumference of a circle.	7			
	Understand and use facts about cyclic quadrilaterals.	7			
	Understand and use alternate segment theorem.	7			
	Prove circle theorems	8-9			
Linear graphs	work out the equation of a linear graph that is parallel to another line and passes through a specific point.	6			
	<u>work out the equation of perpendicular lines</u>	7			
	<u>Find the equation of a tangent to a circle.</u>	8-9			
Inequalities and regions	Solve a simple linear inequality and represent it on a number line.	4			
	Find regions that satisfy more than one graphical inequality.	7			

AP2

HT3

Chapters	Learning Objectives:	Grade	R	A	G
Factorising quadratics	Factorise a quadratic expression of the form $x^2 + bx + c$ into two linear brackets (Revision)	5			
	Factorise a quadratic expression of the form $ax^2 + bx + c$ into two linear brackets where $a \neq 0$ (Revision)	6			
Solving quadratic equations	Solve quadratic equations by factorisation.	5			
	Solve a quadratic equation by using the quadratic formula.	7			
	<u>Solve a quadratic equation by completing the square.</u>	8-9			
	Identify the roots of a quadratic function by solving a quadratic equation.	7			
	<u>Identify the turning point of a quadratic function by using symmetry or completing the square.</u>	8-9			
	Identify the significant points of a quadratic function graphically.	7			
Algebraic fractions	Solve problems involving quadratics	7			
	Simplify algebraic fractions	7			
	<u>Solve equations containing algebraic fractions.</u>	8-9			
Iteration	Find an approximate solution for an equation using the process of iteration (problems including financial modelling)	8-9			

AP3

HT4					
Chapters	Learning Objectives:	Grade	R	A	G
Quadratic Sequences	Find the n th term of a linear sequence.	4			
	Generate the terms of a quadratic sequence from the n th term.	4			
	Work out the n th term of a quadratic sequence.	8-9			
Approximation and bounds	Estimate before calculating and round a calculation to give a reasonable answer including money problems	4			
	use inequality notation to specify simple error intervals due to truncation or rounding				
	apply and interpret limits of accuracy including upper and lower bound/Truncation	6			
	Combine limits of two or more variables together to solve problems.	7			
Probability	Work out the probability of different outcomes of combined events.	5			
	Work out the probability of two outcomes or events occurring at the same time.	5			
	Use tree diagrams to work out the probability of combined events.	5			
	Use the connectors 'and' and 'or' to work out the probabilities for combined events.	5			
	Work out the probability of combined events when the probabilities change after each event.	6			
	Use Venn diagrams to solve probability questions.	6			
	Work out the number of choices, arrangements or outcomes when choosing from lists or sets.	6			
Sampling	Understand sampling.	5			
	Collect unbiased reliable data for a sample.	6			

AP4

HT5

Chapters	Learning Objectives:	Grade	R	A	G
Direct / Inverse proportion	Write and use equations to solve problems involving direct proportion. Including problems involving square and cubic proportionality	7			
	Write and use equations to solve problems involving inverse proportion, including problems involving square, cubic proportionality (decorating)	7			
	Use and recognise graphs showing direct/ inverse proportion.	5			
Velocity/ Distance–time graph	Interpret distance–time graphs	4			
	Read information from a velocity–time graph.	5			
	Work out the distance travelled from a velocity–time graph.	6			
	Work out the acceleration from a velocity–time graph.	6			
Estimating area under a curve	Use areas of rectangles, triangles and trapeziums to estimate the area under a curve.	8-9			
	Interpret the meaning of the area under a curve.	8-9			
Rates of change	Draw a tangent at a point on a curve and use it to work out the gradient at a point on a curve.	7			
	Interpret the gradient at a point on a curve	7			

AP5

HT6

Chapters	Learning Objectives:	Grade	R	A	G
simultaneous equations (one non-linear)	Solve a pair of simultaneous equations where one is linear and one is non-linear, graphically and algebraically including equations of circles	8-9			
Geometric Progression	To be able to work out the nth term of a Geometric Progression	8-9			
Functions	Find the output of a function.	8-9			
	Find the inverse function.	8-9			
	Find the composite of two functions.	8-9			
	Estimate the answer to an equations that does not have an exact solution using trial and improvement.	7			
Trigonometry in non- right angled triangles	Use trigonometric ratios and Pythagoras' theorem to solve more complex three-dimensional problems.	8-9			
	Use the sine rule and the cosine rule to find sides and angles in any triangle.	7			
	Work out the area of a triangle if you know two sides and the included angle.	7			
Proofs	Prove a result using algebra.	8-9			
End of year exam					