




Term 1

Strand	Unit	Topic	Objectives	
Algebra and Functions	Variations	<ul style="list-style-type: none"> Direct Variation Inverse Variation 	<ul style="list-style-type: none"> express direct and inverse variation in algebraic terms use this form of expression to find the unknown quantities [Includes linear, square, square root and cubic variation (direct and inverse). e.g. y is inversely proportional to the square of x. Given that $y = 2$ when $x = 6$, find the value of y when $x = 2$] 	1
Algebra and Functions	<ul style="list-style-type: none"> Algebraic representation and formulae Algebraic manipulation 		<ul style="list-style-type: none"> Factorise and simplify rational expressions e.g. — construct and transform formulae and equations e.g. transform formulae where the subject appears twice or where a power of the subject appears e.g. construct equations from numerical and geometrical problems find the value of an unknown quantity in a formula factorise and simplify rational expressions simplify fractional indices understand and use the rules of indices manipulate algebraic fractions 	2
	Indices	<ul style="list-style-type: none"> Rules of Indices Different types of indices 	<ul style="list-style-type: none"> Understand and use the rules of indices e.g. work out $2^{-3} \times 2^4$ simplify $3x^{-4} \times \frac{2}{3}x^{\frac{1}{2}}, \frac{2}{5}x^{\frac{1}{2}} \div 2x^{-2}$ and $\left(\frac{2x^5}{3}\right)^3$ Use and interpret positive, negatives, fractional and zero indices e.g. $5^{\frac{1}{2}} = \sqrt{5}$ 	1

			<p>evaluate $2^5, 4^0, 5^{-2}, 100^{\frac{1}{2}}, 8^{\frac{-2}{3}}$ solve $32^x = 2$</p>
Geometry and Measurements	Pythagoras Theorem	Pythagoras theorem	<ul style="list-style-type: none"> • apply Pythagoras' theorem to calculate a side of a right-angled triangle • solve problems involving Pythagoras theorem
	Trigonometric Ratios	<ul style="list-style-type: none"> • Trigonometric Ratios • Apply the sine, cosine and tangent ratios for acute angles to calculate: <ul style="list-style-type: none"> ○ an angle ○ a sides of a right angle triangle • Practical application of trigonometry 	<ul style="list-style-type: none"> • apply the sine, cosine and tangent ratios for acute angles to calculate a side or an angle of a right-angled triangle • solve word problems in two dimensions involving angles of elevation and depression
Geometry and Measurements	Mensuration (A)	<p>Length of arc and area of Sector</p> <ul style="list-style-type: none"> • area and circumference of a circle • area and perimeter of shaded regions • arc length • area of sector • word problems 	<ul style="list-style-type: none"> • find the area and circumference of a circle • calculate the area and perimeter of the shaded regions in the given diagrams • calculate arc length • compute area of a sector • solve word problems by drawing sector to compute its radius, arc length, angle, area and perimeter
	Mensuration (B)	<p>Volume and surface area of:</p> <ul style="list-style-type: none"> • a pyramid • a cone • a sphere • compound shapes 	<ul style="list-style-type: none"> • calculate the volume and surface area of : <ul style="list-style-type: none"> ○ a pyramid, ○ a solid cone/hollow cone / right circular cone ○ a sphere/ hemisphere/hollow hemisphere/ solid hemisphere ○ a hemisphere <p><i>(Before moving on to the above mentioned shapes/figures a teacher must recall the volume and surface area of prisms and cylinders.)</i></p> • find slant height of a pyramid/ cone using Pythagoras' theorem

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|  | | | <ul style="list-style-type: none">• use volume of pyramid to find its height or sides of its base• calculate the volume and surface area of a composite solids• interpret and solve word problems involving volume and surface area of compound shapes• use and interpret nets [e.g. net of a prism] |
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Total number of weeks

1

Strand	Unit	Topic	Objectives
Number Theory and Arithmetic	Personal and small business finance	<ul style="list-style-type: none"> • Percentages • Discount • Profit and loss • Taxation • Personal and Household finance • Simple interest • Compound interest • Hire purchase • Commission • Money 	<ul style="list-style-type: none"> • solve problems involving percentages. Includes discount, and profit and loss (as an amount or a percentage). Percentages: <ul style="list-style-type: none"> ○ Calculate the given percentage of a quantity ○ Express one quantity as a percentage of another ○ Calculate percentage increase or decrease ○ Carry out calculations involving reverse percentages • solve problems involving taxation • use given data to solve problems on personal and small business finance involving earnings, simple interest and compound interest. Knowledge of compound interest formula given below is required: $\text{Value of investment} = P \left[1 + \frac{r}{100} \right]^n$ <i>Where P is the amount invested, r is the percentage rate of interest and n is the number of years of compound interest.</i> • extract data from tables and charts • solve problems involving hire purchase • use different problem solving strategies to solve everyday life problems • solve problems involving money and convert one currency to another
Algebra and Functions	Solutions of equations and inequalities	Solution to quadratic equations <ul style="list-style-type: none"> • Factorisation • Completing the square • Using the quadratic formula • Problems involving quadratic equations 	<ul style="list-style-type: none"> • solve quadratic equations using <ul style="list-style-type: none"> ○ factorisation method ○ completing square method ○ the quadratic formula • interpret and solve word problems that can be reduced to quadratic equations

		Linear inequalities in one variable	<ul style="list-style-type: none"> • solve simple linear inequalities in one variable • represent the answers using number line
Algebra and Functions	Coordinate geometry	<ul style="list-style-type: none"> • Length of segment • Mid-point • Gradient of a straight line • Equation of a straight line • Equation of parallel lines • Gradient of parallel and perpendicular lines 	<ul style="list-style-type: none"> • demonstrate familiarity with Cartesian coordinates in two dimensions • find the gradient of a straight line • calculate the gradient of a straight line from the coordinates of two points on it • calculate the length and the coordinates of the midpoint of a line segment from the coordinates of its end points • Interpret and obtain the equation of a straight line graph in the form $y = mx + c$ • determine the equation of a straight line parallel to a given line <i>e.g. find the equation of a line parallel to $y = 4x - 1$ that passes through $(0, -3)$</i> • find the gradient of parallel and perpendicular lines <i>e.g. find the gradient of a line perpendicular to $y = 3x + 1$</i> <i>e.g. find the equation of a line perpendicular to one passing through the coordinates $(1, 3)$ and $(-2, -9)$</i>
Geometry and Measurements	Symmetry	Plane and rotational Symmetry, planes of symmetry, axes of rotational symmetry, order of rotational symmetry	<ul style="list-style-type: none"> • draw/state the number of lines/planes of symmetry • draw/state the number of axes of rotational symmetry • recognize rotational and line symmetry (including order of rotational symmetry) in two dimensions. Includes properties of triangles, quadrilaterals and circles directly related to their symmetries.
	Similarity and Congruence	<ul style="list-style-type: none"> • Congruent and similar triangles • Similarity tests • Area and volume of similar figures and solids 	<ul style="list-style-type: none"> • solve problems and give simple explanations involving similarity and congruence <i>[Includes showing that two triangles are similar or showing that two triangles are congruent (using correct congruence condition SSS, SAS, ASA, RHS)]</i> • calculate lengths of similar figures • use the relationships between areas of similar triangles,

			with corresponding results for similar figures, and extension to volumes and surface areas of similar solids. (Includes use of scale factor)	
	Geometrical constructions	Scale drawings	<ul style="list-style-type: none"> • Read and make scale drawings 	1
Probability and Statistics	Statistics	<ul style="list-style-type: none"> • Categorical • Numerical and • Grouped data 	<ul style="list-style-type: none"> • collect, classify and tabulate statistical data • read, interpret and draw simple inferences from tables and statistical diagrams • calculate the mean, median, mode and range for individual and discrete data and distinguish between the purposes for which they are used • calculate an estimate of the mean for grouped and continuous data • identify the modal class from a grouped frequency distribution 	1
	Statistical diagrams	<ul style="list-style-type: none"> • Frequency Polygon • histograms with equal and unequal intervals • scatter diagrams 	<ul style="list-style-type: none"> • construct and interpret bar charts, pie charts, pictograms, simple frequency distributions, frequency polygons, histograms with equal and unequal intervals and scatter diagrams <i>For unequal intervals on histograms, areas are proportional to frequencies and the vertical axis is labelled 'Frequency density'.</i> • construct and use cumulative frequency diagrams • estimate and interpret the median, percentiles, quartiles and interquartile range for cumulative frequency diagrams • calculate the frequency density • understand what is meant by positive, negative and zero correlation with reference to a scatter diagram • draw a straight line of best fit by eye 	2
Total number of weeks				17