

YEAR 9		Autumn 2019		Higher	
DATE	UNIT / LESSON	PREREQ KNOWLEDGE	GRADE Points	GRADE	OBJECTIVES
	1 Number	Use a firm grasp of place value and be able to order integers and decimals and use the four operations. Know integer complements to 10 and to 100, multiplication facts to 10 x 10, strategies for multiplication and division to 10, 100 and 1000. Use mental methods for addition, subtraction, multiplication and division. Use mental methods for addition, subtraction, multiplication and division. Use mental methods for addition, subtraction, multiplication and division.	3	3	
04/09/2019	1.1 Number problems and reasoning	Multiply numbers in a written format to questions later in the section. Use number lines to solve problems.	3	6	Work out the total number of ways of performing a series of tasks.
06/09/2019	1.2 Place value and estimating	Estimate the value of a square root. Round numbers to a specified degree of accuracy.	3	4	Estimate an answer. Use place value to answer questions.
16/09/2019	1.3 HCF and LCM	Apply the four operations. Multiply prime factors together. List the factors of a number.	4	5	Write a number as the product of its prime factors. Find the HCF and LCM of two numbers.
23/09/2019	1.4 Calculating with powers (indices)	Work out simple powers. Apply the four operations.	3	5	Use powers and roots in calculations. Multiply and divide using index laws. Work out a power raised to a power. Use negative indices.
30/09/2019	1.5 Zero, negative and fractional indices	Convert between fractions and decimals. Use the laws of indices for positive indices. Multiply by powers of 10 when the number is written as an ordinary number and not as an index. Review different ways to divide by 10. Use negative indices.	5	9	Use fractional indices. Write a number in standard form. Calculate with numbers in standard form.
07/10/2019	1.6 Powers of 10 and standard form	Multiply by powers of 10 when the number is written as an ordinary number and not as an index. Review different ways to divide by 10. Use negative indices.	4	6	Calculate with numbers in standard form.
14/10/2019	1.7 Surds	Understand the meaning of the surd in the recurring notation. Use the meaning of the surd to simplify the skills of searching for a perfect square factor.	7	8	Understand the difference between rational and irrational numbers. Simplify a surd. Rationalise a denominator.
HAF YEAR	2 Algebra	Use negative numbers with the four operations and recall and use hierarchy of operations and understand order of operations. Use a calculator for decimals and negative numbers. Use index laws numerically. Use and interpret algebraic notation. Set up and solve simple equations. Recall the definitions of geometric and arithmetic sequences. Use index laws numerically. Use and interpret algebraic notation. Set up and solve simple equations.	3	7	
28/10/2019	2.1 Algebraic indices	Recognise that squaring and taking the square root, and cubing and taking the cube root, are inverse operations. Recall the definitions of geometric and arithmetic sequences. Multiply a single term over a bracket. Find highest common factors.	4	7	Use the rules of indices to simplify algebraic expressions. Factorise algebraic expressions.
04/11/2019	2.2 Expanding and factorising	Simplify algebraic terms, including using index notation. Multiply a single term over a bracket. Find highest common factors.	3	7	Expand brackets. Factorise algebraic expressions.
11/11/2019	2.3 Equations	Solve a simple equation expressed in words. Solve linear equations. Find lowest common multiples.	3	6	Solve equations involving brackets and numerical fractions. Use equations to solve problems.
18/11/2019	2.4 Formulae	Substitute values into a one-step formula. Write numbers in standard form.	3	6	Substitute numbers into formulae. Rearrange formulae. Distinguish between expressions, equations, formulae and identities.
25/11/2019	2.5 Linear sequences	Find the next term in a given arithmetic sequence. Substitute values in a simple linear expression. Write the equation given the nth term. Use a function machine to find outputs.	3	5	Find a general formula for the nth term of an arithmetic sequence. Determine whether a particular number is a term of a given arithmetic sequence.
02/12/2019	2.6 Non-linear sequences	Find the next term in a given quadratic sequence. Identify arithmetic and geometric sequences. Find the term-to-term rule for a sequence.	3	6	Solve problems using geometric sequences. Work out terms in Fibonacci-like sequences. Find the nth term of a quadratic sequence.
09/12/2019	TEST				
16/12/2019	2.7 More expanding and factorising	Recalling a square root. Finding the factor pairs of small integers.	4	7	Expand the product of two brackets. Use the difference of two squares. Factorise quadratics of the form $x^2 + bx + c$.
END OF TERM 1 TEST					
	3 Interpreting and representing data	Read scales on graphs, draw circles, measure angles and plot coordinates in the first quadrant. Use frequency tables. Use inequality notation. Find the range, mode and median of a data set. Find the range, mode, median and mean of a data set.	2	5	
06/01/2020	3.1 Statistical diagrams 1	Work out mode, median and range from a list of numbers. Identify trends by noticing whether sequences of numbers increase, decrease or oscillate.	2	4	Construct and use back-to-back stem and leaf diagrams. Construct and use frequency polygons and pie charts.
	3.2 Time series	Identify trends by noticing whether sequences of numbers increase, decrease or oscillate.	3	3	Plot and interpret time series graphs.
13/01/2020	3.3 Scatter graphs	Recognise when a line has a positive, negative or zero gradient. Plot points on a coordinate grid, and identify points that do not lie on a straight line. Understand and be able to derive the meaning of correlation.	3	4	Use trends to predict what might happen in the future. Use lines to interpret scatter graphs. Determine whether or not there is a linear relationship between two variables. Draw a line of best fit on a scatter graph. Use the line of best fit to predict values.
20/01/2020	3.5 Averages and range	Find the range of a list of numbers. Find the range of two numbers.	3	5	Decide which average to use for a set of data. Calculate the mean and range from a grouped frequency table. Find the modal class and the group containing the median.
27/01/2020	3.6 Statistical diagrams 2	Use subtraction to find missing values. Draw a bar chart. Draw a pie chart.	3	3	Construct and use bar charts. Choose appropriate diagrams to display data. Recognise misleading graphs.
	4 Fractions, ratio and percentages	Know the four operations of number. Find common factors. Have a basic understanding of fractions as being 'parts of a whole'. Understand that percentages are more accurate in calculations than rounded percentages or decimal equivalents. Recall the properties of special types of triangles and quadrilaterals.	3	7	
03/02/2020	4.1 Fractions	Identify unit fractions, improper fractions and mixed numbers. Multiply a whole number by a fraction. Know the priority of operations.	3	5	Add, subtract, multiply and divide fractions and mixed numbers. Find the reciprocal of an integer, decimal or fraction.
	4.2 Ratios	Multiply a fraction by its reciprocal for a product of 1. Simplify ratios. Write ratios in the form n : 1.	3	4	Write ratios in the form 1 : n or n : 1. Simplify ratios. Find quantities using ratios.
10/02/2020	4.3 Ratio and proportion	Write one number as a proportion of the total. Identify equivalent ratios.	3	5	Solve problems involving ratios. Convert between context and measures. Recognise and use direct proportion. Solve problems involving ratios and proportion.
	4.4 Percentages	Find a percentage of a given amount. Work out percentage multipliers.	3	6	Work out percentage increases and decreases. Solve real-life problems involving percentages.
	4.5 Fractions, decimals and percentages	Convert between fractions, decimals and percentages. Solve simple equations.	3	7	Work out percentage increases and decreases. Solve real-life problems involving percentages.
HAF YEAR	5 Angles and trigonometry	Rearrange simple formulae and equations, as appropriate to rearrange the formulae. Understand that fractions are more accurate in calculations than rounded percentages or decimal equivalents. Recall the properties of special types of triangles and quadrilaterals.	3	6	
24/02/2020	5.1 Angle properties of triangles and quadrilaterals	Recognise special types of triangle and quadrilateral. Recall basic angle facts.	3	3	Derive and use the sum of angles in a triangle and in a quadrilateral. Derive and use the fact that the exterior angle of a triangle is equal to the sum of the two opposite interior angles.
	5.2 Interior angles of a polygon	Name polygons and understand the meaning of 'regular polygons'. Substitute numbers into an expression. Find missing angles in triangles, quadrilaterals and at a point.	3	4	Calculate the interior angles of a polygon. Use the interior angles of polygons to solve problems.
	5.3 Exterior angles of a polygon	Find missing angles on a straight line. Calculate the sum of interior angles of a polygon.	3	5	Show the sum of the exterior angles of a polygon. Use the angles of polygons to solve problems.
02/03/2020	5.4 Pythagoras' Theorem 1	Recognise right-angled and square roots. Find the area of a square.	4	4	Calculate the length of the hypotenuse of a right-angled triangle. Solve problems using Pythagoras' theorem.
09/03/2020	5.4 Pythagoras' Theorem 1	Find square roots. Recognise perfect squares. Use Pythagoras' theorem to find the length of the hypotenuse.	5	5	Calculate the length of a shorter side in a right-angled triangle. Solve problems using Pythagoras' theorem.
16/03/2020	5.6 Trigonometry 1	Convert fractions to decimals. Identify the hypotenuse. Use the angle sum of a triangle to work out missing angles.	3	6	Use trigonometric ratios to find lengths in a right-angled triangle. Use trigonometric ratios to solve problems.
23/03/2020	5.7 Trigonometry 2	Identify the opposite and adjacent sides of a given angle in a right-angled triangle. Use the trigonometric ratios to find lengths in right-angled triangles.	3	6	Use trigonometric ratios to calculate an angle in a right-angled triangle. Find angles of elevation and angles of depression. Use trigonometric ratios to solve problems. Know the exact values of the sine, cosine and tangent of some angles.
END OF TERM 2 TEST					
	6 Graphs	Identify coordinates of given points in the first quadrant or all four quadrants. Write the equation for a straight line graph. Use and draw coordinate graphs. Use function machines and inverse operations. Use consistent units, such as speed.	3	7	
15/04/2020	6.1 Linear graphs	Identify positive and negative gradients and intercepts from graphs. Rearrange equations.	3	5	Find the gradient and y-intercept from a linear equation. Rearrange an equation into the form $y = mx + c$. Compare two graphs from their equations. Plot graphs with equations $ax + by = c$. Sketch graphs using the gradient and intercepts.
	6.2 More linear graphs	Identify lines with the same gradient or a intercept from their equations. Write the equation of a line from a graph.	4	5	Find the equation of a line, given its gradient and one point on the line. Find the gradient of the straight line points.
20/04/2020	6.3 Graphing rates of change	Find speed from given distance and time. Find the area of triangles and rectangles.	3	7	Draw and interpret distance-time graphs. Calculate average speed from a distance-time graph. Interpret velocity-time graphs. Find acceleration and distance from velocity-time graphs.
	6.4 Real-life graphs	Write the equation of a line from a real-life graph. Plot a graph using values given in a table.	3	5	Draw and interpret real-life graphs. Recognise direct proportion. Draw and use a line of best fit.
	6.5 Line segments	Identify parallel and perpendicular lines. Understand the properties of parallel lines.	3	7	Find the coordinates of the midpoint of a line segment. Find the gradient and length of a line segment. Find the equations of lines parallel or perpendicular to a given line.
27/04/2020	6.6 Quadratic graphs	Identify quadratic expressions. Draw the equation of a line from a graph.	4	7	Draw quadratic graphs. Solve quadratic equations using graphs. Identify the line of symmetry of a quadratic graph. Interpret quadratic graphs relating to real-life situations.
04/05/2020	6.7 Cubic and reciprocal graphs	Know the shape of linear and quadratic graphs. Identify the shape of cubic and reciprocal graphs.	5	7	Draw graphs of cubic functions. Solve cubic equations using graphs. Draw graphs of reciprocal functions. Recognise a graph from its shape.
	6.8 More graphs	Match the shape of a container to the graph of depth of water against time. Read values from graphs.	4	6	Interpret linear and non-linear real-life graphs. Draw the graph of a circle.
	7 Area and volume	Know the names and properties of 3D shapes. Know the concept of perimeter and area by measuring lengths of sides. Substitute numbers into an equation and give answers to an appropriate degree of accuracy. Draw the nets of solids. Identify planes of symmetry of 3D solids. Sketch a net of a 3D shape. Work out the volume of a 3D solid made of cubes. Recall Pythagoras' theorem.	3	9	
11/05/2020	7.1 Perimeter and area	Recognise units of length (perimeter) and area. Work out the area and perimeter of rectangles, triangles and quadrilaterals.	3	3	Find the perimeter and area of compound shapes. Recall and use the formulae for the area of a trapezium.
	7.2 Units and accuracy	Recall the formulae for the area of quadrilaterals and triangles. Identify the possible error when a measurement is rounded to a specified degree of accuracy. Work out percentages of quantities.	3	7	Convert between metric units of area. Calculate the maximum and minimum possible value of a measurement.
18/05/2020	7.3 Prisms	Calculate the volume and surface area of a cuboid. Calculate the volume of a shape made from cuboids.	4	6	Convert between metric units of volume. Calculate volumes and surface areas of prisms.
HAF YEAR	7.4 Circles	Understand 'radius' and 'diameter'. Solve and rearrange simple equations. Work out fractions of a circle given the angle of a sector. Simplify equations.	3	5	Calculate the area and circumference of a circle. Calculate area and circumference in terms of π . Calculate the perimeter and area of sectors and quarter circles. Calculate arc lengths, angles and areas of sectors of circles.
08/06/2020	7.6 Cylinders and spheres	Find the area and circumference of a circle in terms of π . Sketch a net of a cylinder. Solve simple equations.	4	8	Calculate volume and surface area of a cylinder and a sphere. Solve problems involving volumes and surface areas.
	7.7 Pyramids and cones	Find the volume of a cube. Find the side length of a cube given its volume. Calculate the area of a triangle. Use Pythagoras' theorem to work out the length of the hypotenuse.	3	9	Calculate volume and surface area of pyramids and cones. Solve problems involving pyramids and cones.
	8 Transformations and constructions	Recognise 3D shapes. Plot coordinates in four quadrants and linear equations parallel to the coordinate axes. Convert metric measures. Recognise congruent and similar shapes. Transform shapes using translation, reflection, rotation and enlargement. Draw 3D shapes on the isometric grid. Recognise dimensions of a cuboid.	3	7	
15/06/2020	8.1 3D solids	Draw 3D shapes on the isometric grid. Recognise dimensions of a cuboid.	3	4	Draw plans and elevations of 3D solids. Net a 2D shape in a mirror line.
	8.2 Reflection and rotation	Draw simple shapes on a coordinate grid. Know whether the image is congruent to the original following a reflection or a rotation.	3	4	Reflect a 2D shape in a mirror line. Rotate a 2D shape about a centre of rotation. Describe reflections and rotations.
22/06/2020	8.3 Enlargement	Enlarge shapes on a coordinate grid in one quadrant. Describe translations.	3	7	Enlarge shapes by fractional and negative scale factors about a centre of enlargement. Translate a shape using a vector.
	8.4 Transformations and combinations of transformations	Describe translations. Carry out and describe combinations of transformations.	4	5	Translate a shape using a vector.
29/06/2020	8.5 Bearings and scale drawings	Convert metric measures and apply to scales. Accurate drawing of right-angled triangles.	3	4	Draw and use scales on maps and scale drawings. Solve problems involving bearings.
06/07/2020	8.6 Constructions 1	Accurate drawing of triangles given SAS and ASA. Know the meaning of the terms perpendicular, bisect, etc.	3	4	Construct triangles using a ruler and compasses. Construct the perpendicular bisector of a line. Construct the shortest distance from a point to a line using a ruler and compasses.
	8.7 Constructions 2	Draw angles with a protractor. Construct triangles and deduce information from them.	4	5	Draw angles using a ruler and compasses. Construct angles using a ruler and compasses. Construct shapes made from triangles using a ruler and compasses.
13/07/2020	8.8 Loci	Draw a locus.	4	7	Draw a locus. Use loci to solve problems.
END OF TERM 3 TEST					