

YEAR 9		Autumn 2019		Foundation	
DATE	UNIT / LESSON	SKILL KNOWLEDGE	GRADE	GRADE	OBJECTIVES
	1 Number	Identify the value of digits in a whole number or decimal. Round to the nearest integer, and to a given power. Apply the four operations. Recall all multiplication facts to 10 x 10, and use them to derive quickly the corresponding division facts. Know strategies for multiplying and dividing whole numbers by 2, 3, 4, 5 and 10. Recognise odd and even numbers. Use brackets and the hierarchy of operations (not including powers). Understand and use positive and negative numbers. Interpret scales on thermometers using °F and °C.	1	4	
04/09/2019	1.1 Calculations	Order positive and negative integers and decimals. Use the symbols <, =, >. Find a fraction of a number. Recall square numbers. Understand the commutative property of multiplication.	2	2	Use priority of operations with positive and negative numbers. Simplify calculations by cancelling. Use inverse operations.
09/09/2019	1.2 Decimal numbers	Identify place value. Convert between metric measures.	2	4	Round to a given number of decimal places. Multiply and divide decimal numbers.
16/09/2019	1.3 Place value	Round to the nearest 100, 10 and whole number. Multiply and divide by powers of 10.	1	3	Write decimal numbers of millionths. Round to a given number of significant figures. Estimate answers to calculations. Use one calculation to find the answer to another.
23/09/2019	1.4 Factors and multiples	Understand the meaning of the words prime, factor, multiple and product. List the multiples of a given number.	2	4	Recognise 2, 100 prime numbers. Find factors and multiples of numbers. Find common factors and common multiples of two numbers. List the HCF and LCM of two numbers by listing.
30/09/2019	1.5 Squares, cubes and roots	Understand the meaning of the words prime, factor, multiple and product. Round numbers to a specified degree of accuracy.	2	4	Find square roots and cube roots. Recognise powers of 2, 3, 4 and 5.
07/10/2019	1.6 Index notation	Use simple powers of 10. Convert between metric units. Calculate numeric expressions with powers.	2	4	Understand and calculate on a calculator. Find square roots and cube roots. Recognise powers of 2, 3, 4 and 5. Understand and calculate on a calculator.
14/10/2019	1.7 Prime factors	List the factors of numbers, identify which factors are prime. Evaluate numeric expressions with powers.	4	4	Write a number as the product of its prime factors. Use prime factor decomposition and Venn diagrams to find the HCF and LCM.
HALF TERM					
	2 Algebra	Use the four operations with positive and negative integers. Recall and use the hierarchy of operations. Evaluate numeric expressions involving powers and roots. Multiply and divide numbers with brackets. Find the HCF of two numbers. Simplify simple algebraic expressions.	1	4	
28/10/2019	2.1 Algebraic expressions	Simplify simple algebraic expressions.	2	3	Use correct algebraic notation. Write and simplify expressions.
04/11/2019	2.2 Simplifying expressions	Multiply and divide simple terms. Calculate with positive and negative integers. Use index notation.	2	4	Use the index laws. Multiply and divide expressions.
11/11/2019	2.3 Substitution	Recognise equivalent expressions. Calculate with positive and negative integers. Apply the four operations.	2	4	Substitute numbers into expressions.
18/11/2019	2.4 Formulae	Calculate with negative numbers and terms. Recall square numbers. Substitute into and evaluate expressions. Write simple expressions.	3	4	Recognise the difference between a formula and an expression. Substitute numbers into a simple formula.
25/11/2019	2.5 Expanding brackets	Multiply negative and positive terms. Simplify algebraic expressions. Write simple formulae.	2	4	Expand brackets. Simplify expressions with brackets. Substitute numbers into expressions with brackets and powers.
02/12/2019	2.6 Factoring	Find HCF of number pairs. Multiply a single term over brackets.	3	4	Recognise factors of algebraic terms. Factorise algebraic expressions. Use the identity $(a+b)^2 = a^2 + 2ab + b^2$.
09/12/2019	2.7 Using expressions and formulae	Write simple expressions. Substitute into and evaluate expressions.	3	4	Write expressions and simple formulae to solve problems. Use maths and simple formulae.
END OF TERM 1 TEST					
	3 Graphs, tables and charts	Read scales on graphs and plot coordinates in the first quadrant. Draw circles. Measure and draw angles. Know that there are 360 degrees in a full turn and 180 degrees in a straight line. Interpret and draw graphs. Use and interpret notation. Use correct notation for time using 12 & 24-hour clocks. Find the midpoint of two numbers.	2	4	
06/01/2020	3.1 Frequency tables	Addition of numbers. Counting only symbols and drawing tally charts. Interpret a frequency table, including calculating the total population.	2	3	Organise tables and data collection sheets. Reading data from tables.
	3.2 Two-way tables	Convert between 12 and 24-hour clock times. Calculate with time. Understand use of fractions.	2	3	Use data from tables. Design and use two-way tables.
13/01/2020	3.3 Representing data	Determine what features are missing from a graph. Interpret bar charts.	2	3	Draw and interpret comparative and composite bar charts. Interpret and compare data shown in bar charts, line graphs and histograms.
	3.4 Time series	Write decimal numbers of millionths. Plot a line graph.	2	3	Plot and interpret time series graphs. Use trends to predict what might happen in the future.
20/01/2020	3.5 Stem and leaf diagrams	Draw numbers in order of size.	3	3	Construct and interpret stem and leaf and back-to-back stem and leaf diagrams.
	3.6 Pie charts	Express a part of a circle as a fraction of percentage of the whole. Know the number of degrees in a circle. Draw a circle. Draw a pie chart.	2	4	Draw and interpret pie charts.
27/01/2020	3.7 Scatter graphs	Understand description of value as things age, as well as an understanding of correlation (e.g. direct and inverse). Plot coordinates in the first quadrant.	3	4	Plot and interpret scatter graphs.
	3.8 Line of best fit	Recall definitions of positive, negative and no correlation. Read values from a graph.	3	4	Determine whether or not there is a relationship between sets of data. Draw a line of best fit on a scatter graph. Use the line of best fit to predict values.
	4 Fractions and percentages	Use the four operations of number. Find common factors. Have a basic understanding of fractions as being parts of a whole, and be able to write one value as a fraction of another. Define percentage as 'number of parts per hundred'. Know number complements to 10 and multiplication tables. Convert between common fractions, decimals and percentages.	2	4	
03/02/2020	4.1 Working with fractions	Identify numerator and denominator in fractions. Identify the denominator of a fraction. Find the LCM. Write fractions in their simplest form.	2	3	Compare fractions. Add and subtract fractions. Use fractions to solve problems.
	4.2 Operations with fractions	Convert between units of length. Add and subtract fractions. Convert between mixed numbers and improper fractions.	1	4	Find a fraction of a quantity or measurement. Use fractions to solve problems.
	4.3 Multiplying fractions	Find a fraction of a quantity. Know that $1000 = 1 \text{ kg}$. Know the conversion rate $1 \text{ m} = 100 \text{ cm}$. Know 1 million pounds as a figure.	1	3	Multiply whole numbers, fractions and mixed numbers. Simplify calculations by cancelling.
	4.4 Dividing fractions	Divide larger numbers by smaller numbers. Convert between mixed numbers and improper fractions. Multiply a whole number or a fraction by a fraction.	3	4	Divide whole number by a fraction. Divide a fraction by a whole number or a fraction.
10/02/2020	4.5 Fractions and decimals	Identify the place value of a digit in a decimal number. Convert between common fractions and decimals. Convert between common fractions and decimals.	2	3	Convert fractions to decimals and vice versa. Use decimals to find quantities.
	4.6 Fractions and percentages	Write one value as a fraction of another. Write common fractions and decimals as percentages.	2	3	Convert percentages to fractions and vice versa. Write one number as a fraction of another.
	4.7 Calculating percentages 1	Find percentages of quantities. Convert a fraction to a decimal. Convert a percentage to a fraction.	2	3	Convert percentages to decimals and vice versa. Find a percentage of a quantity. Use percentages to solve problems. Calculate simple interest.
	4.8 Calculating percentages 2	Calculate with percentages. Convert a percentage to a decimal. Find a percentage of a quantity.	2	3	Calculate percentage increase and decrease. Use percentages in real-life situations. Calculate VAT (before asked for).
HALF TERM					
	5 Equations, inequalities and sequences	Use inequality signs between numbers. Use negative numbers with the four operations, recall and use the hierarchy of operations and understand some operations. Deal with decimals and negatives on a calculator. Use index laws numerically. Draw number lines. Write the next terms in a sequence, and find the term to term rule. Use function machines. Multiply a term over brackets. Substitute into and evaluate an expression. Find the output of a function machine when given the input.	2	4	
24/02/2020	5.1 Solving equations 1	Understand the meaning of the term 'linear equation'. Find the output of a function machine when given the input.	1	3	Understand and set linear equations. Rearrange simple linear equations.
	5.2 Solving equations 2	Use all four operations to solve simple, single one-step equations. Work out the outputs of a function machine. Simplify expressions.	2	3	Solve simple linear equations.
02/03/2020	5.3 Solving equations with brackets	Expand a single bracket, involving positive and negative numbers. Simplify expressions.	3	4	Solve linear equations with brackets.
09/03/2020	5.4 Introducing inequalities	Identify numbers that satisfy an inequality. Use the inequality signs between numbers.	2	4	Solve equations with unknowns on both sides. Use correct notation to show inclusive and exclusive inequalities. Solve simple linear inequalities. Write down whole numbers which satisfy an inequality.
	5.5 More inequalities	Use inequality signs between numbers.	3	4	Represent inequalities on a number line. Solve two-step inequalities.
16/03/2020	5.6 More formulae	Identify the inverse of all four operations. Substitute into and evaluate expressions.	2	4	Substitute values into formulae and solve equations. Change the subject of a formulae. Know the difference between an expression, an equation, a formula and an identity. Recognise and extend sequences.
23/03/2020	5.7 Generating sequences	Find the missing numbers in simple arithmetic sequences. Write down missing terms in sequences. Find the term to term rule.	3	4	
	5.8 Using the nth term of a sequence	Substitute into a simple expression. Solve simple equations.			Use the nth term to generate terms of a sequence. Find the nth term of an arithmetic sequence.
END OF TERM 1 TEST					
	6 Angles	Be able to use a ruler and protractor. Have an understanding of angles as a measure of turning. Name angles and distinguish between acute, obtuse, reflex and dead angles. Use angle relationships to solve problems. Use angle relationships to solve problems. Use angle relationships to solve problems. Use angle relationships to solve problems. Use angle relationships to solve problems.	2	5	
15/04/2020	6.1 Properties of shapes	Identify lines of symmetry and rotational symmetry in 2D shapes. Draw angles.	2	3	Solve geometric problems using side and angle properties of quadrilaterals. Identify congruent shapes.
20/04/2020	6.2 Angles in parallel lines	Identify parallel and perpendicular lines. Identify acute and obtuse angles. Know that the angles in a quadrilateral sum to 360°.	3	3	Understand and use the angle properties of parallel lines. Find missing angles using corresponding and alternate angles.
	6.3 Angles in triangles	Identify different types of triangles. Know that the angles in a triangle sum to 180°.	2	3	Solve angle problems in triangles. Understand angle growth about triangles.
27/04/2020	6.4 Exterior and interior angles	Recall the number of sides of different polygons. Know the properties of special triangles and quadrilaterals.	2	4	Calculate the interior and exterior angles of regular polygons.
	6.5 More exterior and interior angles	Recall the number of interior angles in different polygons. Identify exterior and interior angles.	2	5	Calculate the interior and exterior angles of polygons. Explain why some polygons fit together and some others do not.
	6.6 Geometrical patterns	Use angle facts to find missing angles. Write an equation to solve a problem.	3	5	Solve angle problems using equations. Solve geometrical problems involving reasoning.
	7 Averages and range	Calculate the midpoint of two numbers. Draw the statistical diagram in unit 3. Use inequality notation. Calculate the mode, median and range.	1	4	
04/05/2020	7.1 Mean and range	Understand that sharing equally involves dividing total. Identify the mode.	2	3	Calculate the mean from a list and from a frequency table. Compare sets of data using the mean and range.
	7.2 Mode, median and range	Identify the mode. Draw a stem and leaf diagram. Understand inequality notation.	2	3	Find the mode, median and range from a stem and leaf diagram. Identify outliers. Estimate the range from a grouped frequency table.
11/05/2020	7.3 Types of average	Find the mode, median and mean.	1	3	Recognise the advantages and disadvantages of each type of average. Find the modal class. Find the median from a frequency table.
18/05/2020	7.4 Estimating the mean	Calculate the value halfway between pairs of values. Calculate the mean. Read data from a frequency table.	4	4	Estimate the mean of grouped data.
02/06/2020	7.5 Sampling	Understand the use of random numbers in a real life situation.	3	3	Understand the need for sampling. Understand how to avoid bias.
HALF TERM					
	8 Perimeter, area and volume 1	Measure lines. Recall the names of 2D shapes. Identify and name common 3D solids: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres. Use strategies for multiplying and dividing by powers of 10. Round numbers to a specified degree of accuracy. Use the area of rectangles to find the area of a shape. Use the area of rectangles to find the area of a shape. Use the area of rectangles to find the area of a shape.	2	5	
08/06/2020	8.1 Rectangles, parallelograms and triangles	Understand the meaning of 'perpendicular'. Work out the perimeter and area of triangles and rectangles.	3	3	Calculate the perimeter and area of rectangles, parallelograms and triangles. Estimate lengths, areas and costs. Calculate a missing length, given the area.
15/06/2020	8.2 Trapezia and changing units	Multiplying and dividing by powers of 10. Convert between metric measures, centimetres and metres.	3	3	Calculate the area and perimeter of trapezium. Find the height of a trapezium given its area. Convert between metric measures.
22/06/2020	8.3 Area of compound shapes	Know that $1 \text{ km} = 1000 \text{ m}$. Multiply and divide by powers of 10. Convert between metric measures of area.	3	3	Calculate the perimeter and area of shapes made from triangles and rectangles. Calculate areas in hectares, and convert between m^2 and ha .
29/06/2020	8.4 Surface area of 3D solids	Calculate the surface area of a cuboid. Calculate the surface area of a prism.	3	4	Calculate the surface area of a cuboid. Calculate the surface area of a prism.
06/07/2020	8.5 Volume of prisms	Identify prisms and other solids. Calculate the volume of a prism. Calculate the volume of a prism.	2	4	Calculate the volume of a cuboid. Calculate the volume of a prism.
13/07/2020	8.6 More volume and surface area	Multiply and divide by large powers of 10. Know that $1 \text{ km} = 1000 \text{ m}$. Work out the volume and surface area of a prism.	3	5	Solve problems involving surface area and volume. Convert between measures of volume.
END OF TERM 1 TEST					