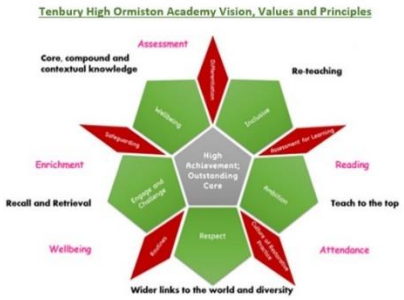
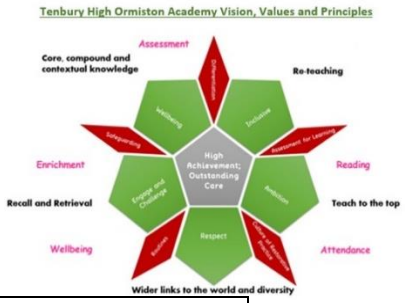
TENBURY HIGH
ORMISTON ACADEMY



Curriculum Overview for Mathematics
Year 10

Half Term 3: Circles (HIGHER) **Declarative Knowledge:** • Name and parts of a circle • Identify the properties of a circle **Procedural Knowledge:** • Calculate the circumference of a circle in terms of pi • Calculate the circumference of a circle as rounded • Calculate the area of a circle in terms of pi • Calculate the area of a circle as rounded • Calculate the length of an arc • Calculate the area of a sector • Identify circle theorems **Conditional Knowledge:** • Solve problems with circumference and area of a circle		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Centre, radius, chord, diameter, circumference, tangent, arc, sector, segment, midpoint, Pi, exact value, area
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2. Recall test completed at the midpoint of the unit to ensure revision of the unit and to identify areas of relearning before the end of unit exam.
		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Exam style questions – practise exam questions based on the unit and on previous learning, which are then marked in lesson.
Half Term 3: Advanced Drawing, Measuring and Constructing (HIGHER) **Declarative Knowledge:** • Define interior and exterior angles • Define parallel lines • Know labelling conventions **Procedural Knowledge:**		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Interior, exterior, angle, parallel, bearing, polygon, 2D, 3D, measurement, polyhedra, faces, vertex (vertices), sides,



• Measure angles • Convert between 2D and 3D units of measurement • Construct 3D shape drawings on a square grid • Construct 3D shape drawings on an isometric grid • Represent 3D shapes in 2D nets • Represent 3D shapes in plans and elevations • Draw loci constructions from a fixed distance from a point • Draw loci constructions from a fixed distance from a line • Draw loci constructions from two equidistant points • Draw loci constructions from two equidistant lines **Conditional Knowledge:** • Reason to calculate the missing angle of polygons • Interpret nets of 3D shapes • Interpret plans and elevations of 3D shapes • Identify planes of symmetry		isometric, net, plan, elevation, symmetry, loci, equidistant
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2. Recall test completed at the midpoint of the unit to ensure revision of the unit and to identify areas of relearning before the end of unit exam.
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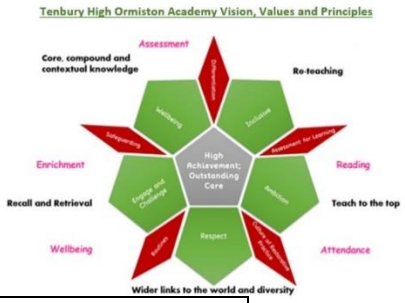
<u>Half Term 3: Continuous Data (HIGHER)</u> **Declarative Knowledge:** • Recall the measures of central tendency **Procedural Knowledge:** • Calculate the mean from grouped data • Calculate the median from grouped data • Calculate the mode from grouped data		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Mode, median, mean, range, interquartile range, unequal, equal, class width, graph, frequency, cumulative frequency, boxplot, minimum, maximum



• Represent continuous and grouped data in cumulative frequency graphs • Represent continuous and grouped data in boxplots with unequal class widths • Calculate the interquartile range • Represent continuous and grouped data in boxplots with equal class widths **Conditional Knowledge:** • Reason why interquartile range is better than the range • Compare data sets through graphs • Compare data sets through central tendency • Compare data sets through spread		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2. Recall test completed at the midpoint of the unit to ensure revision of the unit and to identify areas of relearning before the end of unit exam.
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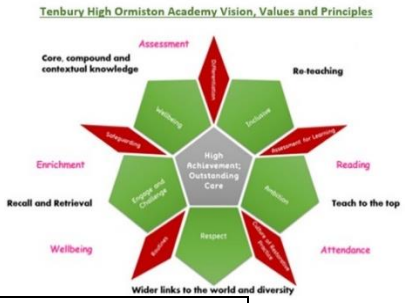
Half Term 4: Set Theory and Logic (HIGHER) **Declarative Knowledge:** • Plan thinking and processes before starting **Procedural Knowledge:** • Represent sets with set notation • Represent sets with Venn diagrams • Represent elements of intersections and unions of sets and subsets **Conditional Knowledge:** • Solve probability problems using sets • Represent solutions to linear inequalities using set notation		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Elements, set, union, intersection, universal set, complement, Venn diagram, set notation, logic, inequality, greater than, less than, equal to
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2. Recall test completed at the midpoint of the unit to ensure revision of the unit and to identify areas of relearning before the end of unit exam.



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Half Term 4: Number Theory (HIGHER) **Declarative Knowledge:** • Define factor • Define multiple • Define prime numbers • Define common factors • Define common multiples • Define Highest Common Factor • Define Lowest Common Multiple • Know the prime factor rule for identifying terminating decimals **Procedural Knowledge:** • Represent numbers in prime number form • Calculate the Highest Common Factor using prime numbers • Calculate the Lowest Common Multiple using prime numbers • Represent error intervals • Convert a recurring decimal into a fraction • Calculate with upper and lower bounds • Combine upper and lower bounds **Conditional Knowledge:** • Solve problems with Highest Common Factor and Lowest Common Multiple • Work with advanced prime numbers, including numbers written in factorised form • Calculate percentage error of upper and lower bound calculations		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2. Recall test completed at the midpoint of the unit to ensure revision of the unit and to identify areas of relearning before the end of unit exam.
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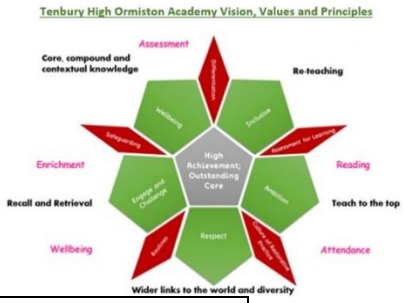

Half Term 3: Polygons and Angles (CROSSOVER) **Declarative Knowledge:** • Recall the interior angles in a triangle • Recall the interior angles in a quadrilateral • Recall the sum of interior angles in polygons • Recall the rule for angles in parallel lines **Procedural Knowledge:** • Set up equations to solve geometric problems • Calculate missing angles in triangles • Calculate missing angles on a straight line • Calculate missing angles in a quadrilateral • Measure bearings **Conditional Knowledge:** • Apply the properties of quadrilaterals		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Interior, exterior, triangle, quadrilateral, polygon, parallel, geometric, bearing, North
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
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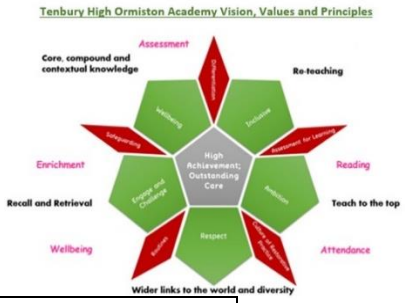
Half Term 3: Area (CROSSOVER) **Declarative Knowledge:** • Define and identify parallelograms • Define and identify trapezia • Define and identify circles		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Parallelogram, trapezium (trapezia), circle, circumference, sector, radius, diameter,



Procedural Knowledge: • Calculate the area of a parallelogram • Calculate the area of a trapezium • Calculate the area of a circle **Conditional Knowledge:** • Calculate the area of compound shapes • Reason and problem solve with area of a parallelogram, trapezium and circles		compound shape, composite shape
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
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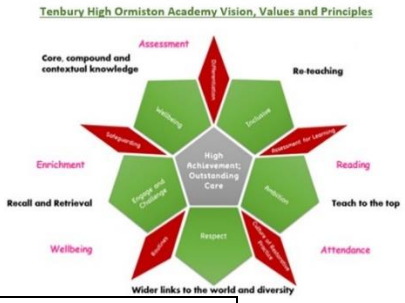
<u>Half Term 3: Standard Form (CROSSOVER)</u> **Declarative Knowledge:** • Multiply and divide by powers of 10 • Recall the law of distributivity • Recall the law of commutativity • Recognise SI prefixes and engineering form **Procedural Knowledge:** • Convert large numbers into standard form • Convert small numbs into standard form • Add and subtract in standard form • Multiply and divide in standard form **Conditional Knowledge:** • Convert 'almost standard form' to standard form • Solve problems and reason with standard form, including with the order of operations		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Standard form, index, power, exponent, large, small, distributive, commutative, SI, operation
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Exam style questions – practise exam questions based on the



		unit and on previous learning, which are then marked in lesson.
Half Term 4: Advanced Proportion and Rates of Change (CROSSOVER) **Declarative Knowledge:** • Convert percentages into decimals • Define simple interest • Define direct proportion • Define inverse proportion **Procedural Knowledge:** • Calculate original value from a percentage change (reverse percentages) • Calculate simple interest • Calculate with direct proportion numerically • Calculate with direct proportion graphically • Calculate with inverse proportion numerically • Calculate with compound units (such as density, speed, pressure, value for money) **Conditional Knowledge:** • Calculate with inverse proportion graphically • Calculate with direct proportion algebraically • Calculate with inverse proportion algebraically • Work with ratio problems in context • Combine ratios • Find unknown parts of ratios • Work with ratios and fractions		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Percentage, decimal, reverse percentage, original, interest, simple interest, direct, inverse, proportion, compound unit, density, pressure, speed
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
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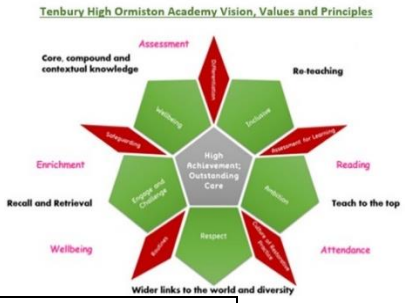
Half Term 4: Congruence and Similarity (CROSSOVER)		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG



Declarative Knowledge: • Define congruence and congruent • Define similarity and similar • Know the parts of vector notation • Know the properties to include when describing a transformation • Know that rotations, reflections and translations provide congruent shapes • Know that enlargements provide similar shapes **Procedural Knowledge:** • Translate shapes as a vector • Reflect shapes • Rotate shapes • Identify the mirror line of reflections • Identify the centre of rotations • Identify the order of rotational symmetry • Identify the order of reflectional symmetry • Find scale factors • Enlarge shapes with positive scale factors • Enlarge shapes with fractional scale factors **Conditional Knowledge:** • Prove that shapes are similar • Write equivalent sides as equivalent ratios • Enlarge shapes with negative scale factors • Work with congruent triangles		Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Congruent, congruence, similar, similarity, vector, translation, rotation, reflection, enlargement, transformation, mirror line, order, rotational symmetry, reflectional symmetry, scale factor, centre of rotation, centre of enlargement
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
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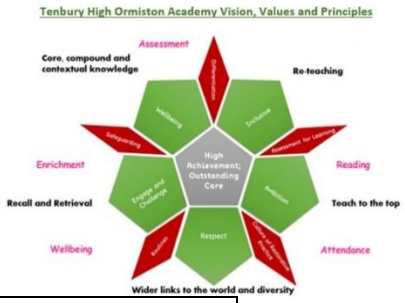
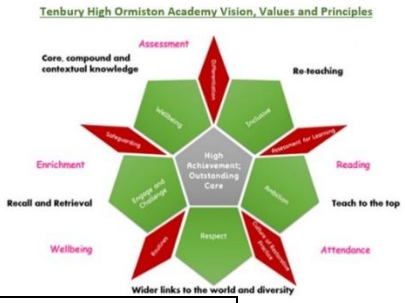
<u>Half Term 4: Contextual Graphs (CROSSOVER)</u> **Declarative Knowledge:** • Recognise 'real life' graphs • Interpret y=-intercepts as a fixed value or charge		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		y-intercept, gradient, rate of change, speed, distance, time, formula, distance-time, velocity,



• Recognise the gradient as a rate of charge in context **Procedural Knowledge:** • Construct conversion graphs • Interpret data from conversion graphs • Use the Speed, Distance, Time formula • Use distance-time graphs to represent data and to calculate the average speed • Use distance-time graphs to calculate the speed of a section • Use velocity time graphs **Conditional Knowledge:** • Use the gradient of a contextual graph as a change in context • Use the y-intercept as a fixed value or charge • Calculate acceleration with velocity time graphs • Calculate displacement using velocity time graphs	  	velocity-time, average, acceleration, displacement End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2. Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Exam style questions – practise exam questions based on the unit and on previous learning, which are then marked in lesson.
Half Term 3: Drawing, Measuring and Constructing (FOUNDATION) **Declarative Knowledge:** • Know the sum of angles on a line • Know the sum of angles around a point • Know the sum of angles in a triangle **Procedural Knowledge:** • Measure angles • Name angles • Construct triangles accurately • Construct angle bisects • Construct line bisects	  	Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons Angle, acute, obtuse, reflect, right-angle, degrees, triangle, equilateral, isosceles, right-angled triangle, scalene, bisector End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit



Conditional Knowledge: • Reason and problem solve with drawing and measuring angles • Reason and problem solve with constructing triangles • Reason and problem solve with angle bisectors and line bisectors		and other units studied in Term 1 and Term 2.
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<u>Half Term 3: Polygons and Angles (CROSSOVER)</u> **Declarative Knowledge:** • Recall the interior angles in a triangle • Recall the interior angles in a quadrilateral • Recall the sum of interior angles in polygons • Recall the rule for angles in parallel lines **Procedural Knowledge:** • Set up equations to solve geometric problems • Calculate missing angles in triangles • Calculate missing angles on a straight line • Calculate missing angles in a quadrilateral • Measure bearings **Conditional Knowledge:** • Apply the properties of quadrilaterals		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Interior, exterior, triangle, quadrilateral, polygon, parallel, geometric, bearing, North
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
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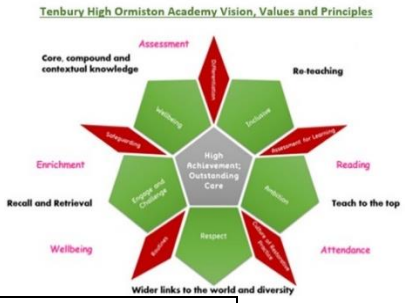
<u>Half Term 3: Area (CROSSOVER)</u> **Declarative Knowledge:** • Define and identify parallelograms		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined



• Define and identify trapezia • Define and identify circles **Procedural Knowledge:** • Calculate the area of a parallelogram • Calculate the area of a trapezium • Calculate the area of a circle **Conditional Knowledge:** • Calculate the area of compound shapes • Reason and problem solve with area of a parallelogram, trapezium and circles		Expectation of Mathematical vocabulary used in lessons
		Parallelogram, trapezium (trapezia), circle, circumference, sector, radius, diameter, compound shape, composite shape
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
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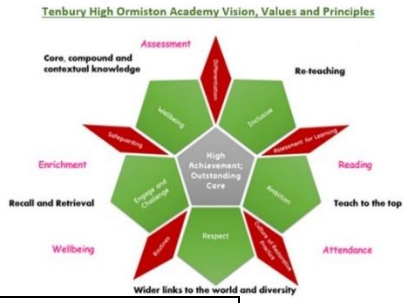
Half Term 3: Discrete data (FOUNDATION) **Declarative Knowledge:** • Know the process of collecting data • Know the process of processing data **Procedural Knowledge:** • Construct pie charts • Interpret pie charts • Calculate the mode of a list of data • Calculate the mean of a list of data • Calculate the median of a list of data • Calculate the range from a list of data **Conditional Knowledge:** • Generate summary statistics from frequency tables and graphs		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Data, collecting, processing, pie chart, sector, radius, mode, median, mean, range, frequency, frequency table, graph
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.



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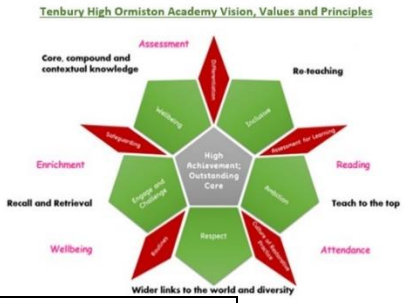
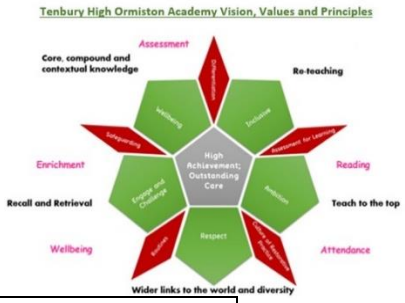
Half Term 4: Bivariate Data (FOUNDATION) **Declarative Knowledge:** • Identify a scatter graph • Know the definition of positive correlation • Know the definition of negative correlation • Know the definition of no correlation • Know the definition of outlier • Know the definition of strong correlations • Know the definition of weak correlations **Procedural Knowledge:** • Identify positive, weak and no correlations • Describe correlations as weak or strong • Identify outliers in data • Construct lines of best-fit • Construct time series graphs **Conditional Knowledge:** • Complete time series graphs		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Scatter graph, positive correlation, negative correlation, no correlation, strong correlation, weak correlation, outliers, line of best fit, time-series
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Exam style questions – practise exam questions based on the unit and on previous learning, which are then marked in lesson.
Half Term 4: Percentages, Fractions and Decimals (FOUNDATION)		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG



Declarative Knowledge: • Define decimal • Define fraction • Define percentage **Procedural Knowledge:** • Convert decimals to fractions • Convert fractions to decimals • Convert percentages to decimals • Convert percentages to fractions • Calculate a percentage of an amount • Identify decimal multipliers for percentage changes • Increase a number by a percentage • Decrease a number by a percentage **Conditional Knowledge:** • Calculate percentage changes in context • Reason and problem solve with percentage changes		Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Decimal, fraction, percent, increase, decrease, change, multiplier
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Exam style questions – practise exam questions based on the unit and on previous learning, which are then marked in lesson.
<u>Half Term 4: Estimation and use of the calculator (FOUNDATION)</u> **Declarative Knowledge:** • Know the buttons on a calculator • Know when to round up and down • Identify significant figures **Procedural Knowledge:** • Round numbers to a given number of decimal places • Round numbers to a given number of significant figures • Truncate numbers to a given number of decimal places • Truncate numbers to a given number of significant figures		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Significant figures, decimal places, tenths, hundredths, thousandths, round, truncate, upper bound, lower bound, error interval, estimate
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.



Conditional Knowledge: • Know when it is appropriate to round and when it is not appropriate to round • Identify the upper bound of a rounded number • Identify the lower bound of a rounded number • Represent upper and lower bounds as an error interval • Estimate calculations by rounding in context • Round numbers appropriately in context		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Exam style questions – practise exam questions based on the unit and on previous learning, which are then marked in lesson.
<u>Half Term 4: Proportional Reasoning (FOUNDATION)</u> **Declarative Knowledge:** • Define direct proportion • Define inverse proportion **Procedural Knowledge:** • Calculate with direct proportion • Calculate with inverse proportion • Calculate best buys using proportional reasoning • Convert values using exchange rates • Convert percentages into decimals • Use decimal multipliers **Conditional Knowledge:** • Increase amounts using a decimal multiplier • Decrease amounts using a decimal multiplier		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Direct, inverse, proportion, money, exchange, decimal, multiplier, increase, decrease
		End of unit exam completed in lessons at the end of the unit. Formal exam is completed in the Term 2 assessment window, including content from this unit and other units studied in Term 1 and Term 2.
		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Exam style questions – practise exam questions based on the unit and on previous learning, which are then marked in lesson.

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