Trimley St Mary – Maths – Progression of Knowledge and Skills

ELG – EYFS Mathematics – Numbers / Shape, Space and Measure	Milestone 1 – Year 1 & 2 By the end of Year 1 pupils should have a basic grasp of all of this content. By the end of Year 2 pupils should have an advancing understanding of this content, whilst some will have a deep understanding.	Milestone 2 – Year 3 & 4 By the end of Year 3, pupils should have a basic grasp of all of this content. By the end of Year 4 pupils should have an advancing understanding of this content, whilst some will have a deep understanding.	Milestone 3 – Year 5 & 6 By the end of Year 5, pupils should have a basic grasp of all of this content. By the end of Year 6 pupils should have an advancing understanding of this content, whilst some will have a deep understanding.
Number • **Count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number.** • **Use quantities and objects, to add and subtract two single-digit numbers and count on or back to find the answer.** • **Solve problems, including doubling, halving and sharing.** • Recognise some numerals of personal significance. • Recognise numerals 1 to 5. • Count up to three or four objects by saying one number name for each item. • Count actions or objects which cannot be moved. • Count objects to 10, and beginning to count beyond 10. • Count out up to six objects from a larger group. • Select the correct numeral to represent 1 to 5, then 1 to 10	Number • Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. • Count, read and write numbers to 100 in numerals. • Given a number, identify one more and one less. • Count in steps of 2, 3, 5 and 10 from 0 or 1 and in tens from any number, forward and backward. • Identify, represent and estimate numbers using different representations, including the number line. • Read and write numbers initially from 1 to 20 and then to at least 100 in numerals and in words. • Use the language of: equal to, more than, less than (fewer), most and least. • Compare and order numbers from 0 up to 100; use < > and = signs. • Recognise the place value of each digit in a two-digit number (tens, ones). • Use place value and number facts to solve problems. • Solve one-step problems with addition and subtraction:- using concrete objects and pictorial representations including those involving numbers, quantities and measures, using the addition (+), subtraction (-) and equals (=) signs, applying their increasing knowledge of mental and written methods.	Number • Count in multiples of 2 to 9, 25, 50, 100 and 1000. • Find 1000 more or less than a given number. • Count backwards through zero to include negative numbers. • Identify, represent and estimate numbers using different representations. • Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. • Order and compare numbers beyond 1000. • Recognise the place value of each digit in a four-digit number. (thousands, hundreds, tens, and ones) • Round any number to the nearest 10, 100 or 1000. • Solve number and practical problems with increasingly large positive numbers. • Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why. • Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. • Add and subtract numbers mentally, including:- A three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. • Estimate and use inverse operations to check answers to a calculation.	Number Read numbers up to 10 000 000. • Use negative numbers in context and calculate intervals across zero. • Write numbers up to 10 000 000 • Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. • Order and compare numbers up to 10 000 000. • Round any whole number to a required degree of accuracy. • Determine the value of each digit in any number. • Solve number and practical problems. • Solve multi-step addition and subtraction problems in contexts, deciding which operations and methods to use and why. • Add and subtract whole numbers with more than 4 digits, including using formal written methods. (columnar addition and subtraction) • Add and subtract numbers mentally with increasingly large numbers. • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. • Add and subtract negative integers. • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.

objects. • Count an irregular arrangement of up to ten objects. • Estimate how many objects they can see and checks by counting them. • Use the language of 'more' and 'fewer' to compare two sets of objects. • Find the total number of items in two groups by counting all of them. • Say the number that is one more than a given number. • Find one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, begin to use the vocabulary involved in adding and subtracting. • Record, using marks that they can interpret and explain. • Begin to identify own mathematical problems based on own interests and fascinations.	• Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:- One-digit and two-digit numbers to 20, including zero, A two-digit number and ones, A two-digit number and tens, Two two-digit numbers, Adding three one-digit numbers. • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. • Represent and use number bonds and related subtraction facts within 20. • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. • Solve one-step (two-step at greater depth) problems involving multiplication and division. • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs. • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. • Solve problems involving multiplication and division using mental methods. • Use known multiplication facts to check the accuracy of calculations. • Recognise, find and name a ½ as one of two equal parts of an object, shape or quantity. • Recognise, find and name a ¼ as one of four equal parts of an object, shape or quantity.	• Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction. • Solve problems involving multiplying and dividing, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems (such as n objects are connected to m objects). • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. • Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. • Recognise and use factor pairs and commutativity in mental calculations. • Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems. • Recall multiplication and division facts for multiplication tables up to 12 × 12. • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • Round decimals with one decimal place to the nearest whole number. • Compare numbers with the same number of decimal places up to two decimal places. • Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. • Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	• Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. • Use knowledge of the order of operations to carry out calculations involving the four operations. • Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. • Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. • Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. • Perform mental calculations, including with mixed operations and large numbers. • Estimate and use inverse operations and rounding to check answers to a calculation. • Identify common factors, common multiples and prime numbers. • Establish whether a number up to 100 is prime and recall prime numbers up to 19. • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. • Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3). • Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes.

	• Recognise, find, name and write fractions ½, ¼, ¾ and 2/4 of a length, shape, set of objects or quantity. • Recognise the equivalence of 2/4 and 1/2. • Write simple fractions for example, 1/2 of 6 = 3.	• Compare and order unit fractions and fractions with the same denominators. • Recognise and show, using diagrams, families of common equivalent fractions. • Recognise and write decimal equivalents of any number of tenths or hundredths. • Recognise and write decimal equivalents to 1/4, 1/2, 3/4. • Add and subtract fractions with the same denominator within one whole. • Solve problems involving increasingly harder fractions. • Calculate quantities and fractions to divide quantities (including non-unit fractions where the answer is a whole number). • Add and subtract fractions with the same denominator. • Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. • Solve simple measure and money problems involving fractions and decimals to two decimal places.	• Compare and order fractions whose denominators are all multiples of the same number. • Compare and order fractions, including fractions > 1. • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number. • Round decimals with two decimal places to the nearest whole number and to one decimal place. • Read, write, order and compare numbers with up to three decimal places. • Identify the value of each digit in numbers given to three decimal places. • Solve problems involving number up to three decimal places. • Recognise the percent symbol (%) and understand that percent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. • Compare and order fractions whose denominators are all multiples of the same number. • Compare and order fractions, including fractions > 1. • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number. • Round decimals with two decimal places to the nearest whole number and to one decimal place. • Read, write, order and compare numbers with up to three decimal places. • Identify the value of each digit in numbers given to three decimal places. • Solve problems involving number up to three decimal places. • Recognise the percent symbol (%) and understand that percent relates to

			'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. • Add and subtract fractions with the same denominator and denominators that are multiples of the same number. • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. • Multiply simple pairs of proper fractions, writing the answer in its simplest form. • Solve problems which require knowing percentage and decimal equivalents of, 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25. • Divide proper fractions by whole numbers. • Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.
Shape, Space and Measure **• Use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems.** **• Recognise, create and describe patterns.** **• Explore characteristics of everyday objects and shapes and use mathematical language to describe them.** • Begin to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and	**Ratio and Proportion** Recognise and name common 2D and 3D shapes. • Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. • Identify 2-D shapes on the surface of 3-D shapes. • Compare and sort common 2-D and 3-D shapes and everyday objects. • Describe position, direction and movement, including whole, half, quarter and three-quarter turns. • Order and arrange combinations of mathematical objects in patterns and sequences.	**Ratio and Proportion** • Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. • Recognise angles as a property of shape or a description of a turn. • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. • Identify acute and obtuse angles and compare and order angles up to two right angles by size.	**Ratio and Proportion** • Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. • Solve problems involving the calculation of percentages and the use of percentages for comparison. • Solve problems involving similar shapes where the scale factor is known or can be found. • Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. • Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. • Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.

mathematical terms to describe shapes. • Select a particular named shape. • Can describe their relative position such as 'behind' or 'next to'. • Order two or three items by length or height. • Order two items by weight or capacity. • Use familiar objects and common shapes to create and recreate patterns and build models. • Use everyday language related to time. • Begin to use everyday language related to money. • Order and sequence familiar events. • Measure short periods of time in simple ways.	• Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise). • Compare, describe and solve practical problems for:- lengths and heights, mass/weight, capacity and volume, time. • Measure and begin to record:- lengths and heights, mass/weight, capacity and volume, time (hours, minutes, seconds). • Recognise and know the value of different denominations of coins and notes. • Sequence events in chronological order using language. • Recognise and use language relating to dates, including days of the week, weeks, months and years. • Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. • Use standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. • Compare and order lengths, mass, volume/capacity and record the results using >, < and =. • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. • Find different combinations of coins that equal the same amounts of money. • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. • Compare and sequence intervals of time.	• Identify lines of symmetry in 2-D shapes presented in different orientations. • Complete a simple symmetric figure with respect to a specific line of symmetry. • Recognise angles as a property of shape and as an amount of rotation. • Identify right angles, recognise that 2 right angles make a half turn and 4 make a whole turn. • Identify angles that are greater than a right angle. • Describe positions on a 2-D grid as coordinates in the first quadrant. • Describe movements between positions as translations of a given unit to the left/right and up/down. • Plot specified points and draw sides to complete a given polygon. • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). • Measure the perimeter of simple 2-D shapes. • Add and subtract amounts of money to give change. (£ and p) • Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use appropriate vocabulary. • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Compare durations of events. • Convert between different units of measure. (for example, kilometre to metre; hour to minute) • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. • Find the area of rectilinear shapes by counting squares.	• Draw given angles, and measure them in degrees (°). • Identify:- angles at a point and one whole turn (total 360°), angles at a point on a straight line and a turn (total 180°), other multiples of 90°. • Use the properties of rectangles to deduce related facts and find missing lengths and angles. • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. • Draw 2-D shapes using given dimensions and angles. • Recognise, describe and build simple 3-D shapes, including making nets. • Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. • Recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles. • Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. • Describe positions on the full coordinate grid. (all four quadrants) • Draw and translate simple shapes on the coordinate plane, and reflect them in the axes. • Convert between different units of metric measure. • Understand and use approximate equivalences between metric units and

	• Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. • Know the number of minutes in an hour and the number of hours in a day. • Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. • Ask and answer questions about totalling and comparing categorical data. • Solve addition and subtraction problems involving missing numbers	• Estimate, compare and calculate different measures, including money in pounds and pence. • Read, write and convert time between analogue and digital 12- and 24-hour clocks. • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. • Interpret and present data using bar charts, pictograms and tables. • Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts, pictograms and tables. • Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. • Solve addition and subtraction, multiplication and division problems that involve missing numbers	common imperial units such as inches, pounds and pints. • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. • Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes. • Estimate volume and capacity. • Solve problems involving converting between units of time. • Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling. • Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. • Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places. • Convert between miles and kilometres. • Recognise that shapes with the same areas can have different perimeters and vice versa. • Recognise when it is possible to use formulae for area and volume of shapes. • Calculate the area of parallelograms and triangles. • Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units.

			• Solve comparison, sum and difference problems using information presented in a line graph. • Complete, read and interpret information in tables, including timetables. • Interpret and construct pie charts and line graphs and use these to solve problems. • Calculate and interpret the mean as an average. • Use simple formulae. • Generate and describe linear number sequences. • Express missing number problems algebraically. • Find pairs of numbers that satisfy an equation with two unknowns. • Enumerate possibilities of combinations of two variables.