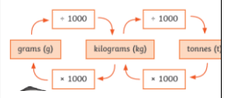
Y6 Mathematics	TERM 1A Number: Place value Number: Fractions, decimals and percentages		TERM 1B Number: Addition and subtraction/multiplication and division Number: Fractions, decimals and percentages		TERM 2A Geometry: Properties of shape/position and direction Number: Fractions, decimals and percentages		TERM 2B Number: Fractions, decimals and percentages Number: Algebra		TERM 3A Measurement Number: Ratio and proportion Statistics		TERM 3B Continued on from Term 3A	
	Key knowledge To know ten ones are called one ten. To know ten tens are called one hundred. To know ten hundreds are called one thousand. To know ten thousands are called one ten thousand. To know ten thousands are called one hundred thousand. To know one hundred thousands are called one million. To know ten one millions are called ten million. To know the value of digits becomes ten times bigger as digits move to the left. To know the value of digits become ten times smaller as digits move to the right. To know the value of a digit relies on its place in the number. To know negative numbers are below zero. To know negative numbers are less than zero. To know positive numbers are above zero. To know positive numbers are greater than zero. To know zero is neither positive or negative. To know for both positive and negative numbers, the larger the value of the number, the further it is from zero. To know when rounding to a given value, the immediate digit to the right is the one to consider. If it is four or less, we round down to the previous multiple; if it is five or more we round up to the next multiple.	**Key skills** To be able to read, write, order and compare numbers up to 10,000,000 and determine the value of each digit. To be able to round any whole number to a required degree of accuracy. To be able to use negative numbers in context, and calculate intervals across zero. To be able to solve number and practical problems that involve all of the above. To be able to identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to three decimal places. To be able to divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.	**Key knowledge** To know addition is commutative; subtraction is not. To know the language of addition: addend plus addend is equivalent to sum/total. To know the whole can be found by adding the parts. To know when the whole and one of the parts is known, the other part can be worked out. To know the language of subtraction: minuend subtract subtrahend is equivalent to difference. To know multiplication is commutative, division is not. To know long multiplication and division are methods of multiplying and dividing large numbers without a calculator. To know the remainder is the amount left over when one number does not divide equally into another. This can sometimes be rounded up and sometimes rounded down, according to context. To know BIDMAS tells us the order in which operations should be carried out. To know estimating helps us to get a rough idea of a calculation. We round numbers in the calculation to make it easier. To know a common multiple is a number that is a multiple of two or more other numbers To know a common factor is a number that divides exactly into two or more other numbers. To know a prime number can only be divided by 1 and itself. The first ten prime	**Key skills** To be able to multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. To be able to 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. To be able to 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. To be able to perform mental calculations, including with mixed operations and large numbers. To be able to identify common factors, common multiples and prime numbers. To be able to use knowledge of the order of operations to carry out calculations involving the four operations. To be able to solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. To be able to use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. To be able to use common factors to simplify fractions. To be able to use common multiples to express fractions in the same denomination.	**Key knowledge** To know that on a four-quadrant grid, when reading right and up from the origin, the coordinates are positive numbers; when reading left and down from the origin, the coordinates are negative. To know a translation is where an object is moved to a new position without being turned or reflected. The translated image is the same size and shape as the original object. To know a reflection is where each point is mapped to a corresponding point. These are an equal distance and at right angles to a mirror line. The size and angles of the reflected image stay the same as the original object; its sense has changed in that the image is back to front. To know there are several types of angles, classified by their size. To know a whole turn (full turn or complete turn) is equal to 360°. To know a right angle is a quarter of a full turn and equal to 90°. Lines that meet at a right angle are described as perpendicular. To know a straight angle is half a full turn and equal to 180°. To know an acute angle is any angle smaller than a right angle. To know an obtuse angle is an angle greater than a right angle but smaller than a straight angle. To know a reflex angle is any angle greater than a straight angle. To know angles at a point are formed when any number of lines meet at a	**Key skills** To be able to describe positions on the full coordinate grid (all four quadrants). To be able to draw and translate simple shapes on the coordinate plane, and reflect them in the axes. To be able to draw 2D shapes using given dimensions and angles. To be able to recognise, describe and build simple 3D shapes, including making nets. To be able to compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. To be able to illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. To be able to recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. To be able to associate a fraction with division and calculate decimal fraction equivalents (for example, 0.375) for a simple fraction (for example, ⅜). To be able to multiply one-digit numbers with up to two decimal places by whole numbers. To be able to use written division methods in cases where the answer has up to two decimal places. To be able to solve problems which require answers to be rounded to specified degrees of accuracy.	**Key knowledge** To know the % symbol is used to represent percentage. To know percent means number of parts per hundred. To know a percentage is a way of expressing a fraction or decimal as parts of a hundred. To know percentages have fraction and decimal equivalents. To know 1%, 10% and 50% are helpful percentages to use when finding percentages of numbers. To know a linear number sequence is where each value increases or decreases by the same amount. To know each number in a linear number sequence is called a term. To know the constant change between each number is called the term to term rule. This is found by finding the difference between each adjacent term. To know an expression is a group of numbers, letters and operation symbols. To know an equation is a number statement with an equal sign. Expressions on either side are equal. To know a formula is a special type of equation that shows the relationship between different variables. They are often used in geometry to find area and volume. To know in an equation with two unknown numbers, there may be several possible values for the unknowns that will balance the equation. To know enumerating means making a complete list of answers to a problem.	**Key skills** To be able to solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison. To be able to recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. To be able to solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. To be able to solve problems involving similar shapes where the scale factor is known or can be found. To be able to solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. To be able to use simple formulae. To be able to generate and describe linear number sequences. To be able to express missing number problems algebraically. To be able to find pairs of numbers that satisfy an equation with two unknowns. To be able to enumerate possibilities of combinations of two variables.	**Key knowledge** To know metric and imperial measurements are used in different places throughout the world.  1 mile ~ 1.6 km 5 miles ~ 8 km 1 inch ~ 2.5 cm 2.2 pounds ~ 1 kg 1 gallon ~ 4.5 litres To know perimeter is a measurement of distance. Area is a measurement of space. To know area of a rectangle = length x width. To know perimeter of a rectangle = (length + width) x 2. To know area of a triangle = base x perpendicular height ÷ 2. To know shapes with the same area can have different perimeters and vice versa. To know area of a parallelogram = base x perpendicular height. To know volume can be calculated by counting cubes or by multiplying the length by the width by the height. To know area is measured in the unit squared. To know volume is measured in the unit cubed. To know ratio is when you compare one part to another part. To know proportion is when you compare one part to the whole. Writing them as a fraction will help. To know ratio tables can help us find missing values when solving problems.	**Key skills** To be able to solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. To be able to 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. To be able to convert between miles and kilometres. To be able to recognise that shapes with the same areas can have different perimeters and vice versa. To be able to recognise when it is possible to use formulae for area and volume of shapes. To be able to calculate the area of parallelograms and triangles. To be able to 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 [for example, mm3 and km3]. To be able to interpret and construct pie charts and line graphs and use these to solve problems. To be able to calculate and interpret the mean as an average.	

	To know 10,000 and 100,000 can be divided into two, four, five and ten equal parts and these units are used in graphing and measure contexts. To know ten tenths is equivalent to one whole. To know one hundred hundredths is equivalent to one whole. To know one thousand thousandths is equivalent to one whole. To know when a number is multiplied by ten, the digits move one place to the left. To know when a number is divided by ten, the digits move one place to the right. To know when a number is multiplied by one hundred the digits move two places to the left. To know when a number is divided by one hundred the digits move two places to the right. To know when a number is multiplied by one thousand the digits move three places to the left. To know when a number is divided by one thousand the digits move three places to the right. To know powers of ten (from hundredths to ten million) can be divided into two, four, five and ten equal parts and these units are used in graphing and measure contexts.		numbers are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29. To know when a whole is divided into equal parts each part is a fraction of the whole. To know a fraction can be expressed as one number written above another ¾ . To know the bottom part of the fraction is the denominator. This represents the total number of equal parts. The numerator is the top part of the fraction; this represents the number of parts being considered. To know equivalent fractions refer to the same proportion of the whole but are written in different ways. To know equivalent fractions can be calculated by multiplying or dividing the numerator and denominator by the same amount. To know when the numerator and denominator are divided by the same number, this is called cancelling or simplifying. To know an easy way to compare and order fractions is by expressing them with the lowest common denominator (the lowest multiple of both denominators). To know a unit fraction has a numerator of one. To know a proper fraction is less than one whole and has a numerator that is lower than the denominator. To know an improper fraction is more than a whole unit; the numerator is higher than the denominator. To know a mixed number consists of a whole number and a fraction; mixed numbers can also be expressed as improper fractions.	To be able to compare and order fractions, including fractions > 1. To be able to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. To be able to multiply simple pairs of proper fractions, writing the answer in its simplest form (for example, ¼ x ½ = ⅛); To be able to divide proper fractions by whole numbers (for example, ⅓÷ 2 = ⅙).	point. These angles add up to 360°. To know vertically opposite angles are on opposite sides of the point where two lines cross. These pairs of angles are always equal. To know angles in a triangle add up to 180 degrees. To know angles in a quadrilateral add up to 360 degrees. To know you can calculate the sum of the interior angles of a polygon by subtracting 2 from the number of sides and multiplying this by 180. To know a circle is a 2D shape. The perimeter of a circle is called the circumference. The distance across the middle is the diameter. The distance from the centre to the circumference is the radius. The radius is half the diameter. To know a net is what a 3D shape would look like if it was unfolded. To know a 3D shape has three dimensions – length, width and depth. A polyhedron is a 3D shape with flat faces. Spheres, cylinders and cones are not polyhedrons because they have curved surfaces. To know a protractor is used to measure angles and help us construct 2D shapes. To know any fraction can be converted to a decimal by dividing the numerator by the denominator. To know some fractions can be converted to thousandths in order to convert to a decimal. To know if there is a decimal point in the number being multiplied, put a decimal point in the product. Line it up with the decimal point in the number being multiplied.		To know in algebra, missing numbers in equations are represented by letters. This is often written like as an x that looks like this: x .		To know a similar shape is a shape where each dimension of the shape has been increased or decreased by the same factor. To know to increase a shape by a given scale factor, simply multiply each dimension by the same amount. To know a line graph is a graph where points are plotted and joined by a series of straight lines. The title tells you what the line graph shows. The labels on the axes explain what they represent and give the units that are used (as appropriate). To know pie charts represent discrete data. A circle is divided into segments, where each segment represents a data category. The size of each segment represents its proportion of the total unit. To know the mean is the average set of data. To find the mean (or average), add up all the values to find the total. Divide the total by the number of values that you added together. This will give you the mean.			

			To know to add fractions, express each fraction in terms of the lowest common denominator and add the numerators together. To know to subtract a fraction, express each fraction in terms of the lowest common denominator and subtract the numerators. To know to multiply a fraction, multiply the numerators together and then multiply the denominators together. To know to divide a fraction by a whole number, you can change it to an equivalent multiplication. To divide by 5, we can multiply by one fifth. To know when dividing fractions by whole numbers, if the divisor is a factor of the numerator, simply divide the numerator by the divisor and leave the denominator the same. To know to find the whole when the fraction is known, find the size of each equal part and multiply by how many parts in total.		To know in short division, if there is a decimal point in the dividend, put a decimal point in the quotient; line it up with the decimal point in the dividend.							
	Key vocabulary (tier 2) compare decimal place digit greater than hundred thousands hundreds hundredths interval less than millions negative number ones partition round rounded sequence ten millions ten thousands tens tenths thousands thousandths	**Key vocabulary (tier 3)**	**Key vocabulary (tier 2)** add addend altogether bidmas (brackets, indices, division, multiplication, addition, subtraction) common denominator decimal equivalent commutative decrease denominator difference divide dividend divisor equation equivalence equivalent exchange expression factor highest/lowest common multiple improper fractions increase inverse less long/short minuend minus mixed number more	**Key vocabulary (tier 3)**	**Key vocabulary (tier 2)** acute angle apex axes circumference co-ordinate decimal fraction decimal place diameter edge equal to. fraction equilateral equivalent faces horizontal hundredth irregular isosceles obtuse parallel parallelogram perpendicular polygon portioning protractor quadrant radius recurring reflect	**Key vocabulary (tier 3)**	**Key vocabulary (tier 2)** compare convert discount equation equivalent decimal equivalent fraction expression formula list of possibilities (enumerate) order pairs of unknowns per cent (out of) percentage substitution term unknown variable whole	**Key vocabulary (tier 3)**	**Key vocabulary (tier 2)** area bar chart capacity centimetre comparison continuous data cubic units difference discrete data enlargement foot for every…there are frequency table gallon gram inch interpret kilogram kilometre length line graph litre mass mean average median millilitre millimetre mode ounce	**Key vocabulary (tier 3)**		

			multiplicand multiplication/division multiplier multiply numerator operation plus product proper fractions quotient regroup remainder simplest form simplify subtract subtrahend sum total whole number		reflex regrouping regular remainder right-angle right-angled rotate rounding scalene sharing tenth thousandth three-dimensional translate trapezium two-dimensional vertex vertical vertices				part perimeter pictogram pie chart pint pound proportion ratio rectilinear scale factor similar shapes stone sum tally chart volume whole width			