Curriculum Map- Maths Year 6

Subject - Maths					
		Learning Objectives	**Knowledge Expectations**	**Vocabulary Expectations**	**Links to prior/post learning**
Y6	**Chapter 1- Numbers to 10 000 000**	To create and identify numbers to 10 000 000 ; to write in numerals and words numbers to 10 000 000. To construct and record numbers to 10 000 000; to recognise the value of digits to 10 000 000. To recognise and construct numbers to 10 000 000 using an abacus; to recognise the value of digits in numbers to 10 000 000 and write numbers using numerals and words. To compare numbers to 10 000 000 using place value. To compare and order numbers to 10 000 000; to create combinations of numbers using a fixed number of digits. To round numbers to 10 000 000 to the nearest miliion, hundred thousand and ten thousand.	To know that numbers can be represented using place value counters To know each number on the number line has a unique position To know each two-digit number can be partitioned into a 10s part and a ones part To know each three-digit number can be partitioned into a 100s part, 10s part and a ones part To know that each four-digit number can be partitioned into a 1000 part, 100s part, 10s part and 1s part To know that each five digit number can be portioned into a 10 000 part, 1 000 part, 100 part, 10 part and 1 part. To understand the 100s, 10s and ones structure of 3 digit numbers can be used to support addition To understand the 1000s, 100s, 10s and ones structure of 4 digit numbers can be used to support addition To understand the 10,000s, 1,000s, 100s, 10s and ones structure of 4	number numeral zero one, two, three … twenty teens numbers, eleven, twelve … twenty twenty-one, twenty-two … one hundred, two hundred … one thousand … ten thousand, hundred thousand, million none how many …? count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens, threes, fours, eights, fifties, sixes, sevens, nines, twenty-fives and so on to hundreds, thousands equal to equivalent to is the same as more, less most, least tally many odd, even multiple of, factor of factor pair sequence continue predict few pattern pair, rule relationship next, consecutive > greater than < less than, ≥ greater than or equal to ≤ less than or equal to Roman numerals integer, positive, negative above/below zero, minus negative numbers formula divisibility square number prime number factorise prime factor ascending/descending order digit total, ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same	Year 5: To read and represent numbers to 100 000. To read and represent numbers to 1 000 000. To read and represent numbers to 1 000 000 using number discs. To compare numbers to 1 000 000 using place value. To compare numbers to 1 000 000 using place value. To compare numbers to 1 000 000 using pictorial representations and proportionality. To compare numbers to 1 000 000 from pictorial representations, using lists and number lines. To make and identify patterns in numbers using knowledge of place value. To make number patterns that decrease in multiples of 10 000 or 100 000. To round numbers to the nearest 10 000 using number lines and bar graphs. To round numbers to the nearest 100 000 using number lines and bar graphs.

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		To round numbers to the nearest appropriate number up to and including millions; to determine when rounding is appropriate and to which value.	digit numbers can be used to support addition To know that 0-9 can be used when writing one digit, two digit and three digit, four digit and five digit numbers To know that numbers can be partitioned in different ways e.g. 53- 5 tens and 3 ones, 4 tens and 13 ones To know that numbers can be represented in different ways and using different manipulatives To know that counting in 50's follows a similar pattern to counting in 5s- make the number 10 times bigger To know that counting in 100's follows a similar pattern to counting in 10s- make the number 10 times bigger To know that number patterns can be continued To know that when counting in 25's, you add 25 on each time To know that counting in 1,000's follows a similar pattern to counting in 1's	number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, one thousand more one less, ten less, one hundred less, one thousand less equal to compare order size first, second, third … twentieth twenty-first, twenty-second … last, last but one before, after next between, halfway between above, below Estimating guess how many ...? estimate nearly roughly close to approximate, approximately about the same as just over, just under exact, exactly too many, too few enough, not enough round, nearest, round to the nearest ten, hundred, thousand, ten thousand round up, round down	To round numbers to the nearest 100, 1000, 10 000 and 100 000 using number lines.

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			To know there are 10 hundreds in one thousand To know that numbers can be rounded up and down To know that if there is a 5-9 digit in the place column, the number is rounded up to the nearest 10/100 e.g. 76 rounded to 80 To know that if there is a 0-4 digit in the place value column, the number is rounded down to the nearest 10/100 e.g. 72 rounded to 70 To know that numbers can be represented using place value charts To understand the 100,000s, 10,000s, 1,000s, 100s, 10s and ones structure of 5 digit numbers can be used to support addition To know that numbers can have the same digit but placed in different positions and represent different values To know that numbers can increase and decrease To know that numbers can be rounded to the nearest ten, hundred, thousand, ten thousand, hundred thousand, million		

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			To know that 10 one millions makes 10 million To know that 100 one hundred thousands makes 10 million To know 1,000 ten thousands makes 10 million		
	Chapter 2- **Four operations on whole numbers**	To use multiple operations and create expressions from a picture; to use the order of operations to solve expressions. To create and solve expressions using the four operations. To multiply numbers by multiples of 10; to use number bonds as a key strategy in multiplication. To multiply 3- and 4-digit numbers by 2-digit numbers without regrouping or renaming; to use both number bonds and the column method as key strategies. To multiply 3- and 4-digit numbers by 2-digit numbers without regrouping or renaming; to use both	To know that calculations can use one or more operation To know that brackets can be used for part of an expression To know to do the multiplication before addition in an expression To know to do the calculation in brackets before multiplication To know when subtracting or adding, do it left to right To know that if there are more than one set of brackets, do the calcutions in the brackets first To know to calculate from left to right when solving multiplication or divison equations To know that numbers can ba partitioned when multiplying e.g. 23x113 = 20 x 113 and 3 x 113 To know that division fact families can be used to solve problems To know that numbers can be partitioned when dividing e.g. 7192= 6000 and 1192	addition add, more, and make, sum, total altogether double near double half, halve one more, two more … ten more … one hundred more how many more to make …? how many more is … than …? how much more is …? subtract take away how many are left/left over? how many have gone? one less, two less, ten less … one hundred less how many fewer is … than …? how much less is …?, difference between equals is the same as number bonds/pairs/facts missing number tens boundary, hundreds boundary, ones boundary, tenths boundary inverse multiplication multiply multiplied by multiple, factor groups of times product once, twice, three times … ten times repeated addition division dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one each, two each, three	Year 5: To add using the 'counting on' strategy with concrete materials and number lines. To subtract using the 'counting backwards' strategy with concrete materials. To add numbers within 1 000 000 using rounding and concrete materials. To use addition and subtraction to solve comparison problems with numbers to 1 000 000. To add numbers within 1 000 000 using the column method of addition. To subtract using the column method, number bonds and number discs using numbers to 1 000 000. To add and subtract using number bonds as a key strategy using numbers within 1 000 000. To consolidate and refine addition skills and place-value knowledge to solve addition problems.

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		number bonds and the column method as key strategies. To multiply 3- and 4-digit numbers by 2-digit numbers with regrouping and renaming; to use number bonds and pattern recognition as key strategies for multiplication. To multiply 3- and 4-digit numbers by 2-digit numbers with regrouping and renaming; to use number bonds and the column method as key strategies. To estimate products of multiplying 3- and 4-digit numbers by a 2-digit numbers; to use knowledge of multiplication to create specific products. To divide 3-digit numbers by 2-digit numbers using a variety of strategies; to use number bonds, long division and bar models to facilitate division by 2-digit numbers. To divide 4-digit numbers by 2-digit numbers; to use	To know that remainders can be represented as a decimal/fraction To know that multiples are the product of times tables e.g. 6, 12, 18. 24 To know that factors are numbers that divide exactly into another numbers e.g. factors of 8 = 1, 2, 4, 8 To know that a **common factor** is a number that can be divided into two different numbers, without leaving a remainder. E.g. 3 is a common factor of 9 and 12 To know that a prime number is a number than is only divisible by 1 and itself e.g. 5, 7, 13 To know that prime numbers (other than 2) are odd numbers To know that a square number is number multiplies by itself e.g. 5x5 To know that a cubed number is a number multiplied by itself 3 times e.g. 5x5x5 To know that a composite number is a number than can be made by multiplying other whole numbers	each … ten each group in pairs, threes … tens equal groups of doubling halving array row, column number patterns multiplication table multiplication fact, division fact inverse square, squared cube, cubed	To subtract numbers to 1 000 000 using concrete materials, the column method and number bonds. To consolidate and review multiplication; to find the result of multiplying by a number. To consolidate and review multiplication; to find the numbers we can multiply by to get a number. To define and find common factors of numbers to 100. To identify and name the prime numbers; to recognise prime numbers as numbers that only have 2 factors. To define and determine prime numbers to 100. To create and determine square and cubed numbers. To multiply 1- and 2-digit numbers by 10, 100 and 1000. To multiply 2- and 3-digit numbers by a 1-digit number using multiple strategies. To multiply 4-digit numbers by 1-digit numbers. To multiply 4-digit numbers by 1-digit numbers with regrouping, using a variety of strategies. To multiply a 4-digit number by a 1-digit number, with regrouping from the

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		number bonds and long division as the key strategies. To divide 4-digit numbers by 2-digit numbers using a variety of methods; to use number bonds, long and short division as key methods. To divide 3-digit numbers by 2-digit numbers giving rise to remainders; to use number bonds and long and short division as key strategies to solve division problems. To divide 4-digit numbers by 2-digit numbers giving rise to a remainder; to represent the remainder as part of a whole amount of money or decimal. To use the bar model heuristic to solve word problems involving multiplication and division. To solve word problems using division as the main strategy; to use pictorial representations to support word problems. To solve word problems involving multiple operations,			ones, tens and hundreds, using multiple methods. To multiply 2-digit numbers by 2-digit numbers using multiple methods. To multiply a 2-digit number by a 2-digit number using multiple methods, including the grid method, number bonds and column method, with regrouping. To multiply a 3-digit number by a 2-digit number, with the grid method and column method as key strategies. To multiply a 3-digit number by a 2-digit number with regrouping, using the column method as the key strategy To find thousands, hundreds and tens in a 4-digit number using concrete materials. To divide 3- and 4-digit numbers by 1-digit numbers, using number bonds and long division as the key methods. To divide 4-digit numbers by 1-digit numbers, using number bonds and long division as the key methods. To divide 3-digit numbers by 1-digit numbers, using long division, short division and mental methods, that give rise to remainders.

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		including multiplication and division. To find common multiples in real-life situations; to use common multiples in tandem with knowledge of time. To use common multiples to solve problems; to organise mathematical thinking into tables and lists. To find the largest common factor of 3-digit numbers; to use multiplication and division to find largest common factors. To find common factors using concrete materials. To use prime numbers to create other numbers; to explore prime numbers above 100. To explore prime numbers using concrete materials; to identify prime numbers using multiplication or division			

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	Chapter 3- Fractions	To use concrete materials to simplify fractions; to recognise equivalence in fractions to 1 /4 To simplify fractions using division and common factors; to represent fractions using concrete materials and pictorial representations. To compare fractions and place them in order from smallest to largest. To compare and order fractions by finding common denominators. To compare and order fractions using common factors. Adding and subtracting fractions with different denominators; using pictorial representations to compare fractions and add/subtract. To add and subtract fractions of different denominators; to develop questions and word problems based on the information provided.	To know that when you divide fractions, simply flip the fractions so the denominator is now on the top and the numerator is now at the bottom. Then multiply the fractions together and simplify the answer To know that mixed number fractions can be recorded as improper fractions e.g. 3 2/3 = 5/3 To know that fractions can be equivalent- the numerator and denominator will be different but they are equal e.g. 4/5 = 8/10 To know that fractions can be compared and ordered using < and > To know that fractions with different denominators can be ordered To know that fractions can be converted so they have the same denominator To know that fractions with different denominators needs to be converted to the have the same denominator before they can be added e.g. 1/9+1/3= 1/9 +3/9 To know that fractions with different denominators needs to be converted to the have the same denominator before they can be subtracted e.g. ¾ - 1/8 = 6/8 – 1/8 = 5/8 To know that fractions can be multiplied by whole numbers e.g. 3 x 2/5 = 6/5 = 1 1/5 To know that fractions can be multiplied by mixed number fractions e.g. 5 x 1 2/3 = 5 + 10/3 = 5 + 3 1/3 = 8 1/3	fraction, proper/improper fraction, equivalent fraction mixed number numerator, denominator equivalent, reduced to, cancel equal part equal grouping equal sharing parts of a whole half, two halves one of two equal parts quarter, two quarters, three quarters one of four equal parts one third, two thirds one of three equal parts sixths, sevenths, eighths, tenths …	Year 5: To divide whole numbers to create fractions; to create mixed numbers and improper fractions when dividing whole numbers. To write improper fractions and mixed numbers using a number line and pictorial methods. To find equivalent fractions using pictorial methods. To compare and order fractions using the pictorial method. To compare and order improper fractions using the pictorial method. To compare mixed numbers using pictorial representations; to find common denominators where one fraction is already the common denominator for all fractions in the question. To make number pairs (number bonds) with fractions with different denominators. To add unlike fractions by finding a common denominator using pictorial methods. To add unlike fractions by finding a common denominator using pictorial methods. To add together unlike fractions where the sum is greater than 1,

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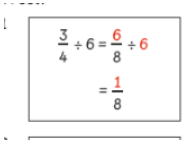
		To add and subtract fractions with different denominators. To add and subtract mixed numbers, including fractions with different denominators; to subtract from the whole and add the remainder back on. To add and subtract fractions with different denominators; to add and subtract mixed numbers. To multiply fractions using pictorial representations and abstract methods. To determine if the commutative law applies to fractions; to multiply fractions using concrete materials and pictorial representations. To use concrete materials to understand and solve the multiplication of fractions; to simplify equations using pattern blocks. To divide a fraction by a whole number; to use pictorial representation to	To know when dividing fractions, you need to find a common factor  To know that when comparing fractions, the denominator can be made the same To know that when you multiply fractions, multiply the numerators to find the new numerator, multiply the denominators to find the new denominator. To know dividing by a fraction tells us how many smaller parts make up a whole number or another fraction. To know when dividing a fraction by a whole number, turn the numerator and denominator into factors of the whole number  		creating mixed numbers or improper fractions. To add unlike fractions which create improper fractions and mixed numbers that give rise to simplification. To subtract fractions with different denominators; to subtract fractions from whole numbers. To subtract fractions where the denominators are not the same; to use bar models as a key strategy for subtracting fractions. To subtract fractions and mixed numbers from mixed numbers with different denominators. To multiply fractions by whole numbers creating other fractions, mixed numbers or improper fractions. To multiply fractions by whole numbers where the product is an improper fraction or mixed number. To multiply mixed numbers by whole numbers, creating larger mixed numbers. To multiply mixed numbers by whole numbers in multi-step word problems.

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		divide whole numbers into fractions. To divide fractions by whole numbers using concrete materials and pictorial representations; to divide fractions when the numerator and divisor are not easily divisible. To divide fractions by a whole number; to use pictorial representations to support division			
	Chapter 4- Decimals	To read and write decimals to thousandths; to use concrete materials to represent decimals. To divide whole numbers by larger whole numbers; to use Base 10 materials to represent tenths, hundredths and thousandths. To divide whole numbers that give rise to decimals; to calculate decimal fraction equivalents using long division To convert fractions into decimals using bar models and long division.	To know that 1/10 is 1 of 10 equal parts To know that fractions can be represented as decimals To know that 1/10 is the same as 0.1 To know that 0.1 is 1 tenth To know that the. is the decimal point To know that you can have a whole number and a decimal e.g. 3.2 To know that 3.2 is three wholes and 2/10s To know we read 3.2 as three and two tenths To know that 1/100 is the same as 0.01 To know that 0.01 is 1 hundredth To know 1/100 is written as 0.01 as a decimal To know that 3.02 is three and 2 hundredths To know that we read 3.02 as three and 2 hundredths To know that 10/100 is the same as 1/10	hundredths, thousandths decimal, decimal fraction, decimal point, decimal place, decimal	Year 5: To write decimal numbers. To read and write decimals. To read and write decimals. To compare tenths and hundredths written as decimals. To order and compare decimals. To compare and order decimals of amounts. To write fractions as decimals. To add and subtract amounts in decimals.

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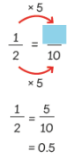
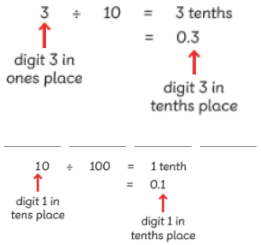
		To write fractions as decimals; to use long division as the key strategy for turning fractions into decimals. To multiply decimals by whole numbers using partitioning or the worded method to help find the solution. To multiply whole numbers that include a decimal by other whole numbers; to use partitioning and the worded method as key strategies. To multiply decimals by whole numbers, including regrouping and renaming. To multiply decimals by whole numbers using a variety of methods; to use the heuristic 'making a list' to help solve a problem. To divide decimals using number bonds and number discs as the key strategies. To divide decimals using bar models, number bonds and long division as key strategies, including regrouping and renaming.	To know that 124 hundredths is the same as 1.24 To know that place value frames can be used when ordering and comparing decimals To know that decimals can be rounded to the nearest whole or tenth To know that tenths less than 5 are rounded down e.g. 2.4 is rounded to 2 To know that tenths 5 or more are rounded up e.g. 2.6 is rounded to 3 To know when writing fractions as decimals you need to convert the denominator to 10 or 100  You must then multiply the numerator by the same number To know that whole numbers can be divided and the product can be shown as a decimal  To know that 0.001 is 1 thousandth To know that 0.4 can be 4 tenths and 40 hundreths		To add and subtract decimals; to add and subtract amounts in pounds and pence. To add and subtract amounts in pounds and pence. To add and subtract decimals; to add and subtract amounts in pounds and pence. To add and subtract decimals to find the smallest possible sum and difference. To add and subtract decimals; to find number pairs that add up to 1. To add and subtract the perimeter of an object using decimals. To round decimals to the nearest whole number; to round numbers to nearest tenth.

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		To multiply decimals by a 2-digit whole number using number discs and the column method. To divide decimals by 2-digit numbers using number bonds and the worded method. To divide decimals by 2-digit whole numbers using number bonds and the worded method.	To know that decimals can be converted to fractions To know that decimals can be converted to fractions with the same denominator To know that fractions can be converted to decimals and they can be ordered To know that decimals can be added and subtracted To know that when adding decimals, we rename in the same way as adding whole numbers To know that when we are subtracting decimlas, we rename is the same way as subtracting whole numbers To know that adding decimals can be linked to adding money To know the number bond knowledge can be applied to finding pairs of decimlas e.g. 1 and 9, 0.1 and 0.9 To know that decimlas can be rounded to the nearest tenth, hundreth or thousandth To know that in 0.235 the 2 is in the tenths place, 3 is in the hundredths place and 5 is in the thousandths To know that whole number can be converted into tenths/hundredths when dividing e.g. 2÷10 = 20 tenths ÷ 10		
	Chapter 5- Measurement	To convert common measurements into metres, centimetres and millimetres. To convert units of measure into different units; to use knowledge of decimals and	To know that mass is the quantity of matter in an object To know that some objects are heavier/lighter than others To know that objects can be ordered based on their weight	measure measurement size compare unit, standard unit metric unit, imperial unit measuring scale, division guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as, approximately roughly just over, just under Length	Year 5: To convert units of length. To convert units of length, including centimetres and metres. To convert units of length.

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		fractions to help convert units. To convert metres into kilometres as units of measure. To convert units of mass from grams to kilograms using decimals and fractions. To convert units of time from minutes to hours; to represent time using 24-hour notation.	To know that scales can be used to measure the weight of an object To know that mass can be measure in g and kg To know 2 or more sets of objects can be compared using <>= To know that scales have markers to show the mass of an object To know that length is measured from end to end To know that length can be measured by different objects To know that rulers can be used to measure how long/ tall an object is To know that objects can be ordered from shortest to tallest To know that length can be measure in cm, m and km To know 2 or more sets of objects can be compared using <>= To know that the most effective way of measuring a line, is to make it straight To know there are 100cm in a metre To know there are 1,000m in a km To know that containers can be full, half full etc. To know that capacity is the amount something can hold	centimetre, metre, millimetre, kilometre, mile, yard, foot, feet, inch, inches length, height, width, depth, breadth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher … and so on longest, shortest, tallest, highest … and so on far, further, furthest, near, close distance apart … between … to … from edge, perimeter, circumference area, covers square centimetre (cm2), square metre (m2), square millimetre (mm2) ruler metre stick, tape measure Weight mass: big, bigger, small, smaller weight: heavy/light, heavier/lighter, heaviest/ lightest tonne, kilogram, half kilogram, gram, pound, ounce weigh, weighs, balances heavy, light heavier than, lighter than heaviest, lightest scales Capacity and volume litre, half litre, millilitre, centilitre cubic centimetres(cm3), cubic metres (m3), cubic millimetres (mm3), cubic kilometres (km3) capacity volume, full empty more than less than half full quarter full holds, contains container, measuring cylinder pint, gallon Temperature temperature degree centigrade Time time days of the week, Monday, Tuesday … months of the year (January, February ...)	To solve problems by converting units of length. To convert units of mass. To convert units of mass, including grams into kilograms. To convert units of mass. To convert units of mass, including kilograms and pounds. To convert units of time. To convert units of time from days into weeks and months. To convert units of time. To solve problems by converting units of time. To convert units of time. To read the temperature on a thermometer

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			To know containers can have the same/different capacity but different volumes To know that objects can be ordered based on their capacity To know that volume is the space covered by an object To know that volume is measured in ml and l To know 2 or more sets of objects can be compared using <>= To know that scales have markers to show the volume To know that 200g is the same as 0.2kg To know that mass can be rounded to the nearest whole To know that 1.2kg is the same as 1kg and 200g To know that 3.5kg is the same as 3 ½ kg To know that 100ml= 0.1l To know that 10ml= 0.01l To know that 152cm is the same as 1.52m To know that 10cm= 0.1m To know that 1cm = 0.01m To know that 1.2m is the same as 1m and 20cm To know that length can be rounded to the nearest whole	seasons: spring, summer, autumn, winter day, week, weekend, fortnight, month, year, leap year, century, millennium birthday, holiday morning, afternoon, evening, night bedtime, dinner time, playtime today, yesterday, tomorrow before, after earlier, later next, first, last noon, midnight calendar, date, date of birth now, soon, early, late, earliest, latest quick, quicker, quickest, quickly slow, slower, slowest, slowly old, older, oldest new, newer, newest takes longer, takes less time how long ago? how long will it be to …? how long will it take to …?	

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			To know that 10mm= 1 cm To know that 1000m= 1 km To know that 100m = 0.1km To know that 10m = 0.01km To know that 1 inch is about 2.5cm To know that measurements can be recorded as decimals		
	Chapter 6- **Word Problems**	To use bar models to solve word problems involving the four operations. To use the bar model heuristic to solve word problems involving the four operations. To use the bar model heuristic to solve complex word problems involving time. To solve complex word problems using pictorial representation and the four operations. To create and solve word problems that apply the bar model heuristic and working backwards as the main strategies.	To know that some problems have more than one step To know that you need to make a plan to help to solve the word problem To know that pictorial representations can help to solve the word problem To know that bar models can be used to solve the word problem	ddition add, more, and make, sum, total altogether double near double half, halve one more, two more … ten more … one hundred more how many more to make …? how many more is … than …? how much more is …? subtract take away how many are left/left over?, how many have gone? one less, two less, ten less … one hundred less how many fewer is … than …? how much less is …? difference between equals is the same as number bonds/pairs/facts missing number tens boundary, hundreds boundary, ones boundary, tenths boundary inversemultiplication multiply multiplied by multiple, factor groups of times product once, twice, three times … ten times repeated addition division dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one	Year 5: To solve word problems involving multiple operations; to identify the operation needed to carry out the plan. To solve word problems involving multiplication and division using bar models as the main heuristic. To solve word problems involving multiple operations, identifying key information and representing information using bar model diagrams. To solve word problems involving multiple operations, using bar models as they key heuristic to represent key information.

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		To create and solve complex word problems using the four operations.		each, two each, three each … ten each group in pairs, threes … tens equal groups of doubling halving array row, column number patterns multiplication table multiplication fact, division fact, inverse square, squared cube, cubed	
	Chapter 7- Percentages	To find the percentage of a whole number using division and multiplication; to use bar modelling as a pictorial approach to calculating percentage. To find the percentage of a quantity; to use bar model diagrams to support the division and multiplication of numbers towards the percentage. To find the percentage change in an amount over time; to calculate the percentage change where the number gives rise to a decimal. To use percentage, bar models and fractions to compare amounts.	To know there is 100% in a whole To know that fractions and decimals can be converted into percentages To know that % is the symbole for percent To know that 7/10 = 70/100 = 70% To know the sign % stands for **'per cent'** which means 'out of 100'. To know 40% means 40 out of 100 To know 11 out of 100 means 11% To know to change a decimal to a percentage, **multiply by 100**. Change 0.67 to a percentage: 0.67 x 100 = 67%	proportion, in every, for every percentage, per cent, %	Year 5: To compare quantities; to compare fractions, decimals and percentages; to convert fractions to decimals and percentages. To convert values of an amount into percentages; to convert fractions into percentages. To convert values of an amount into percentages; to convert fractions into percentages.
	Chapter 8- Ratio	To use ratios and fractions to compare objects; to find the relationship between ratios, percentages and fractions.	To know that ratio shows how much of one thing there is compared to another.	Ratio, proportion, for every….there are…, part, whole, scale factor,	

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		To determine the ratio of a quantity using concrete materials; to simplify ratios using concrete materials in addition to division. To compare more than two quantities using the term 'ratio'; to use bar models to express ratios where there is more than one quantity. To compare quantity using both fractions and ratios; to use bar model diagrams to represent ratios. To compare quantities using bar models and common factors; to use multiplication and division to simplify ratios. To compare numbers using ratios; to make decisions about simplifying ratios using division. To solve word problems using a variety of heuristics including guess-and-check and bar models; to apply knowledge of ratios to word problems. To solve word problems using the bar model heuristic; to	To know that ratios are usually written in the form a:b. To know the order in which a ratio is stated is important. Changing the order of the numbers in a ratio changes the proportions. To know that ratios can be simplified To know that we can compare quantities and objects	enlargement, similar shapes, length, width, perimeter	

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		employ division and multiplication as primary strategies when solving word problems visually. To apply the guess-and-check and advanced bar model heuristic to ratio word problems.			
	Chapter 9- Algebra	To determine a pattern using concrete materials and pictorial representation; to use a table to identify a repeating pattern; to express a rule using a letter or symbol. To determine a pattern using concrete materials and pictorial representation; to use a table to identify a repeating pattern; to express the relationship between consecutive numbers in terms of a symbol or letter. To determine a pattern using concrete materials and pictorial representation; to use a table to identify a pattern; to express the relationship between consecutive numbers in terms of a symbol or letter. To determine a pattern using concrete materials and	To know that in maths, you can generate/create a rule To know that symbols and letters can be used to represent parts of the equation To know that symbols and letters can be to express relationships between numbers To know they can make generalisations (e.g. only the first, third or fifth number can be in the middle) and explain their reasoning To know that 3xp is the same as 3p To recognise rules and writing them algebraically, then applying numbers to algebraic expressions To know that evaluate means find the value of To know they can use a similar formula to find numbers in a sequence. To know the rule is essentially the formula to find any number in the pattern, which we call '*n*'. To know they can use a formula to find the perimeter of a shape	Algebra formula, formulae equation unknown variable, term to term rule, variable, expression, equation, substitution, pairs of unknowns, enumerate	

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		pictorial representation; to use a table to identify a pattern; to express unknown numbers in terms of a letter or symbol, including using a number before a letter for multiplication. To use a table to identify a pattern; to write algebraic expressions using each of the four operations. To use examples to identify rules; to write algebraic expressions using each of the four operations; to evaluate algebraic expressions including the use of inverse operations. To recognise patterns; to write algebraic expressions with two steps; to evaluate algebraic expressions with two steps. To recognise patterns; to write and evaluate algebraic expressions with two steps; to write and use formulae. To use formulae to solve problems; to replace a letter/variable with a number then solve the equation; to			

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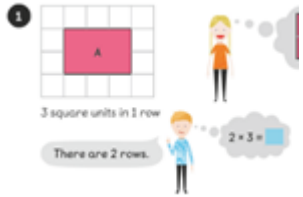
		use inverse operations to solve equations. To solve equations; to use equations to find unknown values.			
	Chapter 10- Area and Perimeter	To find the area and perimeter of rectangles; to calculate perimeter using the known area and vice versa. To find and calculate the area of a parallelogram; to use concrete materials and prior understanding of area to construct a formula for the area. To use prior knowledge of area to determine and solve the area of a triangle; to use and apply the formula for the area of a rectangle to solve problems involving triangles. To calculate the area of a triangle using a formula; to calculate the area of a triangle in multiple ways. To use multiple methods to solve the area of a triangle. To find the area of a parallelogram using an understanding of triangles; to	To know that figures can cover different surfaces To know that figures can look different but cover the same surface To know that figures can have the same area but different perimeters To know that area can be recorded as 4 units2 To know that area of rectangles can be measured by multiplying the length by the height  To know the perimeter is the length of the outline of a shape To know that the perimeter of a square can be calculated by finding one side To know that the perimeter of a rectangle can be calculate by finding the length of one long side and one short side and adding/multiplying these	Meter, kilometre, perimeter, length, width, rectangle, rectilinear, dimensions, area	Year 5: To find the perimeter of shapes. To find shapes with a specific perimeter. To find the perimeter of different shapes. To use scale diagrams to find the perimeter of a shape. To measure the area of shapes by counting squares. To measure the area of squares. To measure the area of a shape. To measure area in square metres. To measure area in square metres. To find the area of shapes in square metres. To make an estimation of area in kilometres.

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		use concrete materials to find the area of a parallelogram.	To know that perimeter can be calculated using a ruler To know that shapes can have the same perimeter but look differently To know that shapes can be joined to form a new figure To know that scale diagrams can be used to find the perimeter To know that multiplication and addition can be used to find the perimeter To know that area is recorded as cm2 To know that figures can be split to find the area To know that figures can have the same area but look different To know that the area of a paralellagram can be found by finding the area of a rectangle To know that the area of a triangle is half the area of a rectangle To know that you can find the area of a triangle by usng a formula		
	Chapter 11- Volume	To be able to find the volume of cubes and cuboids To be able to estimate the volume of cubes and cuboids, and calculate volume using a formula	To know that volume is the amount of space a 3d shape takes up To know a cubic cm block takes up 1 cubic cm. This is written as 1 cm^3. To know that you can work out the volume of a shape by multiplying **height × width × depth**	centimetres(cm3), cubic metres (m3), cubic millimetres (mm3), cubic kilometres (km3) capacity volume	Year 5: To understand the volume of solids. To find the volume of 3-D shapes. To find the volume of solids. To find the capacity of a cuboid.

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		To be able to calculate, estimate and compare the volume of cubes and cuboids	To know If the shape is made of cubic cm blocks, you can count the cubes to find the shape's volume. To know that shapes can look different but have the same volume To know that volume can be compared To know that 1 pint is about 568ml		To find the capacity of rectangular boxes. To compare and convert units of volume. To convert units of volume (metric and imperial). To convert units of volume (metric and imperial). To solve word problems involving volume. Lesson To solve word problems involving volume
	Chapter 12- Geometry	To investigate opposite angles; to use prior knowledge of angles to solve problems involving angles. To solve problems involving angles using the bar model heuristic; to solve problems involving angles without protractors. To determine and show the sum of the angles inside a triangle. To investigate and determine angles in quadrilaterals. To use the knowledge of angles inside a triangle and a quadrilateral to solve	To know that perpendicular lines meet at a 90 degree angle To know that parallel lines are lines that are the same distance apart and never meet To know that parallel lines are lines travelling in the same direction To know that a vertical line is a line that goes up and down To know that a horozontial line is a line that goes from side to side To know that some 2d shapes have parallel lines To know that nets can make 3d shapes To know that an angle is a figure formed by two lines	shape, pattern flat, line, curved, straight round hollow, solid sort make, build, construct, draw, sketch perimeter centre, radius, diameter circumference, concentric, arc net, open, closed surface angle, right-angled congruent intersecting, intersection plane base, square-based size bigger, larger, smaller symmetry, symmetrical, symmetrical pattern line symmetry reflect, reflection axis of symmetry, reflective symmetry pattern, repeating pattern match regular, irregular 2-D shape 2-D, two-dimensional corner, side point, pointed rectangle (including square), rectangular, oblong rectilinear circle, circular triangle, triangular equilateral triangle,	Year 5: To know the names and qualities of acute, right, obtuse and reflex angles. To measure angles using a protractor. To draw, measure and add angles using a protractor. To measure angles using a protractor; to identify two angles which add up to 180 degrees on a straight line. To investigate angles that, when combined, make 360 degrees. To draw angles using a protractor. To draw lines and angles with a high level of accuracy.

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		problems involving angles in other shapes	To know that when two lines join it creates an angle To know angles can be on the inside or outside of a shape To know that a right angle is exactly 90 degrees To know the names of different angles- right, actute, obtuse To know that the type of angle is determined by how many degrees it is To know that the number of sides a shape has, determines the number of angles To know that an acute angle is less than 90 degrees To know that an obtuse angle is more than 90 degrees but less than 180 degrees To know that a straight line is 180 degrees To know that if a triangle has three sides of different lengths it is a scalene triangle To know that if a triangle has three sides the same length it is an equilateral triangle To know that if a triangle has two sides the same length, it is a isosleces triangle	isosceles triangle, scalene triangle pentagon, pentagonal hexagon, hexagonal heptagon octagon, octagonal quadrilateral, parallelogram, rhombus, trapezium, kite polygon right-angled parallel, perpendicular x-axis, y-axis, quadrant 3-D shape 3-D, three-dimensional face, edge, vertex, vertices cube, cuboid pyramid sphere,	To describe the sides and angles of both rectangles and squares. To investigate the angles of various quadrilaterals, including squares and rectangles. To solve problems involving angles in rectangles. To solve problems involving angles. To use our understanding of angles to solve problems. To investigate regular polygons.

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			To know that quadrilaterals are polygons with 4 sides To know that it is possible to fold a square or rectangle in half To know that the two halves needs to be identical To know that shapes can have more than one line of symmetry To know that in a symmetrical figure, one half is a reflection of the other half To know that shapes can be sorted in different ways To know that a reflex angel is more than two right angles To know that angles can be measured To know the symbol for degrees and know it is the unit for angles To know that angles can be added together To know angles on a straight line add up to 180 degrees To know that the angles in a circle are equal to 360 degrees To know that the sides of shapes can be measured To know that angles at a point add up to 360 degrees To know the difference between regular and not regular polygons		

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			To know that a regular polygon is a polygon with all sides of equal length and all angles equal To know that you can find angles using only one labelled angle and prior knowledge that a complete circle is 360º. To know that we can use letters to represent angles To know all circles have a **circumference, diameter and radius**. To know they can be measured using a ruler or tape measure. To know the circumference is the distance all the way around a circle. To know the diameter is the distance right across the middle of the circle. To know that the radius is the distance halfway across the circle. The radius is always half the length of the diameter To know that 1:1 means 1 cm on the diagram represents 1cm on the triangle		
	Chapter 13- **Position and Movement**	To represent negative numbers on both vertical and horizontal number lines. To describe the positions of objects on a coordinate grid; to use x and y axes to	To know that you describe the position of an object To know that the x axis is horizontal To know that the y axis is vertical To know that points on the axis are called co-ordinates	higher, lower forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from clockwise, anticlockwise compass point north, south, east, west, N, S, E, W north-east, north-west, south-east, south-west, NE, NW, SE, SW horizontal, vertical,	Year 5: name and plot points. To describe the position of a shape following a translation. To describe movements and reflecting shapes.

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		determine the position of objects on a grid. To describe the position of points using coordinates on a grid. To draw polygons on a coordinate grid; to recognise polygons on a coordinate grid. To describe the translation of shapes on a coordinate grid.	To know that co-ordinates can be plotted on the axis To know that polygons can be plotted on a graph To know that when a shape is moved up or down, it is called a translation To know that when a shape is translated, it only moves and it doesn't change in any other way To know that shapes can be reflected more than once To know that we have vertical and horizontal number lines To know that figures can be drawn on a co-ordinates grid To know that a co-ordinates grid has positive and negative numbers To know the difference between translated and reflection To know that algebraic notations for reflections and translations.	diagonal translate, translation coordinate movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn rotate, rotation angle, is a greater/smaller angle than degree right angle acute angle obtuse angle reflex angle reflection straight line ruler, set square angle measurer, compass, protractor hemisphere, spherical cone cylinder, cylindrical prism, triangular prism tetrahedron, polyhedron octahedron dodecahedron net, open, closed Position and direction position over, under, underneath above, below top, bottom, side on, in outside, inside around in front, behind front, back beside, next to opposite apart between middle, edge centre corner direction journey, route left, right up, down	To describe the movement of a 2-D shape when reflected. To reflect a shape more than once.
	Chapter 14- **Graphs and Averages**	To calculate the average (mean) of sets of values. To calculate the mean. To calculate the mean. To solve problems involving the mean; to use the mean and the number of values to	To know that graphs are used to show data To know the scales can be set in different intervals To know that graphs can be read to find out an amount	count, tally, sort, vote survey, questionnaire, data, database graph, block graph, pictogram represent group, set, list, table, chart, bar chart, frequency table, bar line chart Carroll diagram, Venn diagram line graph pie chart label, title, axis, axes diagram most popular, most common least	Year 5: To read the information presented in a table and interpret its meaning. To read and respond to information presented in a table. To read and respond to tables that have a variety of data sets.

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		calculate the total; to use given information to find unknown values. To show information on graphs; to transfer information from a table to a pie chart. To read and interpret pie charts. To read and interpret pie charts; to use percentages in pie charts. To read and interpret pie charts; to use knowledge of angles to interpret pie charts. To read line graphs; to interpret the information in line graphs that show distance and time. To read and interpret line graphs; to answer questions about the information in line graphs.	To know that graphs/charts can give us information To know the names of different types of graphs/charts To know that drawings needs to be accurate when drawing a chart/graph To know that the scale has to stay the same on each graph/ chart To know that tables can be used to show data To know that line graphs can be used to show data To know that a line graph is a graph with points connected by lines to show how something changes in value To know that a line graph is created by plotting points and joining them with a straight line To know there are two axes to represent two different types of data. To know the Y-axis is vertical (upwards). This is typically the axis that shows a measurement, it always starts at 0. It's important that all measurements are split equally down the axis To know the X-axis is the horizontal (across/flat) line that often represents the names, dates or	popular, least common maximum/minimum value outcome mean (mode, median, range as estimates for this) statistics, distribution	To read and interpret information provided in a line graph where a single line represents the data. To read and interpret information presented on a line graph where the data is represented by more than one line. To read and interpret information presented on a line graph where the data is represented by more than one line. To read and interpret information presented in a table and turn it into a line graph; to determine relationships between data sets.

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			times being measured in the line graph To know that the median is the middle value. To find the median, order the numbers and see which one is in the middle of the list. Eg 3, 3, 6, 13, 100 = 6 The median is 6. To know if f there are two middle values the median is halfway between them. This might not be a whole number To know the mode is the number that appears the most. To find the mode, order the numbers lowest to highest and see which number appears the most often. Eg 3, 3, 6, 13, 100 = 3 The mode is 3. To know the mean is the total of the numbers divided by how many numbers there are. To find the mean, add all the numbers together then divide by the number of numbers. Eg 6 + 3 + 100 + 3 + 13 = 125 ÷ 5 = 25 The mean is 25. To know the mean is not always a whole number. To know the range is the difference between the biggest and the smallest number.		

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			To find the range, subtract the lowest number from the biggest number. Eg 100 - 3 = 97 The range is 97. To know that average is the same as the mean To know that the mean can be shown on a graph To know that information can be read from a pie chart		
	Chapter 15- **Negative Numbers**	To add and subtract negative numbers using a number line. To create number stories using negative numbers.	To know that numbers don't just stop at **zero.** When you count **backwards** from **zero,** you go into **negative numbers.** To know that positive numbers are more than zero: 1, 2, 3, 4, 5, etc. To know that negative numbers are less than zero: -1, -2, -3, -4, -5, etc. To know a number line can be used to order negative and positive numbers. To kno zero, 0, is neither positive nor negative.		