Year 5 Maths Medium Term Plan

National Curriculum

Number - Number and Place Value

Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
Solve number problems and practical problems that involve all of the above
Read Roman numerals to 1000 (M) and recognise years written in Roman numerals

Number – Addition and Subtraction

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
Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Number – Multiplication and Division

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers
Establish whether a number up to 100 is prime and recall prime numbers up to 19
Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
Multiply and divide numbers mentally drawing upon known facts
Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
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 and cubed
Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

Number – Fractions (including decimals and percentages)

Compare and order fractions whose denominators are all multiples of the same number
Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]
Add and subtract fractions with the same denominator and denominators that are multiples of the same number
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
Read and write decimal numbers as fractions [for example, 0.71 = 71/100]
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
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
Solve problems involving number up to three decimal places
Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25

Measurement

Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
Understand and use approximate equivalences between metric units and 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 [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]
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

Geometry – Properties of Shape

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
Draw given angles, and measure them in degrees
Identify:
-angles at a point and one whole turn (total 3600)
-angles at a point on a straight line and ½ a turn (total 180degrees)
-other multiples of 90degrees
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

Geometry – Position and Direction

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

Statistics

Solve comparison, sum and difference problems using information presented in a line graph
Complete, read and interpret information in tables, including timetables

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Term 1 Problem Solving: Reasoning Logically							
PA Maths	Number and place value Read and write 4 and 5 digit numbers To represent 4 and 5 digit numbers (to 1 000 000) (concrete-place value counters) To recognise the place value of each digit in a 4 and 5 digit number	Number and place value To compare & order 4 and 5 digit numbers To round numbers to the nearest 10, 100, 1000	Addition To add whole numbers with more than 4 digits (regrouping in the 1000s, 100s, 10s and 1s) To find the missing value To identify common misconceptions in column addition	Subtraction To subtract whole numbers with more than 4 digits (regrouping in the 1000s, 100s, 10s and 1s) To find the missing value To identify common misconceptions in column subtraction	Multiplication To multiply whole numbers and decimals by 10,100 and 1000 To multiply numbers up to four digits by a one digit number To multiply numbers up to four digits by a two digit number To solve problems involving multiplication	Division To divide whole numbers and decimals by 10,100 and 1000 To divide numbers up to 4 digits with a one digit number (with remainders)	Measure – Time To read and write time on analogue clocks To convert units of time between analogue and digital clocks (12 and 24 hour)
Fact of the Week	3x6=18 6x3=18	4x6=24 6x4=24	6x6=36	7x6=42 6x7=42	8x6=48 6x8=48	9x6=54 6x9=54	12x6=72 6x12=72
Term 2 Problem Solving: Working Systematically							
PA Maths	Statistics To solve comparison problems using information in a line graph To solve sum problems using information in a line graph To solve difference problems using information in a line graph	Fractions, decimals and percentages To identify equivalent fractions (including tenths and hundredths) To compare and order fractions (whose denominators are multiples of the same number) To calculate fractions of numbers and quantities	Geometry-properties of shape To identify 2D shapes (recap) To identify 3-D shapes from 2-D representations (including cubes and other cuboids) To distinguish between regular and irregular polygons based on reasoning about equal sides and angles	Measurement To measure and calculate the perimeter of composite rectilinear shapes To solve missing measure questions when presented algebraically To calculate and compare the area of rectangles. (cm^2 and m^2) To estimate the area of irregular shape	Measurement - length To convert between different units of metric measure (length) To use approximate equivalences between metric and imperial units (length) To use all four operations to solve problems involving measure (length)	Measurement-volume and capacity To estimate and measure capacity To estimate volume To convert between different units of metric measure (volume/capacity) To use approximate equivalences between metric and imperial units (volume/capacity) To use all four operations to solve problems involving measure (volume/capacity)	Measurement - mass To convert between different units of metric measure (mass) To use approximate equivalences between metric and imperial units (mass) To use all four operations to solve problems involving measure (mass)
Fact of the Week	3x7=21 7x3=21	4x7=28 7x4=28	7x7=49	8x7=56 7x8=56	9x7=63 7x9=63	12x7=84 7x12=84	
Term 3 Problem Solving: Visualising							
PA Maths	Number and place value To interpret negative numbers (Counting forward and backward	Addition and subtraction Use rounding to check answers to calculations (addition and subtraction) and determine, in the	Multiplication To identify common factors of two numbers	Division To use number bonds for factor and products and to identify missing factors	Fractions, decimals and percentages To add and subtract fractions with the same denominator	Fractions, decimals and percentages Recognise mixed numbers and improper fractions and convert	

	including through zero NC) To read, write and compare 6 digit numbers To count in steps of powers of 10 up to 10, 00, (extension 1,000,000)	context of a problem, levels of accuracy (NC) Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why (NC)	To know prime numbers, prime factors and composite numbers To recognise and use squared and cubed numbers To solve problems involving multiplication using knowledge of factors and multiples, squares and cubes (NC)	To divide numbers up to 4 digits with a one digit number (with remainders) To interpret remainders appropriately for the context	To add and subtract fractions with denominators that are multiples of the same number	from one form to the other and write mathematical statements >1 as a mixed number To multiply proper fractions and mixed numbers by a whole number (use diagrams to support)	
Fact of the Week	3x8=24 8x3=24	4x8=32 8x4=32	8x8=64	9x8=72 8x9=72	12x8=96 8x12=96	3x9=27 9x3=27	
Term 4 Problem Solving: Working Backwards							
PA Maths	Fractions, decimals and percentages (Recap of tenths and hundredths) Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Read, write, order and compare numbers with up to 3 decimal places Round decimals with two decimal places to the nearest whole number and to one decimal place	Measure-money To use part-part -whole to add money To add money using the column method (regrouping) To subtract money using the column method (regrouping) Solve addition and subtraction multi-step problems in contexts, deciding which operation to use and why (NC) To solve two step word problems using the bar model	Measurement - time Read and write the time to 1 minute (analogue and digital – recap) To solve problems involving converting units of time	Geometry –position and direction To use a 2D grid and co-ordinates in the first quadrant To use a 2D grid and co-ordinates in all four quadrants (extension) To reflect the position of a shape To reflect the position of a shape in all four quadrants (extension)	Geometry –properties of shape. To know angles are measured in degrees (NC) To estimate and compare angles (obtuse, acute, reflex, right angle) To draw given angles and measure them in degrees (using a protractor) To identify angles at a point and one whole turn To identify angles at a point on a straight line and ½ turn	Measurement To use multiplication and division to inter scale and calculate changing rates To use all four operations to solve problems involving measure using decimal notation, including scaling	
Fact of the Week	4x9=36 9x4=36	12x9=108 9x12=108	11x11=121	12x11=132 11x12=132	2x12=24 12x2=24	3x12=36 12x3=36	
Term 5 Problem Solving: Trial and Improvement							
PA Maths	Number and place value To read Roman numerals to 1000 (M) To recognise years written in Roman numerals (NC) To recognise and describe linear number sequences To find the term-to-term rule	Multiplication and division To understand the law of distributivity (multiplication) To use the distributive property strategy to divide 'friendly' numbers To interpret non-integer answers to division by expressing results in different ways	Multiplication and division To solve division problems with decimals using place value counters Solve problems involving multiplication and division, including scaling (NC)	Fractions, decimals and percentages Read and write decimal numbers as fractions To add and subtract decimals To solve problems involving numbers up to 3 decimal places	Fractions, decimals and percentages To recognise the per cent symbol and understand that per cent relates to 'number of parts per hundred' (NC) Write percentages as a fraction with denominator 100 (NC) Write percentages as a fraction with denominator 100 and as a decimal (NC)	Fractions, decimals and percentages To know percentage and decimal equivalents of ½, ¼, 1/5, 2/5/, 4/5 Solve problems which require knowing percentage and decimal equivalence of ½, ¼, 1/5, 2/5/, 4/5 and those fractions with a	

					To convert fractions to percentages	denominator of 10 or 25 (NC)	
Fact of the Week	4x12=48 12x4=48	5x12=60 12x5=60	6x12=72 12x6=72	7x12=84 12x7=84	8x12=96 12x8=96	9x12=108 12x9=108	
Term 6 **Problem Solving: Looking for Pattern and Conjecturing**							
PA Maths	Geometry-position and direction To use a 2D grid and co-ordinates in the first quadrant To use a 2D grid and co-ordinates in all four quadrants (extension) To translate the position of a shape To translate the position of a shape in all four quadrants (extension)	Geometry properties of shape To draw lines to the nearest mm To label parallel lines and right angles To identify and use diagonal and parallel lines. Use the properties of rectangles to deduce related facts and find missing lengths and angles	Statistics To complete, read and interpret information in tables (including time tables) To choose the appropriate representations of data	Measurement-money To use all four operations to solve problems involving measure (money)	Multiplication and division To solve problems that demonstrate an understanding of the equals sign (CG) Four operations (number) To use all 4 operations to solve number problems (two-step and multi-step)	Four operations (measurement) To use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling	Transition Geometry-position and direction Begin to rotate a simple shape about its centre or vertex (CG)
Fact of the Week	12x12=144	Recap the facts found tricky	Recap the facts found tricky	Recap the facts found tricky	Recap the facts found tricky	Recap the facts found tricky	Recap the facts found tricky

Year 5 - Mental Maths	
Number and Place Value` To count forwards and backwards in steps of powers of 10 up to 1,000,000: 10, 100, 1000 etc Count forwards and backwards with positive and negative whole numbers including through zero	Know the value of every digit in six digit+ numbers To compare two numbers (which is less 4 thousands or 41 hundreds) To make the biggest/ smallest integer possible with a range of digits (i.e. 8 3 0 7 6 0 2) To know 1000, 10,000, 100,000 more/less than any six digit number To multiply any number by 10, 100 and 1000 (and explain how the place value changes) To divide any number by 10, 100 and 1000 (and explain how the place value changes) To multiply decimal numbers by 10, 100 and 1000 (and explain how the place value changes) To divide decimal numbers by 10, 100 and 1000 (and explain how the place value changes) To identify the number that sits halfway between two numbers. (i.e. 27,400 and 28,000) To place six digit numbers in ascending and descending order To look at a quantity (i.e. coins in a jar, grapes in a bowl) and make a reasonable estimate To round any two, three, four digit number to the nearest 10, 100, 1000 To round measures. (i.e. distance between cities to the nearest km) To identify the best approximation To calculate the rise and fall in temperature using both positive and negative integers
Addition Add numbers mentally with increasingly large numbers	Add four digit multiples of 100 e.g. 3700 + 4500 Add three or more digit multiples of 100 e.g. 400 + 800 + 500 Add a single-digit multiple of 100 to a three or four-digit number crossing 1000 e.g. 300 + 876 =□ 300 + □ = 1176 □+ 876 = 1176 & 638 + 500= Add a three digit multiple of 10 to a three digit number without crossing the hundreds boundary e.g. 230+364 460+518 Find what to add to a three digit number to make the next higher multiple of 100 e.g. 651 + □ = 700 Find what to add to a decimal with units and tenths to make the next higher whole number e.g. 8.25 + □ = 9.0
Subtraction Subtract numbers mentally with increasingly large numbers	Derive quickly related facts such as: 150-80=70, 1500-800=700 and 1.5-0.8=0.7 Find a difference by counting up through the next multiple of 10,100 or 1000 (8006-2993=□ count up from the smaller to the larger number) Subtract the nearest multiple of 10, 100 or 1000 and adjust (4005-1997= 2008 because it is 4005-2000+3=2008)

	Recognise that knowing a fact such as 136+319=455 makes it possible to find 455-318 and 455-137 Work out mentally one fact such as 101-25 and be able to state the three other facts in the number family Given the numbers 135, 228 and 363 say or write the four different sentences relating to these numbers Subtract multiples of 10 and 100 (620-380=□ and 6200-3800=□) Subtract a single digit multiple of 100 from a four digit number crossing 1000 (1263-400=□) Subtract a three digit multiple of 10 from a three digit number without crossing the hundreds boundary (742-210=□, 742-□= 532, □-210=532) To find what to add to a three digit number to make the next higher multiple of 100 (651+□=700) Find what to add to a decimal with units, tenths and hundredths (5.71+ □ = 7) Find the difference between a pair of numbers lying either side of a multiple of 1000 (8004- □=19) Subtract a pair of decimal fractions each less than 1 and with up to two decimal places (0.7-0.26)
Multiplication Multiply numbers mentally drawing on known facts To find all factor pairs of a number & find common factors of two numbers To establish whether a number up to 100 is prime To recall prime numbers up to 19	Recognise 1,4,9,16,25,36,49,64,81,100 as square numbers (relate to drawings of squares) Find all the pairs of factors for any number to 100 (pairs of factors to 36 are 1&36, 2&18, 3&12, 4&9, 6&6) Use factors for finding products mentally (16x12 = 16 x 3x2x2= 48 x2x2 = 96 x2 = 192) To double using known facts (double 79 = double 70 + double 9 = 140+18= 158) Double a number ending in 5 and halve the other number (16x5 is equivalent to 8x10=80) To multiply by 50 (multiply by 100, then halve: 26 x 50 = 26 x 100 = 2600 halved = 1300) Calculate 16 times table by doubling 8 times table facts Calculate 25 times table by doubling: (1x25=25, 2x25=50, 4x25=100, 8x25=200, 16x25=400 use combinations of these e.g. 25x25 = (16x25) + (8x25) + (1x25) = 625 Work out 12 times table by adding 2 times table and 10 times table To multiply a number by 19 or 21, multiply it by 20 and add or subtract the number (13x21 = 13x20+13= 273)
Division To identify all factor pairs of a number To identify common factors of two numbers To recall prime numbers up to 19 To establish whether a number up to 100 is prime Multiply and divide numbers mentally using known facts	To use and understand the terms factor, multiple and prime, square and cube numbers To know that dividing by four is the same as finding a quarter To divide any number by 10,100, 1000 To round up or down according to context To double all whole numbers and decimals knowing that halving is the inverse Find sixths by halving thirds and twentieths by halving tenths
Fractions and Decimals Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Round decimals with two decimal places to the nearest whole number and to one decimal place (metres & £s) Read, write, order and compare numbers with up to three decimal place To know percentage and decimal equivalents ½, 14, 1/5, 25, 4/5	To mentally add and subtract tenths, and one-digit whole numbers and tenths To multiply and divide whole numbers by 10 and 100 (and to explain what happens to the place value) To know that: -one quarter is half of one half -one eighth is half of one quarter -one sixth is half of one third -one tenth is half of one fifth -one twentieth is half of one tenth To understand that finding one third is equivalent to dividing by three To know that when dividing 3 whole cakes by 4 each person gets ¾ or 3 ÷ 4 To identify a decimal fraction between 2 numbers (between 4.1 and 4.2) To know that 10% = 0.1 = 10% = 1/10 25% = 0.25 = ¼ 50 % = 0.5 = 75% = 0.75 = ¾
Statistics	To count up and down a scale in intervals of any number Test the hypothesis about the frequency of an event by collecting data quickly: Reading paper, voting, internet… To be able to analyse data from a bar chart and respond rapidly to questions To develop an understanding of the mode (most common item) To develop an understanding of the range (difference between greatest and least) To discuss questions such as: -How can we find out if this is true? - What information shall we collect? - How shall we organise it?
Measurement	To convert days to weeks To express duration of days as weeks and days. i.e. 2 weeks and 3 days = 17 days To express relationship orally: Explain how to find the number of months in any number of years. - Explain how to find the change from 50p for a number of chews at 4p each To solve problems involving money: Kobi saved 15p a week for one year. How much did he save? To calculate fractions and percentages: The deposit on a £230 bed is 50%. How much is the deposit? -There is 25% off in the sale. If an item costs £8. How much is it in the sale? To solve problems involving measures: Greg uses 5 tomatoes to make 1/2 litre of soup. How much can he make with 15 tomatoes? - change the recipe for four people to a recipe for six (half and add on). 240g flour, 300ml milk, 2 eggs

	To calculate duration: The sun sets at 19:30 and rises again at 6:30. How many hours of daylight/ darkness? To be fluent with these facts: 1 kilometre= 1000 metres, 1 metre= 100cm or 1000millimetres, 1 centimetre= 10 millimetres, 1 kilogram= 1000 grams, 1 litre = 1000 millimetres To know the equivalent of one half, one quarter, three quarters, one tenth and one hundredth of a metre, km, kg, l in m, cm, g and ml respectively i.e. 10g is one hundredth of 1kg To suggest items that could be measured using: kilometres, metres, centimeres, kilograms, grams, litres, millilitres To know that 1 square metre = 10 000 cm^2 and that 1 square cm = 100mm^2 To recite the rhyme– 30 days has September… To know that a leap year has 366 days
Geometry – Properties of shape	**Tangrams – The pupils can be asked:** -To name the individual tans -To make all the possible convex polygons (there are 13: 1 triangle, 6 quadrilaterals, 3 pentagons and 3 hexagons) -To make all the possible squares, if not all the tans are used and so on…
Geometry – Position and Direction	Practise pointing and chanting negative and positive numbers on a scale, using a 'counting stick' (forwards and backwards) Hold stick both horizontally and vertically to link to both the x and the y axes To count along (x-axis) and up (y-axis) a counting stick as a scale in intervals of 1 To count around a clock face in quarter turn, half turn, three quarter turn, full turn and in 90', 180', 270' and 360' To have rapid recall of positions of the compass– north, south, east, west and N, NE, E, SE, S, SW, W, NW Refer to the 'symmetrical' quality of the numbers with 0 as the middle value Sketch the position of a simple shape after it has been translated, for example 2 units to the left To describe to someone else the convention that (3,2) describes a point found by starting at the origin (0,0) and moving three lines across and two lines up Respond to questions that involve visualisation: -These points are the coordinates of the vertices of a shape: (1,5), (2,5), (4,3), (2,1), (1,1) What is the name of the shape? - Three of the vertices of a square are (2,1), (2,4) and (5,4) What are the coordinates of the fourth vertex? Know the number of diagonals in a polygon. i.e. hexagon has 3 diagonal lines