

Maths Medium Term Plan – Upper Key Stage 2

Week	Area of Maths	Year 5	Year 6
1-2	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.	- read, write, order and compare numbers up to 10 000 000 and determine the value of each digit - round any whole number to a required degree of accuracy - use negative numbers in context, and calculate intervals across zero Solve number and practical problems that involve all of the above.
3	Addition	add whole numbers with more than 4 digits, including using a operations and methods to use and why	solve addition multi-step problems in contexts, deciding which operations and methods to use and why
4	Subtraction	- Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction) - Subtract numbers mentally with increasingly large numbers - solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why	solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why
5 - 6	Multiplication	- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) - solve problems involving multiplication including using their knowledge of factors and multiples, squares and cubes - 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 mentally drawing upon known facts - multiply whole numbers and those involving decimals by 10, 100 and 1000	- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication - multiply one-digit numbers with up to two decimal places by whole numbers
7 - 8	Division	- solve problems involving division including using their knowledge of factors and multiples, squares and cubes - 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 - divide whole numbers and those involving decimals by 10, 100 and 1000	- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context - divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

9 - 10	4 Operations	• solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	• perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve problems which require answers to be rounded to specified degrees of accuracy
11 - 12	Fractions	• 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, $5 \frac{2}{4} + 5 \frac{4}{4} = 5 \frac{6}{4} = 1 \frac{5}{4}$] • 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	• use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions > 1 • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $4 \frac{1}{2} \times 2 \frac{1}{2} = 8 \frac{1}{2}$] • divide proper fractions by whole numbers [for example, $3 \frac{1}{2} \div 2 = 6 \frac{1}{2}$]

Week	Area of Maths	Year 5	Year 6
1	Ratio	• use multiplication and division as inverses to support the introduction of ratio in year 6 • multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers	• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison • solve problems involving similar shapes where the scale factor is known or can be found • solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
2	Decimals	• 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 •	• identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places • use written division methods in cases where the answer has up to two decimal places •
3	Percentage	• recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'	• recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. • solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison
4-5	Decimal – percentage – fractions	• read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • write percentages as a fraction with denominator 100, and as a decimal • solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{4}$ and those fractions with a denominator of a multiple of 10 or 25.	• associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
6-7	Algebra	• understand that numbers can be replaced with letters and symbols to form algebraic equations	• use simple formulae • generate and describe linear number sequences • express missing number problems algebraically • find pairs of numbers that satisfy an equation with two unknowns • enumerate possibilities of combinations of two variables.

8-9	Perimeter, area, volume	- 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.	- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate - recognise that shapes with the same areas can have different perimeters and vice versa - recognise when it is possible to use formulae for area and volume of shapes - calculate the area of parallelograms and triangles - calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³].
10-11	Converting units	- convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) <i>Pupils use their knowledge of place value and multiplication and division to convert between standard units.</i> <i>Pupils calculate the area from scale drawings using given measurements.</i>	- 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 to up to three decimal places - convert between miles and kilometres <i>Pupils connect conversion (for example, from kilometres to miles) to a graphical representation as preparation for understanding linear/proportional graphs. They know approximate conversions and are able to tell if an answer is sensible.</i>
12	4 Operations	Children apply their knowledge of the 4 operations having to make choices about what knowledge they need and why	

Week	Area of Maths	Year 5	Year 6
1-2	Statistics	• solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables • Pupils connect their work on coordinates and scales to their interpretation of time graphs. They begin to decide which representations of data are most appropriate and why.	• interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average. • Pupils connect their work on angles, fractions and percentages to the interpretation of pie charts. Pupils both encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects. • They should connect conversion from kilometres to miles in measurement to its graphical representation.
3	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. • Pupils recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. • Reflection should be in lines that are parallel to the axes	• describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
4	Assessment	Children to prepare for and undergo assessment	
5	Measurement: Time	• solve problems involving converting between units of time • Pupils could be introduced to compound units for speed, such as miles per hour, and apply their knowledge in science or other subjects as appropriate	
6	Fractions (re-visited)	• <i>Pupils practise adding and subtracting fractions to become fluent through a variety of increasingly complex problems. They extend their understanding of adding and subtracting fractions to calculations that exceed 1 as a mixed number</i>	• <i>Pupils should practise, use and understand the addition and subtraction of fractions with different denominators by identifying equivalent fractions with the same denominator. They should start with fractions where the denominator of one fraction is a multiple of the other (for example, $2\frac{1}{2} + 8\frac{1}{2} = 8\frac{5}{2}$) and progress to varied and increasingly complex problems.</i> • <i>Pupils use their understanding of the relationship between unit fractions and division to work</i>

			<i>backwards by multiplying a quantity that represents a unit fraction to find the whole quantity (for example, if $\frac{1}{4}$ of a length is 36cm, then the whole length is $36 \times 4 = 144\text{cm}$)</i>
7	Application and Explanation	- 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 - identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers	identify common factors, common multiples and prime numbers
8	Maths Project	Apprentice 4 operations (inc. decimals in context) - Statistics	
9 - 12	Re-visiting previously taught content to consolidate and deepen based on assessed needs	Teacher assessment used to analyse areas that need to be consolidated in preparation for the following year	

Counting				
Monday	Tuesday	Wednesday	Thursday	Friday
Count up and down Powers of 10	Count through 0 up and down Powers of 10	Count up and down in decimals	Square numbers, cube numbers, prime numbers	Multiples of a given number