St Paul's Cray CE Primary School
Act Justly, Love Mercy, Walk Humbly

Amadeus Primary Academies Trust
Limitless Learning Together

Maths Skills Progression

St Paul's Cray CE Primary School

In order to ensure broad and balanced coverage, we follow these principles:

- Follow White Rose Scheme of Learning
- Follow White Rose Termly overview/ medium/ long term planning
- Follow White Rose Small Steps
- Use AFL to determine previous/ next steps needed.
- Use the RECAP (Ready to progress steps) where applicable and use the NCETM ready to progress support documents.

FOUNDATION STAGE				
Learning Experiences:				
ELG:				
Object Counting	Rote Counting	Subitising	Adding	Subtracting
Use language associated with counting, such as "more", "a lot", "less". Subitise small amounts of objects arranged in a regular pattern, such as a dice pattern. Subitise small amounts of objects arranged in an irregular pattern Begin to develop one-to-one correspondence and say one number name for each object. Move or touch objects to count them.	Can say some counting words randomly Can say the number names in order in an unbroken string forwards. Can say the number names backwards in an unbroken string Understand that the order of numbers is fixed and will not change. This is known as stable order. Recognise the significance and value of zero Can say the number before or after a number, dropping back to one	Instantly recognises groups of two, or possibly three, without the need to count. May not be able to say the number name Makes a small collection of up to three objects to match another collection of objects. Begins connecting small quantities to number words, without the need to count. Can select objects from a larger group by subitising, such as groups of two. When shown a quantity of up to three objects, is able	Know that numbers identify how many objects are in a set. Separate a group of three or four objects in different ways, beginning to recognise that the total is still the same. Know that a group of things changes in quantity when something is added. Compare sets of objects, saying when they have the same number Compare sets of objects, saying which has more objects.	Know that numbers identify how many objects are in a set. Know that a group of things changes in quantity when something is taken away. Count out objects from a larger group Compare sets of objects, saying which has fewer objects. Compare sets of objects, saying how many fewer are in each set. Subtract by counting a group of objects, counting out the number to remove

Can count things they can't touch or see, such as pictures on a wall or sounds. This is known as the abstraction principle. Know that when objects are moved, spread out or moved closer together that the total remains the same Know that the last number they say represents the number of objects in a group. This is known as the cardinal principle. Give someone a specified number of objects. Count out a specified number of objects from a larger group. Make an estimate, such as choosing the group with more objects in or choosing the group which has closest to ten objects Can count on when part of a set of objects is hidden	Can say the number before or after a number, without dropping back to one Can stop and start in different places when counting forwards. Can stop and start in different places when counting backwards. Can count on and keep track of how many they have counted on. Can count back and keep track of how many they have counted back Can see the recurring pattern in our number system and use this to help them count higher. Can enunciate each number clearly.	to identify if the group does or does not contain that amount. Fast recognition of up to three objects and can name the quantity, without having to count them individually. Can show a number of fingers to five 'all at once', without counting. Can recognise small quantities in familiar patterns (e.g. up to six for a dice pattern) without counting. Can say the number name for small quantities in familiar patterns (e.g. up to six for a dice pattern and five for other regular patterns) without counting. Subitises two or more parts within a random arrangement of up to five objects, but does not see the whole without counting. Subitises up to five, including regular and random arrangements of up to five objects, by seeing the parts and quickly knowing the whole. Subitises two or more parts within an arrangement of more than five objects but does not see the whole.	Compare sets of objects, saying how many more are in each set Find one more than a number from one to ten. Say the number that is one more than a given number. Know that numbers are made up of different numbers. For instance, four can be four and zero, one and three or two and two. Represent numbers in different ways, using equipment, five or ten-frames, part-part-whole models, number lines, stories. Understand the effect of adding zero. Find the total number of items in two groups by counting all of them. Select two groups of objects to make a given total of objects. Recognise the number of objects without counting. (0-5) Find out the 'total' or 'how many altogether' after two sets have been combined. Count on to add.	and then recounting all. Find one less than a number from one to ten Know that numbers are made up of different numbers. For example, four can be four and zero, one and three or two and two Represent numbers in different ways using equipment, such as five or ten-frames, part-whole models, number lines or stories. Understand the effect of subtracting zero. Understand the effect of subtracting the full amount Understand the effect of subtracting the full amount Compare groups of objects, saying how many belong and how many don't belong in the set. Count back to subtract Use vocabulary of equals: leaves, balances, same, total. Use vocabulary of subtraction: take away, how many left, subtract, minus. Use vocabulary of comparison in practical contexts:

		Subitises two or more parts within an arrangement of more than five objects. Is beginning to combine parts but does not see the whole. Subitises two or more parts within a larger group and instantly knows the total. Subitises a quantity, perceptually or conceptually, and describes a change, such as 'more' or 'less'.	Use vocabulary of addition: how many altogether, plus, more. Uses vocabulary of equals: makes, balances, same, total. Understand addition as an increase.	how many fewer? How much shorter/cheaper than…? Understand subtraction as a decrease.

YEAR 1
Learning Experiences:
KS1 National Curriculum Areas of Study:
NUMBER

Place Value

- count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
- given a number, identify one more and one less
- use the language of: equal to, more than, less than (fewer), most, least
- identify and represent numbers using objects and pictorial representations including the number line
- read and write numbers from 1 to 20 in numerals and words.

Addition and Subtraction

- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including zero
- read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)
- read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9

Multiplication and Division

- count in multiples of twos, fives and tens (copied from Number and Place Value)
- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Fractions

- recognise, find and name a half as one of two equal parts of an object, shape or quantity
- recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

Algebra

- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9 (copied from Addition and Subtraction)
- represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)
- sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening (copied from Measurement)

Ratio and Proportion

KS1 National Curriculum Areas of Study:

MEASUREMENT

- compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] * capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later]
- sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]
- measure and begin to record the following: * lengths and heights * mass/weight * capacity and volume * time (hours, minutes, seconds)
- recognise and know the value of different denominations of coins and notes
- tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.
- recognise and use language relating to dates, including days of the week, weeks, months and years

KS1 National Curriculum Areas of Study:

GEOMETRY

Properties of Shape

- recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].

Position, Direction and Movement

- describe position, direction and movement, including half, quarter and three-quarter turns.
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KS1 National Curriculum Areas of Study:

Statistics

YEAR 2

Learning Experiences:

KS1 National Curriculum Areas of Study:

NUMBER

Place Value

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward
- compare and order numbers from 0 up to 100; use <, > and = signs
- identify, represent and estimate numbers using different representations, including the number line
- read and write numbers to at least 100 in numerals and in words
- recognise the place value of each digit in a two-digit number (tens, ones)
- use place value and number facts to solve problems

Addition and Subtraction

- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit number
- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot

- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
- solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods
- solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)

Multiplication and Division

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)
- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

Fractions

- Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)
- recognise, find, name and write fractions 1 / 3 , 1 / 4 , 2 / 4 and 3 / 4 of a length, shape, set of objects or quantity
- write simple fractions e.g. 1 / 2 of 6 = 3 and recognise the equivalence of 2 / 4 and 1 / 2 .

Algebra

- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. (copied from Addition and Subtraction)
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)
- compare and sequence intervals of time (copied from Measurement)
- order and arrange combinations of mathematical objects in patterns (copied from Geometry: position and direction)

Ratio and Proportion

KS1 National Curriculum Areas of Study:

MEASUREMENT

- compare and order lengths, mass, volume/capacity and record the results using >, < and =
- compare and sequence intervals of time
- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- find different combinations of coins that equal the same amounts of money
- solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
- tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.
- know the number of minutes in an hour and the number of hours in a day.

KS1 National Curriculum Areas of Study:

GEOMETRY

Properties of Shape

- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces

- identify 2 -D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects

Position, Direction and Movement

- use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise
- order and arrange combinations of mathematical objects in patterns and sequences

KS1 National Curriculum Areas of Study:

Statistics

- interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data

YEAR 3

Learning Experiences:

KS2 National Curriculum Areas of Study:

NUMBER

Place Value

- count from 0 in multiples of 4, 8, 50 and 100
- find 10 or 100 more or less than a given number
- compare and order numbers up to 1 000
- identify, represent and estimate numbers using different representations
- read and write numbers up to 1 000 in numerals and in word
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24hour clocks (copied from Measurement)
- recognise the place value of each digit in a threedigit number (hundreds, tens, ones)
- solve number problems and practical problems involving these ideas.

Addition and Subtraction

- add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Multiplication and Division

- count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)
- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times onedigit numbers, using mental and progressing to formal written methods (appears also in Written Methods)
- estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)

Fractions

- count up and down in tenths
- recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

- recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.
- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
- compare and order unit fractions, and fractions with the same denominators
- recognise and show, using diagrams, equivalent fractions with small denominators
- add and subtract fractions with the same denominator within one whole (e.g. 5 / 7 + 1 / 7 = 6 / 7)
- solve problems that involve all of the above

Algebra

- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction)
- solve problems, including missing number problems, involving multiplication and division, including integer scaling (copied from Multiplication and Division)

Ratio and Proportion

KS2 National Curriculum Areas of Study:

MEASUREMENT

- compare durations of events, for example to calculate the time taken by particular events or tasks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)
- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
- measure the perimeter of simple 2-D shapes
- add and subtract amounts of money to give change, using both £ and p in practical contexts
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)

KS2 National Curriculum Areas of Study:

GEOMETRY

Properties of Shape

- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- recognise angles as a property of shape or a description of a turn
- identify right angles, recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle
- identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Position, Direction and Movement

KS2 National Curriculum Areas of Study:

Statistics

- interpret and present data using bar charts, pictograms and tables
- solve one-step and twostep questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.

YEAR 4

Learning Experiences:

KS2 National Curriculum Areas of Study:

NUMBER

Place Value

- count backwards through zero to include negative numbers
- count in multiples of 6, 7, 9, 25 and 1 000
- find 1 000 more or less than a given number

- order and compare numbers beyond 1 000
- compare numbers with the same number of decimal places up to two decimal places (copied from Fractions)
- identify, represent and estimate numbers using different representations
- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.
- recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths (copied from Fractions)
- round any number to the nearest 10, 100 or 1 000
- round decimals with one decimal place to the nearest whole number (copied from Fractions)
- solve number and practical problems that involve all of the above and with increasingly large positive numbers

Addition and Subtraction

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
- estimate and use inverse operations to check answers to a calculation

Multiplication and Division

- count in multiples of 6, 7, 9, 25 and 1 000 (copied from Number and Place Value)
- recall multiplication and division facts for multiplication tables up to 12 × 12
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)
- multiply two-digit and three-digit numbers by a onedigit number using formal written layout
- recognise and use factor pairs and commutativity in mental calculations (repeated)
- estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)

Fractions

- count up and down in hundredths
- recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten
- compare numbers with the same number of decimal places up to two decimal places
- round decimals with one decimal place to the nearest whole number
- recognise and show, using diagrams, families of common equivalent fractions
- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to 1 / 4 ; 1 / 2 ; 3 / 4
- add and subtract fractions with the same denominator
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- solve simple measure and money problems involving fractions and decimals to two decimal places.

Algebra

- Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)

Ratio and Proportion

KS2 National Curriculum Areas of Study:

MEASUREMENT

- estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares

KS2 National Curriculum Areas of Study:

GEOMETRY

Properties of Shape

- identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry
- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to two right angles by size

Position, Direction and Movement

- describe positions on a 2-D grid as coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon

KS2 National Curriculum Areas of Study:

STATISTICS

- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

YEAR 5

Learning Experiences:

KS2 National Curriculum Areas of Study:

NUMBER

Place Value

- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)
- read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.
- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from Fractions)
- round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000
- round decimals with two decimal places to the nearest whole number and to one decimal place (copied from Fractions)
- solve number problems and practical problems that involve all of the above

Addition and Subtraction

- add and subtract numbers mentally with increasingly large numbers
- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction
- 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

Multiplication and Division

- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value
- multiply and divide numbers mentally drawing upon known facts
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

- statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- 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
- 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
- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- solve problems involving multiplication and division including using 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

Fractions

- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence
- compare and order fractions whose denominators are all multiples of the same number
- read, write, order and compare numbers with up to three decimal places
- round decimals with two decimal places to the nearest whole number and to one decimal place
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- read and write decimal numbers as fractions (e.g. 0.71 =
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- 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 as a decimal fraction
- add and subtract fractions with the same denominator and multiples of the same number
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. 2 / 5 + 4 / 5 = 6 / 5 = 1 1 / 5)
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- solve problems involving numbers up to three decimal places
- solve problems which require knowing percentage and decimal equivalents of 1 / 2 , 1 / 4 , 1 / 5 , 2 / 5 , 4 / 5 and those with a denominator of a multiple of 10 or 25

Algebra

- use the properties of rectangles to deduce related facts and find missing lengths and angles (copied from Geometry: Properties of Shapes)

Ratio and Proportion

KS2 National Curriculum Areas of Study:

MEASUREMENT

- calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm 2) and square metres (m 2) and estimate the area of irregular shapes (also included in measuring)
- estimate volume (e.g. using 1 cm 3 blocks to build cubes and cuboids) and capacity (e.g. using water)
- record the following: * lengths and heights * mass/weight * capacity and volume * time (hours, minutes, seconds)
- use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm 2) and square metres (m 2) and estimate the area of irregular shapes

- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) (copied from Multiplication and Division)
- solve problems involving converting between units of time
- in an hour and the number of hours in a day. (appears also in Telling the Time)
- convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- solve problems involving converting between units of time
- understand and use equivalences between metric units and common imperial units such as inches, pounds and pints

KS2 National Curriculum Areas of Study:

GEOMETRY

Properties of Shape

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- draw given angles, and measure them in degrees (o)
- 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
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles
- identify: * angles at a point and one whole turn (total 360 o) * angles at a point on a straight line and ½ a turn (total 180 o) * other multiples of 90 o

Position, Direction and Movement

- 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

KS2 National Curriculum Areas of Study:

Statistics

- complete, read and interpret information in tables, including timetables
- solve comparison, sum and difference problems using information presented in a line graph

YEAR 6

Learning Experiences:

KS2 National Curriculum Areas of Study:

NUMBER

Place Value

- use negative numbers in context, and calculate intervals across zero
- read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
- identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1 000 where the answers are up to three decimal places (copied from Fractions
- round any whole number to a required degree of accuracy
- solve problems which require answers to be rounded to specified degrees of accuracy (copied from Fractions)
- solve number and practical problems that involve all of the above

Addition and Subtraction

- 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
- use estimation 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
- Solve problems involving addition, subtraction, multiplication and division

Multiplication and Division

- perform mental calculations, including with mixed operations and large numbers

- associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) (copied from Fractions)
- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 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
- use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))
- identify common factors, common multiples and prime numbers
- use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions)
- calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm 3) and cubic metres (m 3), and extending to other units such as mm 3 and km 3 (copied from Measures)
- use their knowledge of the order of operations to carry out calculations involving the four operations
- use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve problems involving addition, subtraction, multiplication and division
- solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion)

Fractions

- compare and order fractions, including fractions >1
- identify the value of each digit in numbers given to three decimal places
- solve problems which require answers to be rounded to specified degrees of accuracy
- use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g.
- recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
- add and subtract fractions with the same denominator and multiples of the same number
- 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
- multiply one-digit numbers with up to two decimal places by whole numbers
- divide proper fractions by whole numbers
- multiply one-digit numbers with up to two decimal places by whole numbers
- multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
- identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
- associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)
- use written division methods in cases where the answer has up to two decimal places

Algebra

- express missing number problems algebraically
- find pairs of numbers that satisfy number sentences involving two unknowns
- enumerate all possibilities of combinations of two variables
- use simple formulae
- recognise when it is possible to use formulae for area and volume of shapes (copied from Measurement)
- generate and describe linear number sequences

Ratio and Proportion

- solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

- solve problems involving the calculation of percentages [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.

KS2 National Curriculum Areas of Study:

MEASUREMENT

- calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm 3) and cubic metres (m 3), and extending to other units such as mm 3 and km 3 .
- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Converting)
- recognise that shapes with the same areas can have different perimeters and vice versa
- calculate the area of parallelograms and triangles
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm 3) and cubic metres (m 3), and extending to other units [e.g. mm and km
- recognise when it is possible to use formulae for area and volume of shapes
- 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

KS2 National Curriculum Areas of Study:

GEOMETRY

Properties of Shape

- recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing)
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- draw 2-D shapes using given dimensions and angles
- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Position, Direction and Movement

- 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.

KS2 National Curriculum Areas of Study:

Statistics

- interpret and construct pie charts and line graphs and use these to solve problems
- calculate and interpret the mean as an average