

# Pathway 5

## Autumn Term

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
Number Place value / Rounding		Number Addition / Subtraction		Number Multiplication / Division		Number Fractions (Inc Decimals / Percentages)		Number Place value / Rounding		Number Addition / Subtraction		Number Multiplication / Division		Number Fractions
Measurement Time / money				Geometry Properties of Shape		Statistics Use and Interpret		Measurement Perimeter and Area				Geometry Properties of Shape		Statistics Use and Interpret

## Spring Term

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Number Place value / Rounding		Number Addition / Subtraction		Number Multiplication / Division		Number Fractions (Inc Decimals / Percentages)		Number Place value / Rounding		Number Addition / Subtraction	
Measurement Using Measures			Geometry Properties of Shape		Statistics Use and Interpret		Measurement Time / money			Geometry Properties of Shape	

## Summer Term

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Number Multiplication / Division		Number Fractions (Inc Decimals / Percentages)		Number Place value / Rounding		Number Addition / Subtraction		Number Multiplication / Division		Number Fractions (Inc Decimals / Percentages)	
Measurement Perimeter and Area			Geometry Properties of Shape		Statistics Use and Interpret		Measurement Using Measures			Geometry Position and direction	

# Pathway 5

## Number: Place Value

- Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit e.g. What must be added to 37 500 to change it to 67 500?
- Count forwards or backwards in steps of powers of 10 from any given number up to 1 000 000
- Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers 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 number, place value and rounding e.g. The distance to the bus stop is 1km to the nearest 100m; what is the shortest distance it could be?
- Recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule e.g. find the rule and complete the sequence: \_\_, 16, 8, 4, \_\_, 1, 0.5, \_\_
- Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. e.g. MCMXIV (1914)

## Number: Multiplication and Division

- Continue to practise and apply multiplication tables and related division facts, committing them to memory and using them confidently to make larger calculations
- Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers
- Solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors e.g.  $828 \div 36 = (828 \div 4) \div 9 = 207 \div 9 = 23$
- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers e.g. prime factors of  $60 = 2 \times 2 \times 3 \times 5$ . Establish whether a number up to 100 is prime and recall prime numbers up to 19
- Multiply and divide numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers, short division and interpret remainders appropriately for the context.
- Multiply and divide numbers mentally drawing upon known facts e.g.  $840 \div 12$  and those involving decimals by 10, 100 and 1000
- Recognise and use square numbers and cube numbers, and the notation for squared ( $^2$ ) and cubed ( $^3$ )
- 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 e.g. a toymaker can make 8 toys in 2 hours; how many toys can he make in 5 hours?

## 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.

## Number: Fractions (including decimals)

- Know that percentages, decimals and fractions are different ways of expressing proportions. Count forwards and backwards in fractions and decimals bridging zero. 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 and extending to thousandths, making links to decimals and measures. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents e.g.  $782/1000 = 7/10 + 8/100 + 2/1000$
- Recognise mixed numbers and improper fractions and convert from one form to the other e.g.  $5 \frac{2}{3} = 17/3$  and write mathematical statements  $>1$  as a mixed number Connect fractions  $>1$  to division with remainders e.g.  $37/5 = 37 \div 5 = 7 \frac{2}{5}$
- Add and subtract fractions with the same denominator and multiples of the same number e.g.  $2/5 + 7/10 = 11/10 = 1 \frac{1}{10}$ . Find fractions of numbers and quantities e.g.  $7/8$  of 240ml
- Connect multiplication by a fraction to using fractions as operators e.g.  $8/5$  of  $40 = 40 \times 8/5$ . Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. e.g. use egg boxes to represent  $25/6 \times 3 = 615/6 = 83/6 = 81/2$
- Mentally add and subtract: tenths e.g.  $0.8 + 0.9 = 0.2$ , one-digit whole numbers and tenths e.g.  $7.4 - 6.6$ , complements of 1 e.g.  $0.83 + 0.17 = 1$ . Add and subtract decimals with a different number of decimal places e.g.  $98.4 - 9.7$
- Read, write, order and compare decimal numbers as fractions e.g.  $0.8 = 4/5$ . Round decimals with two decimal places to the nearest whole number and to one decimal place numbers with up to three decimal places e.g. put these decimals in order starting from the smallest: 0.471, 0.46, 0.4, 0.465, 0.5
- 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 hundred, and as a decimal fraction and recognise that percentages are proportions of quantities
- Solve problems and puzzles involving number up to three decimal places, checking the reasonableness of answers and 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

## 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 e.g.  $12\ 462 - 2\ 300 = 10\ 162$
- 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 e.g. Write a number story for this number sentence:  $3709 = 4562 + 234 - 1087$

## Statistics: Use and interpret data

- Complete, read and interpret information in tables, including timetables.
- Solve comparison, sum and difference problems using information presented in line graphs
- Connect work on coordinates and scales to their interpretation of time graphs
- Begin to decide which representations of data are most appropriate and why

## Measurement

### Perimeter and Area

- 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 ( $\text{cm}^2$ ) and square metres ( $\text{m}^2$ ) and estimate the area of irregular shapes e.g. investigate possible rectangles with the same area as a particular square
- Estimate volume e.g. using  $1\text{cm}^3$  blocks to build cubes and cuboids and capacity e.g. using water
- Calculate the area of scale drawings using given measurements. e.g. calculate the area of a  $5\text{cm} \times 3\text{cm}$  garden on a scale drawing with a scale  $1\text{cm}:2\text{m}$  ( $60\text{m}^2$ )

### Using Measure

- Convert between different units of measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) e.g.  $2.2\text{m} = 2200\text{mm}$
- Understand and use equivalences between metric and common imperial units such as inches, pounds and pints e.g. Given that an inch is approximately 2.5cm, calculate the metric equivalent of a foot (12 inches)

### Money and Time

- Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling
- Solve problems involving converting between units of time e.g. three children share a trophy for 8 weeks and 4 days; they each have it for the same length of time; how long does each child keep the trophy?

## Geometry: Properties of Shape

- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- Draw lines accurately to the nearest millimetre and use conventional markings for parallel lines and right angles.
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- Draw given angles, and measure them in degrees ( $^\circ$ )
- Identify:
  - angles at a point and one whole turn (total  $360^\circ$ )
  - angles at a point on a straight line and  $\frac{1}{2}$  a turn (total  $180^\circ$ )
  - other multiples of  $90^\circ$
- Use angle sum facts and other properties to make deductions about missing angles
- Use the properties of rectangles to deduce related facts and find missing lengths and angles e.g. all angles are right angles, diagonals are congruent (same length) and bisect each other (divide into two equal parts), one diagonal separates the rectangle into two congruent triangles...
- Use the term diagonal and make conjectures about the angles formed by diagonals and sides, and other properties of quadrilaterals, e.g. using dynamic geometry ICT tools.
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles e.g. sort triangles and quadrilaterals into regular and irregular sets, realising that only the equilateral triangles and the squares are regular