

## Year 1- Landmarks

<b>Key Objectives</b>	
<p><b><u>Number and place value</u></b></p> <ul style="list-style-type: none"> <li>Counts to and across 100, forwards and backwards, beginning with 0 or one, or from any given number</li> <li>Counts, reads and writes numbers to 100 in numerals; counts in multiples of twos, fives and tens</li> <li>Given a number, identifies one more and one Less</li> </ul> <p><b><u>Addition and subtraction</u></b></p> <ul style="list-style-type: none"> <li>Represents and uses number bonds and related subtraction facts within 20</li> </ul> <p><b><u>Fractions (including decimals)</u></b></p> <ul style="list-style-type: none"> <li>Recognises, finds and names a half as one of two equal parts of an object, shape or quantity</li> </ul>	<p><b><u>Measurement</u></b></p> <ul style="list-style-type: none"> <li>Compares, describes and solves practical problems for:           <ol style="list-style-type: none"> <li>lengths and heights eg long/short, longer/shorter, tall/short, double/half;</li> <li>mass/weight eg heavy/light, heavier than, lighter than;</li> <li>capacity and volume eg full/empty, more than, less than, half, half full, quarter; and</li> <li>time eg quicker, slower, earlier, later.</li> </ol> </li> <li>Tells the time to the hour and half past the hour and draws the hands on a clock face to show these times</li> </ul> <p><b><u>Properties of shape</u></b></p> <ul style="list-style-type: none"> <li>Recognises and names common 2-D and 3-D shapes, including:           <ol style="list-style-type: none"> <li>2-D shapes eg rectangles (including squares), circles and triangles;</li> <li>3-D shapes eg cuboids (including cubes), pyramids and spheres.</li> </ol> </li> </ul>
<b>Summary Statements</b>	
<p>With reference to the KPIs. By the end of the year:</p> <ul style="list-style-type: none"> <li>a child should be fluent with whole numbers and counting</li> <li>A child has a developing knowledge of addition and subtraction using concrete objects and pictorial representations</li> <li>A child can describe and compare different quantities such as length, mass and capacity/volume.</li> <li>A child is beginning to recognise simple fractions</li> <li>A child is beginning to tell the time</li> <li>Children should read and spell mathematical vocabulary at a level consistent with their increasing word reading and spelling knowledge</li> </ul>	

## Year 2- Landmarks

### **Key Objectives - see interim framework for WT and GD statements.**

#### **Number and place value**

- Counts in steps of two, three, and five from 0, and in tens from any number, forward and backward
- Compares and orders numbers from 0 up to 100 Uses  $<$   $>$  and  $=$  signs correctly
- Uses place value and number facts to solve problems
- The pupil can partition two-digit numbers into different combinations of tens and ones. This may include using apparatus (e.g. 23 is the same as 2 tens and 3 ones which is the same as 1 ten and 13 ones).

#### **Addition and subtraction**

- Solves problems with addition and subtraction by: 1. using concrete objects and pictorial representations, including those involving numbers, quantities and measures; and 2: applying an increasing knowledge of mental and written methods.
- Recalls and uses addition and subtraction facts to 20 and 100: fluently up to 20.
- The pupil can add 2 two-digit numbers within 100 (e.g.  $48 + 35$ ) and can demonstrate their method using concrete apparatus or pictorial representations.
- The pupil can subtract mentally a two-digit number from another two-digit number when there is no regrouping required (e.g.  $74 - 33$ ).
- The pupil can recognise the inverse relationships between addition and subtraction and use this to check calculations and work out missing number problems (e.g.  $\Delta - 14 = 28$ ).

#### **Multiplication and division**

- Solves problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
- The pupil can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables to solve simple problems, demonstrating an understanding

#### **Fractions (including decimals)**

- Recognises, finds, names and writes fractions  $1/3$ ,  $1/4$ ,  $2/4$ , and  $3/4$  of a length, shape, set of objects or quantity
- The pupil can identify  $1/3$ ,  $1/4$ ,  $1/2$ ,  $2/4$ ,  $3/4$  and knows that all parts must be equal parts of the whole.

#### **Measurement**

- Solves simple problems in a practical context involving addition and subtraction of money of the same unit including giving change
- The pupil can use different coins to make the same amount (e.g. pupil uses coins to make 50p in different ways; pupil can work out how many £2 coins are needed to exchange for a £20 note).
- The pupil can read scales in divisions of ones, twos, fives and tens in a practical situation where all numbers on the scale are given (e.g. pupil reads the temperature on a thermometer or measures capacities using a measuring jug).
- The pupil can read the time on the clock to the nearest 15 minutes.

#### **Geometry: properties of shape**

- Compares and sorts common 2-D and 3- D shapes and everyday objects
- The pupil can describe properties of 2-D and 3-D shapes (e.g. the pupil describes a triangle: it has 3 sides, 3 vertices and 1 line of symmetry; the pupil describes a pyramid: it has 8 edges, 5 faces, 4 of which are triangles and one is a square).

#### **Geometry: position and direction**

- Uses mathematical vocabulary to describe position, direction and movement including movement in a straight line, and distinguishes between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)

#### **Statistics**

- Asks and answers questions about totalling and comparing categorical data

The pupil can use estimation to check that their answers to a calculation are reasonable (e.g. knowing that  $48 + 35$  will be less than 100).

of commutativity as necessary (e.g. knowing they can make 7 groups of 5 from 35 blocks and writing  $35 \div 5 = 7$ ; sharing 40 cherries between 10 people and writing  $40 \div 10 = 4$ ; stating the total value of six 5p coins).

## Summary Statements

With reference to the Landmarks. By the end of the year:

- A child should be mentally fluent with whole numbers, counting and place value.
- A child should know the number bonds to 20 and be precise in using and understanding place value
- Using practical resources, a child can work with numerals, words and the four operations (eg concrete objects and measuring tools)
- Using a range of measures, a child can recognise, describe, draw, compare and sort different shapes and use the related vocabulary
- A child can describe and compare different quantities such as length, mass, capacity/volume, time and money
- A child can read and spell mathematical vocabulary at a level consistent with their increasing word reading and spelling knowledge

## Year 3- Landmarks

### **Key Objectives**

#### **Number and place value**

- Counts from 0 in multiples of four, eight, 50 and 100
- Can work out if a given number is greater or less than 10 or 100
- Recognises the place value of each digit in a three-digit number (hundreds, tens, and ones)
- Solves number problems and practical problems involving these ideas

#### **Addition and subtraction**

- Adds and subtracts numbers mentally including:
  1. a three-digit number and ones;
  2. a three-digit number and tens; and
  3. a three-digit number and hundreds.

#### **Multiplication and division**

- Recalls and uses multiplication and division facts for the multiplication tables- 3, 4 and 8.
- Writes and calculates mathematical statements for multiplication and division using the multiplication tables that are known including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

#### **Fractions (including decimals)**

- Counts up and down in tenths; recognises that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
- Recognises, finds and writes fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
- Recognises and shows, using diagrams, equivalent fractions with small denominators

#### **Measurement**

- Measures, compares, adds and subtracts lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
- Adds and subtracts amounts of money to give change, using both £ and p in practical contexts
- Tells and writes the time from an analogue clock and 12-hour and 24-hour clocks
- Identifies right angles, recognises that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identifies whether angles are greater than or less than a right angle

#### **Statistics**

- Interprets and presents data using bar charts, pictograms and tables

### **Summary Statements**

With reference to the KPIs. By the end of the year:

- A child will be developing written and mental methods using the four operations including number facts and the concept of place value, and performing calculations with whole numbers
- solve a range of number and place value problems;
- compare different shapes with reference to its angles;
- use measuring instruments, making reference to their units of measure;
- tell the time accurately;
- recall the majority of the multiplication tables; and
- read and spell mathematical vocabulary correctly and confidently, using growing word reading knowledge and knowledge of spelling.
- A child is able to read and write simple fractions and decimals

## Year 4- Landmarks

### **Key Objectives**

#### **Number and place value**

- Counts in multiples of six, seven, nine, 25 and 1,000
- Counts backwards through zero to include negative numbers
- Orders and compares numbers beyond 1,000
- Rounds any number to the nearest 10, 100 or 1,000

#### **Addition and subtraction**

- Solves addition and subtraction two-step problems in context, deciding which operations and methods to use and why

#### **Multiplication and division**

- Recalls multiplication and division facts for multiplication tables up to 12 x 12

#### **Fractions (including decimals)**

- Recognises and shows, using diagrams, families of common equivalent fractions
- Counts up and down in hundredths; recognises that hundredths arise when dividing an object by 100 and dividing tenths by 10
- Rounds decimals with one decimal place to the nearest whole number
- Solves simple measure and money problems involving fractions and decimals to two decimal places

#### **Measurement**

- Converts between different units of measure eg kilometre to metre; hour to minute

#### **Geometry: properties of shape**

- Compares and classifies geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identifies lines of symmetry in two dimensional shapes presented in different orientations

#### **Geometry: position and direction**

- Plots specified points and draws sides to complete a given polygon

#### **Statistics**

- Solves comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

### **Summary Statements**

With reference to the KPIs. By the end of the year:

- A child should be fluent with whole numbers and the four operations, including number facts and the concept of place value
- Developing efficient written and mental methods and performing calculations accurately with increasingly large whole numbers
- Solve a range of problems including those with simple fractions and decimal place value;
- Draw shapes with accuracy using mathematical reasoning and analyse shapes and their properties, confidently describing the relationships between them;
- Use measuring instruments accurately, making connections between measure and number;
- Recall the multiplication tables up to and including the 12 multiplication table and show precision and fluency in the work; and
- Read and spell mathematical vocabulary correctly and confidently using a growing word reading knowledge and a knowledge of spelling.

## Year 5- Landmarks

### **Key Objectives**

#### **Number and place value**

- Reads, writes, orders and compares numbers to at least 1,000,000 and determines the value of each digit
- Interprets negative numbers in context, counts forwards and backwards with positive and negative whole numbers including through zero

#### **Addition and subtraction**

- Adds and subtracts whole numbers with more than four digits, including using formal written methods (column addition and subtraction)
- Numbers mentally with increasingly large numbers (eg  $12,462 - 2,300 = 10,162$ )

#### **Multiplication and division**

- Identifies multiples and factors including finding all factor pairs of a number and common factors of two numbers
- Solves problems involving multiplication and division including using a knowledge of factors and multiples, squares and cubes
- Solves problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

#### **Fractions (including decimals)**

- Compares and orders fractions whose denominators are all multiples of the same number
- Reads and writes decimal numbers as fractions eg  $0.71 = 71/100$
- Reads, writes, orders and compares numbers with up to three decimal places
- Solves problems which require knowing percentage and decimal equivalents of  $1/2$ ,  $1/4$ ,  $1/5$ ,  $2/5$ ,  $4/5$  and those fractions with a denominator of a multiple of 10 or 25

#### **Measurement**

- Converts between different units of metric measure (eg kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- Measures and calculates the perimeter of composite rectilinear shapes in centimetres and metres
- Calculates and compares the area of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>)

#### **Geometry: properties of shape**

- Draws given angles and measures them in degrees (°)
- Distinguishes between regular and irregular polygons based on reasoning about equal sides and angles

#### **Statistics**

- Completes, reads and interprets information in tables, including timetables

### **Summary Statements**

With reference to the KPIs. By the end of the year:

- A child should be fluent in formal written methods for addition and subtraction. Using a developing knowledge of formal methods of multiplication and division, a child should be able to solve problems including properties of numbers and arithmetic

A child can:

- Make connections between fractions, decimals and percentages;
- Classify shapes with geometric properties and use the vocabulary needed to describe them; and
- Read, spell and pronounce mathematical vocabulary correctly.

## Year 6- Landmarks

### **Key Objectives**

#### **Number and place value**

- Rounds any whole number to a required degree of accuracy
- Uses negative numbers in context and calculates intervals across zero
- The pupil can demonstrate an understanding of place value, including large numbers and decimals (e.g. what is the value of the '7' in 276,541?; find the difference between the largest and smallest whole numbers that can be made from using three digits;  $8.09 = 8 + 9 \text{ ?}$ ;  $28.13 = 28 + + 0.03$ ).

#### **Calculation**

- Multiplies multi-digit numbers up to four digits by a two-digit whole number using the formal written method of long multiplication
- Divides numbers up to four digits by a two digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- Solves addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Uses estimation to check answers to calculations and determines, in the context of a problem, an appropriate degree of accuracy
- The pupil can calculate mentally, using efficient strategies such as manipulating expressions using commutative and distributive properties to simplify the calculation (e.g.  $53 - 82 + 47 = 53 + 47 - 82 = 100 - 82 = 18$ ;  $20 \times 7 \times 5 = 20 \times 5 \times 7 = 100 \times 7 = 700$ ;  $53 \div 7 + 3 \div 7 = (53 + 3) \div 7 = 56 \div 7 = 8$ ). • The pupil can use formal methods to solve multi-step problems (e.g. find the change from £20 for three items that cost £1.24, £7.92 and £2.55; a roll of material is 6m long: how much is left when 5 pieces of 1.15m are cut from the roll?; a bottle of drink is 1.5 litres, how many cups of 175ml can be filled from the bottle, and how much drink is left?).

#### **Fractions (including decimals)**

- Uses written division methods in cases where the answer has up to two decimal places Solves problems which require answers to be rounded to specified degrees of accuracy
- Recalls and uses equivalences between simple fractions, decimals and percentages, including in different contexts
- The pupil can recognise the relationship between fractions, decimals and percentages and can express them as equivalent quantities (e.g. one piece of cake that has been cut into 5 equal slices can be expressed as  $\frac{1}{5}$  or 0.2 or 20% of the whole cake). • The pupil can calculate using fractions, decimals or percentages (e.g. knowing that 7 divided by 21 is the same as  $\frac{7}{21}$  and that this is equal to  $\frac{1}{3}$ ; 15% of 60;  $11 \frac{2}{3} + 3 \frac{4}{9}$ ;  $\frac{7}{9}$  of 108;  $0.8 \times 70$ ).

#### **Ratio and Proportion**

- Solves problems involving the calculation of percentages eg of measures and calculations such as 15 per cent of 360, and the use of percentages for comparison
- Solves problems involving unequal sharing and grouping using knowledge of fractions and multiples

#### **Algebra**

- Uses simple formulae
- The pupil can substitute values into a simple formula to solve problems (e.g. perimeter of a rectangle or area of a triangle).

#### **Measurement**

- Uses, reads, writes and converts 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
- The pupil can calculate with measures (e.g. calculate length of a bus journey given start and end times; convert 0.05km into m and then into cm).

#### **Geometry: properties of shape**

- Compares and classifies geometric shapes based on their properties and sizes and finds unknown angles in any triangles, quadrilaterals and regular polygons
- The pupil can use mathematical reasoning to find missing angles (e.g. the missing angle in an isosceles triangle when one of the angles is given; the missing angle in a more complex diagram using knowledge about angles at a point and vertically opposite angles).

#### **Position and direction**

- Draws and translates simple shapes on the coordinate plane and reflects them in the axes
- Interprets pie charts and line graphs and uses these to solve problems

#### **Statistics**

- Calculates and interprets the mean as an average

<b>Summary Statements</b>	
By the end of the year, <ul style="list-style-type: none"><li>• A child should be fluent in formal written methods for all four operations including long multiplication and division and in working with fractions, decimals and percentages and ratios, and make connections between them</li><li>• A child should be able to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation A child is beginning to use the language of algebra as a tool for solving a variety of problems</li><li>• A child can:<ul style="list-style-type: none"><li>• Classify shapes with increasingly complex geometric properties and use the vocabulary needed to describe them; and</li><li>• Read, spell and pronounce mathematical vocabulary correctly.</li></ul></li></ul>	