

**EYFS Key Understandings:**

**Maths Objectives -**

- Count objects, actions and sounds.
- Count beyond ten
- Compare numbers
- Understand the 'one more than/one less than' relationship between consecutive numbers
- Explore the composition of numbers to 10.
- Automatically recall number bonds for numbers 0–10.
- Select, rotate and manipulate shapes in order to develop spatial reasoning skills
- Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.
- Continue, copy and create repeating patterns
- Compare length, weight and capacity

**Early Learning Goal – Number -**

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

**Early Learning Goal – Numerical Patterns -**

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

**Year 1 Key Understandings:**

**Number and Place Value –**

- **Count within 100, forwards and backwards, starting with any number.**
- Represent and explain how to distinguish between ‘teen’ and ‘ty’ numbers.
- Represent and explain one more or less than any given number.
- **Reason about the location of numbers to 20 within the linear number system, including comparing using  $<$ ,  $>$  and  $=$ .**

**Number Facts –**

- **Develop fluency in addition and subtraction facts within 10.**
- **Count fluently forwards and backwards in multiples of 2, 5 and 10**, explaining what is happening when counting and explaining how they know which numbers are multiples of 2, 5 and 10.
- Represent and explain what happens when doubling and halving in different contexts (including measures) and use this understanding to solve problems.

**Addition and Subtraction –**

- **Pupils represent and explain how numbers up to 10 can be composed and decomposed in different number of parts eg.  $6=2+4$  and  $6=2+3+1$ .**
- **Read, write and interpret equations containing addition (+), subtraction (-) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.**
- Solve addition and subtraction problems appropriately by choosing an appropriate method, explaining their decision and justifying their solution.

**Geometry –**

- **Recognise and identify shapes in different orientations in their environment, describe what is the same and what is different about them and justify their thinking:**
  - **2D shapes – rectangles, squares, triangles, circles etc.**
  - **3D shapes – cuboids, cubes, pyramids, spheres etc.**

**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

**Year 2 Key Understandings:**

**Number and Place Value –**

- **Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning.**
- **Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.**
- Compare, represent and explain the value of two-digit numbers in different contexts (including scales).

**Number Facts –**

- Represent and explain 10 more or 10 less than any number under 100, including in different contexts.
- **Secure fluency in addition and subtraction facts within 10, through continued practice.**
- Represent and explain how composing and decomposing of numbers up to 10 can extend to larger numbers in different contexts (including measures).

**Addition and Subtraction –**

- **Add and subtract across 10.**
- Represent and explain commutativity, the relationship between addition and subtraction and **subtraction as ‘take away’, ‘difference’ and ‘how many more to make’ in different contexts (including measures and statistics).**
- **Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number.**
- **Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.**
- Solve addition and subtraction problems by choosing an appropriate method and justifying their decision.

**Multiplication and Division –**

- Represent and explain the difference between odd and even numbers.
- Represent and explain the commutativity between multiplication and division.
- **Recognise repeated addition contexts, representing them with multiplication equations and calculating the product within 2, 5 and 10 times table.**
- **Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).**
- Represent (including arrays) and explain multiplication and division problems (involving 2s, 5s and 10s) in different contexts (including interpreting data and time).

**Fractions –**

- Represent and explain how to find halves and quarters and the relationship between them, in context of discrete objects, continuous measures, shapes, movement (turns) and time and use this understanding to solve problems.

**Measurement and Geometry –**

- Choose and use appropriate standard units (cm or m, g or kg, ml or l, degrees Celsius) and equipment to estimate and measure in different contexts, explaining and justifying decisions.

## **Landscape Mathematics Key Understandings**

- **Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties.**
- Use different coins to make the same amount.
- Read the time on a clock to the nearest 15 minutes.

**Year 3 Key Understandings:**

**Number and Place Value –**

- Represent and explain the base ten structure of the number system (up to thousands)
- **Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-standard partitioning.**
- **Know that 10 tens are equivalent to 1 hundred, and that 100 is ten times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10.**
- **Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10.**
- **Divide 100 into 2,4,5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2,4,5 and 10 equal parts.**

**Number Facts –**

- **Secure fluency in addition and subtraction facts that bridge 10, through continued practice.**
- **Recall multiplication and corresponding division facts in the 10,5,2,4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.**
- **Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10).**

**Addition and Subtraction –**

- **Calculate complements to 100.**
- **Add and subtract up to three-digit numbers using columnar methods.**
- Represent and explain addition and subtraction problems involving three-digit numbers in different contexts (including extracting information from graphs, charts, tables and measuring scales). Choose appropriate methods and justify thinking.
- **Understand the inverse relationship between addition and subtraction and how both relate to the part-part-whole structure.**
- **Understand and use the commutative property of addition and understand the related property for subtraction.**

**Multiplication and Division –**

- Represent and explain, in appropriate contexts: multiplication as both repeated addition and scaling (including fractions) and division as both sharing and grouping.
- Represent and explain multiplication and division problems (involving 3s, 4s and 8s) in different contexts (including statistics). Choose appropriate methods and justify thinking.

**Fractions –**

- **Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.**
- **Find unit fractions of quantities using known division facts (multiplication tables fluency).**
- **Reason about the location of any fraction within 1 in the linear number system.**
- **Add and subtract fractions with the same denominator, within 1.**

**Geometry –**

## **Landscore Mathematics Key Understandings**

- **Recognise right angles as a property of shape or a description of a turn, and identify right angles, acute and obtuse angles in 2D shapes presented in different orientations.**
- **Draw polygons by joining marked points, and identify parallel, perpendicular, horizontal and vertical sides.**

**Year 4 Key Understandings:**

**Number and Place Value –**

- Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.
- Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning.
- Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.
- Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.

**Number Facts –**

- Recall multiplication and division facts up to  $12 \times 12$ , and recognise products in multiplication tables as multiples of the corresponding number.
- Solve division problems, with two-digit dividends and one-digit divisors that involve remainders, and interpret remainders appropriately according to the context.
- Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100).

**Addition and Subtraction –**

- Represent and explain addition and subtraction problems involving four-digit numbers in different contexts (including extracting information from graphs, charts, tables and measuring scales). Choose appropriate methods and justify thinking.

**Multiplication and Division –**

- Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size.
- Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.
- Understand and apply the distributive property of multiplication.
- Represent and explain multiplication (involving up to three-digit by one-digit numbers) and division problems in different contexts (including measures). Choose appropriate methods and justify thinking.

**Fractions –**

- Reason about the location of mixed numbers and non-unit fractions in the linear number system.
- Convert mixed number to improper fractions and vice versa.
- Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.

**Geometry –**

- Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.

## **Landscore Mathematics Key Understandings**

- **Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons.**
- Identify different properties of triangles and quadrilaterals, including angles, sides, lines of symmetry and perimeter.
- **Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.**



**Year 5 Key Understandings:**

**Number and Place Value –**

- Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01.
- Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning.
- Reason about the location of any number with up to 2 decimal places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.
- Represent and explain how the number system includes negative numbers. Pupils can place and identify numbers on a number line, explaining and justifying their decision.
- Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.
- Convert between units of measure, including using common decimals and fractions.

**Number Facts –**

- Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.
- Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).

**Addition and Subtraction –**

- Represent and explain addition and subtraction problems involving numbers more than four-digit numbers in different contexts (including extracting information from graphs, charts, timetables and measuring scales). Choose appropriate mental or column methods and can justify their thinking.

**Multiplication and Division –**

- Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.
- Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.
- Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.
- Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.
- Represent and explain multiplication and division problems (involving up to four-digit numbers by one-digit numbers) in different contexts (including measures). Choose appropriate method and justify thinking.

**Fractions –**

- Find non-unit fractions of quantities.
- Find equivalent fractions and understand that they have the same value and the same position in the linear number system.
- Recall decimal fraction equivalents for  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$  and  $\frac{1}{10}$ , and for multiples of these proper fractions

**Geometry –**

## Landscore Mathematics Key Understandings

- Draw, measure, identify and explain angles (including angles around a point on a straight line, one whole turn and reflex angles) and use their understanding of angles to describe the properties of different shapes (regular and irregular)
- **Compare areas and calculate the area of rectangles (including squares) using standard units and solve problems involving rectilinear shapes.**
- Explain how to reflect and translate shapes on a grid in the first quadrant and use this knowledge and understanding to solve problems.

**Year 6 Key Understandings:**

**Number and Place Value –**

- Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).
- Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.
- Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.
- Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.

**Addition and Subtraction / Multiplication and Division –**

- Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).
- Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.
- Solve problems involving ratio relationships.
- Solve problems with 2 unknowns.
- Represent and explain addition and subtraction problems involving fractions with different denominators, decimals (beyond two decimal places) and calculating the interval across zero in different contexts (including extracting information from graphs, charts, timetables and measuring scales).
- Represent and explain multiplication, division and ratio problems (including up to four-digit numbers by two-digit numbers, fractions and decimals) in different contexts (including converting between metric and imperial units).
- Represent and explain multi-step problems involving the four operations in different contexts. Choose appropriate methods and justify thinking.

**Fractions –**

- Recognise when fractions can be simplified, and use common factors to simplify fractions.
- Express fractions in a common denomination and use this to compare fractions that are similar in value.
- Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.

**Geometry –**

- Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.
- Represent and explain how to find the volume of cubes and cuboids and use their understanding of properties of shapes (including circles) to find area and volume to solve problems.

## **Landscore Mathematics Key Understandings**

- Represent and explain positions on a grid with four quadrants and how to reflect and translate shapes and use this knowledge and understanding to solve problems.
- Recognise 3D shapes represented in different ways (including as 2D drawings and nets) and can draw accurate 2D shapes using given information (including from nets) explaining and justifying their thinking.