**Year 4 Learning Outcomes**

**Autumn**

**Review of column addition and subtraction**

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| 1 | Pupils identify the addends and the sum in column addition |
| 2 | Pupils use their knowledge of place value to correctly lay out column addition |
| 3 | Pupils add a pair of 2-digit numbers using column addition |
| 4 | Pupils add using column addition |
| 5 | Pupils use their knowledge of column addition to solve problems |
| 6 | Pupils add a pair of 2-digit numbers using column addition with regrouping in the ones column |
| 7 | Pupils add a pair of 2-digit numbers using column addition with regrouping in the tens column |
| 8 | Pupils add using column addition with regrouping |
| 9 | Pupils use known facts and strategies to accurately and efficiently calculate and check column addition |
| 10 | Pupils use their knowledge of column addition to solve problems |
| 11 | Pupils identify the minuend and the subtrahend in column subtraction |
| 12 | Pupils subtract using column subtraction |
| 13 | Pupils subtract from a 2-digit number using column subtraction with exchanging from tens to ones |
| 14 | Pupils subtract from a 3-digit number using column subtraction with exchanging from hundreds to tens (1) |
| 15 | Pupils subtract from a 3-digit number using a column subtraction with exchanging from hundreds to tens (2) |
| 16 | Pupils evaluate the efficiency of strategies for subtraction |

**Numbers to 10,000**

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| 1 | Pupils explain how many tens, hundreds and ones 1,000 is composed of |
| 2 | Pupils use knowledge of 1,000 to explain common measure conversions |
| 3 | Pupils use knowledge of 1,000 to solve problems |
| 4 | Pupils use different strategies to add multiples of 100 |
| 5 | Pupils use different strategies to subtract multiples of 100 |
| 6 | Pupils use knowledge of calculation and common measure conversions to solve problems |
| 7 | Pupils compose and decompose four-digit numbers in different ways |
| 8 | Pupils use strategies to make solving calculations more efficient |
| 9 | Pupils compare and order four-digit numbers |
| 10 | Pupils calculate efficiently by using knowledge of place value, addition and subtraction |
| 11 | Pupils explain what rounding is |
| 12 | Pupils round a four-digit number to the nearest thousand |
| 13 | Pupils round a four-digit number to the nearest hundred and ten |
| 14 | Pupils round a four-digit number to the nearest thousand, hundred and ten |
| 15 | Pupils add up to 3 four-digit numbers using a column addition |
| 16 | Pupils subtract four-digit numbers using a column subtraction |
| 17 | Pupils use strategies to make solving calculations more efficient |
| 18 | Pupils explain how many ‘100s’ and ‘200s’, 1,000 is composed of |
| 19 | Pupils explain how many ‘500s’ and ‘250s’, 1,000 is composed of |

**Perimeter**

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| 1 | A regular polygon has sides that are all the same length and interior angles that are all equal in size |
| 2 | Perimeter is the distance around the edge of a two-dimensional shape |
| 3 | Different shapes can have the same perimeter |
| 4 | Perimeter is measured in units of length and can be found by counting units |
| 5 | Perimeter can be calculated by adding together the side lengths of a 2D shape |
| 6 | The perimeter of a rectangle can be calculated by addition and multiplication |
| 7 | Unknown side lengths can be calculated from perimeter and known side lengths |
| 8 | The perimeter of a regular polygon can be calculated by multiplication |
| 9 | The side length of a regular polygon can be calculated by division where the perimeter is known |

**3,6,9 times tables**

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| 1 | Pupils represent counting in threes as the three times table |
| 2 | Pupils explain the relationship between adjacent multiples of three |
| 3 | Pupils use knowledge of the three times table to solve problems |
| 4 | Pupils represent counting in sixes as the six times table |
| 5 | Pupils explain the relationship between adjacent multiples of six |
| 6 | Pupils use knowledge of the six times table to solve problems |
| 7 | Pupils use known facts from the five times table to solve problems involving the six times table |
| 8 | Pupils explain the relationship between multiples of three and multiples of six |
| 9 | Pupils use knowledge of the relationships between the three and six times tables to solve problems |
| 10 | Pupils represent counting in nines as the nine times table |
| 11 | Pupils explain the relationship between adjacent multiples of nine (1) |
| 12 | Pupils explain the relationship between adjacent multiples of nine (2) |
| 13 | Pupils use known facts from the ten times table to solve problems involving the nine times table |
| 14 | Pupils explain the relationship between multiples of three and multiples of nine |
| 15 | Pupils explain the relationship between pairs of three and nine times table facts that have the same product (1) |
| 16 | Pupils explain the relationship between pairs of three and nine times table facts that have the same product (2) |
| 17 | Pupils use the divisibility rules for divisors of three |
| 18 | Pupils use the divisibility rules for divisors of six (1) |
| 19 | Pupils use the divisibility rules for divisors of six (2) |

**Spring**

**7 times tables and patterns**

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| 1 | Pupils represent counting in sevens as the 7 times table |
| 2 | Pupils explain the relationship between adjacent multiples of seven |
| 3 | Pupils use their knowledge of the 7 times table to solve problems |
| 4 | Pupils identify patterns of odd and even numbers in the times tables |
| 5 | Pupils represent a square number |
| 6 | Pupils use knowledge of divisibility rules to solve problems |

**Understanding and manipulating multiplicative relationships**

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| 1 | Pupils explain what each factor represents in a multiplication equation |
| 2 | Pupils explain how each part of a multiplication and division equation relates to a story |
| 3 | Pupils explain where zero can be part of a multiplication or division expression and the impact it has |
| 4 | Pupils partition one of the factors in a multiplication equation in different ways using representations (I) |
| 5 | Pupils partition one of the factors in a multiplication equation in different ways using representations (II) |
| 6 | Pupils explain which is the most efficient factor to partition to solve a multiplication problem |
| 7 | Pupils use knowledge of distributive law to solve two part addition and subtraction problems, efficiently |
| 8 | Pupils use knowledge of distributive law to calculate products beyond known times tables facts |
| 9 | Pupils explain the relationship between multiplying a number by 10 and multiples of 10 |
| 10 | Pupils explain why a zero can be placed after the final digit of a single-digit number when we multiply it by 10 |
| 11 | Pupils explain why a zero can be placed after the final digit of a two-digit number when we multiply it by 10 |
| 12 | Pupils explain why the final digit zero can be removed from a two-digit multiple of 10, when we divide by 10 |
| 13 | Pupils explain why the final digit zero can be removed from a three-digit multiple of 10, when we divide by 10 |
| 14 | Pupils explain the relationship between multiplying a number by 100 and multiples of 100 |
| 15 | Pupils explain why two zeros can be placed after the final digit of a single-digit number when we multiply it by 100 |
| 16 | Pupils explain why two zeros can be placed after the final digit of a two-digit number when we multiply it by 100 |
| 17 | Pupils explain why the last two zeros can be removed from a three-digit multiple of 100 when we divide it by 100 |
| 18 | Pupils explain why the last two zeros can be removed from a four-digit multiple of 100 when we divide it by 100 |
| 19 | Pupils use knowledge of the composition of 100 to multiply by 100 in different ways |
| 20 | Pupils use knowledge of the composition of 100 to divide by 100 in different ways |
| 21 | Pupils explain how making a factor 10 times the size affects the product |
| 22 | Pupils explain how making the dividend 10 times the size affects the quotient |
| 23 | Pupils explain how making a factor 100 times the size affects the product |
| 24 | Pupils explain how making the dividend 100 times the size affects the quotient |
| 25 | Pupils scale known multiplication facts by 100 |
| 26 | Pupils scale division derived from multiplication facts by 100 |

**Coordinates**

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| 1 | Pupils give directions from one position to another on a grid |
| 2 | Pupils move objects including polygons on a grid according to directions, and mark the new position |
| 3 | Pupils describe translations of polygons drawn on a square grid |
| 4 | Pupils draw polygons specified by translations |
| 5 | Pupils mark points specified as a translation from the origin |
| 6 | Pupils mark the position of points specified by coordinates in the first quadrant of a coordinate grid, and write coordinates for already-marked points |
| 7 | Pupils draw polygons specified by coordinates in the first quadrant |
| 8 | Pupils translate polygons in the first quadrant |

**Summer**

**Review of fractions**

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| 1 | Pupils identify a whole and the parts that make it up |
| 2 | Pupils explain why a part can only be defined when in relation to a whole |
| 3 | Pupils identify the number of equal or unequal parts in a whole |
| 4 | Pupils identify equal parts when they do not look the same |
| 5 | Pupils explain the size of the part in relation to the whole |
| 6 | Pupils construct a whole when given a part and the number of parts |

**Fractions greater than 1**

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| 1 | Pupils explain how to express quantities made up of both whole numbers and a fractional part |
| 2 | Pupils explain how a quantity made up of whole numbers and a fractional part is composed |
| 3 | Pupils compose and decompose quantities made of whole numbers and fractional parts |
| 4 | Pupils accurately label a range of number lines and explain the meaning of each part |
| 5 | Pupils identify numbers on marked but unlabelled number lines |
| 6 | Pupils estimate the position of numbers on a number line using fraction sense |
| 7 | Pupils compare and order mixed numbers using fraction sense |
| 8 | Pupils compare and order mixed numbers when the whole number is the same |
| 9 | Pupils compare and order mixed numbers when the whole number and the numerator of the fractional part is the same |
| 10 | Pupils make efficient choices about the order they solve an addition problem in |
| 11 | Pupils make efficient choices about the order they solve a subtraction problem in |
| 12 | Pupils express a quantity as a mixed number and an improper fraction (quarters) |
| 13 | Pupils convert a quantity from an improper fraction to a mixed number (quarters) |
| 14 | Pupils express and convert a quantity from an improper fraction to a mixed number (fifths) |
| 15 | Pupils explain how an improper fraction is converted into a mixed number (any unit) |
| 16 | Pupils explain how a mixed number is converted into an improper fraction |
| 17 | Pupils add mixed numbers |
| 18 | Pupils subtract a proper fraction from a mixed number (converting to an improper fraction first) |
| 19 | Pupils subtract a mixed number from a mixed number and explain which strategy is most efficient |
| 20 | Pupils use knowledge of subtraction to choose correct and efficient approaches when subtracting mixed numbers |

**Symmetry in 2D shapes**

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| 1 | Pupils complete a symmetrical pattern |
| 2 | Pupils compose symmetrical shapes from two congruent shapes |
| 3 | Pupils investigate lines of symmetry in 2D shapes by folding paper shape cut-outs |
| 4 | Pupils find lines of symmetry in 2D shapes using a mirror |
| 5 | Pupils reflect polygons in a line of symmetry |
| 6 | Pupils reflect polygons that are dissected by a line of symmetry |

**Time**

[**National curriculum**](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf)**statutory requirements (p28)**

Pupils should be taught to:

* read, write and convert time between analogue and digital 12- and 24-hour clocks
* solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

**Division with remainders**

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| 1 | Pupils interpret a division story when there is a remainder and represent it with an equation (i) |
| 2 | Pupils interpret a division story when there is a remainder and represent it with an equation (ii) |
| 3 | Pupils interpret a division story when there is a remainder and represent it with an equation (iii) |
| 4 | Pupils explain how the remainder relates to the divisor in a division equation |
| 5 | Pupils explain when there will and will not be a remainder in a division equation |
| 6 | Pupils use knowledge of division equations and remainders to solve problems |
| 7 | Pupils interpret the answer to a division calculation to solve a problem (i) |
| 8 | Pupils interpret the answer to a division calculation to solve a problem (ii) |