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**Year 4 Objectives**

**Place Value**

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| COUNTING   * Count backwards through zero to include negative numbers. * Count in multiples of 6, 7, 9, 25 and 1000. * Count on or back in 10s, 100s from any 2 or 3 digit number. * Count on or back in repeated steps of 1, 100, 1000. * Count up through next multiple of 10, 100, 1000. * Find 1000 more or less than a given number. |
| COMPARING NUMBERS   * Order and compare numbers beyond 1000. * Order a set of whole numbers up to 10,000. * Recognise odd and even numbers up to 1000 and some of their properties, e.g. sums, differences of pairs of odd/even numbers. * Read and write the vocabulary of comparing and ordering numbers. * Use symbols = < > correctly. Give a number lying between two others. * Recognise negative numbers in context: number line, thermometer. |
| IDENTIFYING, REPRESENTING & ESTIMATING NUMBERS   * Identify, represent and estimate numbers using different representations. * Read and write the vocabulary of estimation and approximation. * Estimate up to 250 objects. |
| READING & WRITING NUMBERS   * 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. * Read and write whole numbers up to 10,000, in figures and in words. |
| UNDERSTANDING PLACE VALUE   * Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). |
| ROUNDING   * Round any number to the nearest 10, 100 or 1000. * Round any three-digit number to the nearest 10 or 100. * Round any positive number less than 1000 to nearest 10. |
| PROBLEM SOLVING   * Solve number and practical problems that involve all of the above and with increasingly large positive numbers. * Investigate general statements about familiar numbers. * Solve number problems and puzzles. * Explain methods and reasoning orally and in writing. |

**Addition and Subtraction**

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| NUMBER BONDS   * Add strings of 4 numbers. Within 1000, addition of multiples of 10 and 100. * Recall addition and subtraction facts for each number up to 20. * Derive addition pairs that total 100, multiples of 50 that total 1000. |
| MENTAL CALCULATION   * Add and subtract numbers mentally, including: a four-digit number and ones, a four-digit number and tens, a four-digit number and hundreds. * Add/subtract 1, 10, 100 to any whole number. * Add/subtract 10, 100 1000 from any two-/three-digit number. * Add/subtract a pair of two-digit numbers. * Add several small numbers by finding pairs that total 10, or 9 or 11. * Partition into tens and units, adding tens first. * Add three 2-digit multiples of 10. * Add more than two whole numbers less than 1000, and money. * Use number facts and place value to add/subtract mentally any pair of two-digit whole numbers. * Understand commutative law of addition. * Understand principle (not name) of commutative law for + not –. * Round up or down and adjust: 2999 + 1999 (3000 + 2000 – 2) * Find a small difference by counting up. |
| WRITTEN METHODS   * Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. * Develop written methods for + and – of whole numbers less than 1000. * Develop, refine written methods for column addition/subtraction. * Write subtraction fact corresponding to given addition fact. |
| INVERSE OPERATIONS, ESTIMATING & CHECKING ANSWERS   * Estimate and use inverse operations to check answers to a calculation. * Explain and record methods. Check with addition in a different order. * Check with equivalent calculation. * Check using knowledge of sums of odd/even numbers. |
| PROBLEM SOLVING   * Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. |

**Multiplication and Division**

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| MULTIPLICATION & DIVISION FACTS   * Recall multiplication and division facts for multiplication tables up to 12 × 12 * Partition and multiply. Multiply by partitioning, e.g. 23 x 4. |
| MENTAL CALCULATION   * 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. * Derive doubles of whole numbers to 50, corresponding halves. * Derive doubles of multiples of 10 to 500, corresponding halves. * Derive doubles of multiples of 100 to 5000, corresponding halves. * Identify near doubles. * Multiply a two-digit number by 10. * Multiply and divide whole numbers by 10. * Multiply or divide whole numbers by 10 or 100. * Multiply TU by U, e.g. 13 x 3. * Multiply and divide an integer up to 1000 by 10; understand the effect. * Understand commutative and associative laws of multiplication. * Understand distributive law. * Round up or down after division. * Recognise and use factor pairs and commutativity in mental calculations. |
| WRITTEN CALCULATION   * Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. * Approximate first, use informal pencil and paper methods to multiply and divide. * Develop and refine written methods for TU x U. * Develop and refine written methods for TU ∏ U. |
| PROBLEM SOLVING   * Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. * Choose appropriate number operations and calculation methods to solve money and ‘real life’ word problems with one or more steps. |
| INVERSE OPERATIONS, ESTIMATING & CHECKING ANSWERS   * Explain working. * Check with inverse operation. * Check results by approximating. |

**Algebra**

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| EQUATIONS   * Solve problems, including **missing number** problems, using number facts, place value, and more complex addition and subtraction. * Solve problems, including **missing number** problems, involving multiplication and division, including integer scaling. |
| FORMULAE   * Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit*.* |
| SEQUENCES   * Recognise, extend number sequences formed by counting from any number in steps of constant size, e.g. 25 to 500. * Recognise, extend number sequences formed by counting from any number in steps of constant size, extend beyond zero if counting back. * Solve number puzzles, recognise patterns, generalise and predict. |

**Fractions including decimals and percentages**

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| COUNTING IN FRACTIONAL STEPS   * Count up and down in hundredths. |
| RECOGNISING FRACTIONS   * Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. * Use fraction notation. * Recognise fractions that are several parts of a whole, and mixed numbers. * Find fractions of shapes. |
| COMPARING FRACTIONS   * Compare and order unit fractions 1/3, ¼ and 1/2, and fractions with the same denominators. * Relate fractions to division and find simple fractions of quantities. * Compare a fraction with one half, and say whether it is greater or less. |
| COMPARING DECIMALS   * Compare numbers with the same number of decimal places up to two decimal places. * Use decimal notation for tenths, hundredths (money, metres and centimetres) and use in context. * Order decimals with two places. |
| ROUNDING INCLUDING DECIMALS   * Round decimals with one decimal place to the nearest whole number * Round to the nearest £ or metre. * Convert £ to p, or metres to centimetres, and vice versa. |
| EQUIVALENCE   * Recognise and show, using diagrams, families of common equivalent fractions. * Recognise equivalence of simple 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. * Recognise the equivalence of decimal, fraction forms of one half, one quarter and tenths. |
| ADDITION & SUBTRACTION OF FRACTIONS   * Add and subtract fractions with the same denominator. * Identify two fractions with total of 1. |
| MULTIPLICATION & DIVISION OF DECIMALS   * Find the effect of dividinga one or two digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. |
| PROBLEM SOLVING   * 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. |

**Position and Direction**

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| POSITION, DIRECTION & MOVEMENT   * Describe positions on a 2-D grid as coordinates in the first quadrant. * Recognise position on square grids with numbered lines. * Describe movements between positions as translations of a given unit to the left/right and up/down. * Read and begin to write the vocabulary of movement. * Plot specified points and draw sides to complete a given polygon. |
| PATTERN   * Solve shape problems or puzzles. Explain reasoning and methods. |

**Shape**

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| IDENTIFYING SHAPES & THEIR PROPERTIES   * Identify lines of symmetry in 2-D shapes presented in different orientations. * Describe and visualise 3-D and 2-D shapes, inc. tetrahedron, heptagon. * Recognise equilateral and isosceles triangles. * Visualise solid shapes from 2–D drawings. * Identify simple nets. * Recognise clockwise, anti-clockwise. |
| DRAWING & CONSTRUCTING   * Complete a simple symmetric figure with respect to a specific line of symmetry * Sketch reflection of simple shape in a mirror. |
| COMPARING & CLASSIFYING   * Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. * Classify shapes (right angles, regularity, symmetry). * Investigate general statements about shapes. * Make shapes and discuss properties. |
| ANGLES   * Identify acute and obtuse angles and compare and order angles up to two right angles by size. * Start to draw, measure and order angles. * Use eight compass points. * Recognise horizontal and vertical lines. * Begin to measure angles in degrees. * Know whole turn, 360\*, 4 right angles; quarter turn, 90\*, 1 right angle; half turn, 180°, 2 right angles. * Recognise 45\* as half a right angle. |

**Measurement**

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| COMPARING & ESTIMATING   * Estimate, compare and calculate different measures, including money in pounds and pence. |
| MEASURING & CALCULATING   * Convert £ to p. Choose appropriate number operations and calculation methods to solve money or ‘real life’ word problems with one/two steps.   **Length:**   * Use, read, write km, m, cm, mm and mile. * Know and use relationships between units. * Know 1/2, 1/4, 3/4, 1/10 of 1 kilometre in m, 1 metre in cm or mm. * Suggest suitable units and equipment to estimate or measure length. * Record metres and centimetres using decimals, and other measurements using mixed units. Convert up to 1000 cm to metres and vice versa.   **Mass:**   * Measure and compare using kilograms and grams, and know and use the relationship between them. Know 1/4, 1/2, 3/4 and 1/10 of 1 kg in grams. * Suggest suitable units and equipment to estimate or measure mass. * Record measurements to suitable degree of accuracy, using mixed units, or the nearest whole/half/quarter unit (e.g. 3.25 kg).   **Capacity:**   * Use, read, write litre (l), millilitre (ml), pint. * Know 1/4, 1/2, 3/4, 1/10 of 1 litre in ml. * Suggest suitable units and equipment to estimate or measure capacity. * Record measurements to suitable degree of accuracy, using mixed units, or the nearest whole/half/quarter unit (e.g. 3.25 litres). * Read a variety of scales and dials to a suitable degree of accuracy. * Measure and calculate the **perimeter** of a rectilinear figure and simple shapes (including squares) in centimetres and metres. * Find the area of rectilinear shapes by counting squares. * Measure and calculate area of rectangles and simple shapes, using counting methods and standard units (square centimetres). * Choose appropriate number operations and calculation methods to solve measurement word problems with one or more steps. . |
| TELLING THE TIME   * Read, write and convert time between analogue and digital 12 and 24-hour clocks. * Use, read, write vocabulary of time. * Read time to 1 min. on analogue/12-hour digital clock. * Use 9:53, a.m. and p.m. * Estimate and check times using seconds, minutes, hours. * Read timetables and use this year’s calendar. * Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. |
| CONVERTING   * Convert between different units of measure (e.g. kilometre to metre; hour to minute). * 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. |

**Statistics**

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| INTERPRETING, CONSTRUCTING & PRESENTING DATA   * Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. |
| SOLVING PROBLEMS   * Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. * Solve a given problem by collecting, classifying, representing and interpreting data in tally charts, frequency tables, pictograms (symbol) representing 2, 5, 10 units). * Solve a given problem by collecting, classifying, representing and interpreting data in bar charts; intervals labelled in 2s, 5s, 10s, 20s. * Solve a given problem by collecting, classifying, representing and interpreting data in Venn and Carroll diagrams: two criteria. |