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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.
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| 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.
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| 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.
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| 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.
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| UNDERSTANDING PLACE VALUE* Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).
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| 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.
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| 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.
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**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.
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| 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.
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| 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.
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| 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.
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| PROBLEM SOLVING * Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
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**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.
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| 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.
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| 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.
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| 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.
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| INVERSE OPERATIONS, ESTIMATING & CHECKING ANSWERS * Explain working.
* Check with inverse operation.
* Check results by approximating.
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**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.
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| FORMULAE * Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit*.*
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| 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.
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**Fractions including decimals and percentages**

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| COUNTING IN FRACTIONAL STEPS * Count up and down in hundredths.
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| 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.
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| 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.
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| 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.
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| 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.
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| 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.
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| ADDITION & SUBTRACTION OF FRACTIONS * Add and subtract fractions with the same denominator.
* Identify two fractions with total of 1.
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| 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.
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| 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.
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**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.
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| PATTERN * Solve shape problems or puzzles. Explain reasoning and methods.
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**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.
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| DRAWING & CONSTRUCTING * Complete a simple symmetric figure with respect to a specific line of symmetry
* Sketch reflection of simple shape in a mirror.
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| 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.
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| 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.
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**Measurement**

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| COMPARING & ESTIMATING * Estimate, compare and calculate different measures, including money in pounds and pence.
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| 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. .
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| 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.
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| 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.
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**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.
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| 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.
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