Primary Stage 4 Mathematics for Year 4

Number

Numbers and the number system

➢ Read and write numbers up to 10 000.
➢ Count on and back in ones, tens, hundreds and thousands from four-digit numbers.
➢ Understand what each digit represents in a three- or four-digit number and partition into thousands, hundreds, tens and units.
➢ Use decimal notation and place value for tenths and hundredths in context, e.g. order amounts of money; convert a sum of money such as $13.25 to cents, or a length such as 125 cm to metres; round a sum of money to the nearest pound.
➢ Understand decimal notation for tenths and hundredths in context, e.g. length.
➢ Find multiples of 10, 100, 1000 more/less than numbers of up to four digits, e.g. 3407 + 20 = 3427.
➢ Multiply and divide three-digit numbers by 10 (whole number answers) and understand the effect; begin to multiply numbers by 100 and perform related divisions.
➢ Recognise multiples of 5, 10 and 100 up to 1000.
➢ Round three- and four-digit numbers to the nearest 10 or 100.
➢ Position accurately numbers up to 1000 on an empty number line or line marked off in multiples of 10 or 100.
➢ Estimate where three- and four-digit numbers lie on empty 0–1000 or 0–10 000 lines.
➢ Compare pairs of three-digit or four-digit numbers, using the > and < signs, and find a number in between each pair.
➢ Use negative numbers in context, e.g. temperature.
➢ Recognise and extend number sequences formed by counting in steps of constant size, extending beyond zero when counting back.
➢ Recognise odd and even numbers.
➢ Make general statements about the sums and differences of odd and even numbers.
➢ Order and compare two or more fractions with the same denominator (halves, quarters, thirds,
➢ fifths, eighths or tenths).
➢ Recognise the equivalence between: 1/2, 4/8, and 5/10; 1/4 and 2/8; 1/5 and 2/10.
➢ Use equivalence to help order fractions, e.g. 7/10 and 3/4 .
➢ Understand the equivalence between one-place decimals and fractions in tenths.
➢ Understand that 1/2 is equivalent to 0.5 and also to 5/10 .
➢ Recognise the equivalence between the decimal fraction and vulgar fraction forms of halves, quarters, tenths and hundredths.
➢ Recognise mixed numbers, e.g. 5¾, and order these on a number line.
➢ Relate finding fractions to division.
➢ Find halves, quarters, thirds, fifths, eighths and tenths of shapes and numbers.

Calculation

Mental strategies

➢ Derive quickly pairs of two-digit numbers with a total of 100, e.g. 72 + ▦ 100.
➢ Derive quickly pairs of multiples of 50 with a total of 1000, e.g. 850 + ▦ 1000.
➢ Identify simple fractions with a total of 1, e.g. ¼ + ▦ 1.
➢ Know multiplication for 2x, 3x, 4x, 5x, 6x, 9x and 10x tables and derive division facts.
➢ Recognise and begin to know multiples of 2, 3, 4, 5 and 10, up to the tenth multiple.
➢ Add three or four small numbers, finding pairs that equal 10 or 20.
➢ Add three two-digit multiples of 10, e.g. 40 + 70 + 50.

- Add and subtract near multiples of 10 or 100 to or from three-digit numbers, e.g. 367 – 198 or 278+ 49.
- Add any pair of two-digit numbers, choosing an appropriate strategy.
- Subtract any pair of two-digit numbers, choosing an appropriate strategy.
- Find a difference between near multiples of 100, e.g. 304 – 296.
- Subtract a small number crossing 100, e.g. 304 – 8.
- Multiply any pair of single-digit numbers together.
- Use knowledge of commutativity to find the easier way to multiply.
- Understand the effect of multiplying and dividing three-digit numbers by 10.
- Derive quickly doubles of all whole numbers to 50, doubles of multiples of 10 to 500, doubles of multiples of 100 to 5000, and corresponding halves.

Addition and subtraction

- Add pairs of three-digit numbers.
- Subtract a two-digit number from a three-digit number.
- Subtract pairs of three-digit numbers.

Multiplication and division

- Double any two-digit number.
- Multiply multiples of 10 to 90 by a single-digit number.
- Multiply a two-digit number by a single-digit number.
- Divide two-digit numbers by single digit-numbers (answers no greater than 20).
- Decide whether to round up or down after division to give an answer to a problem.
- Understand that multiplication and division are the inverse function of each other.
- Begin to understand simple ideas of ratio and proportion, e.g. a picture is one fifth the size of the real dog. It is 25 cm long in the picture, so it is 5 × 25 cm long in real life.

Geometry

Shapes and geometric reasoning

- Identify, describe, visualise, draw and make a wider range of 2D and 3D shapes including a range of quadrilaterals, the heptagon and tetrahedron; use pin boards to create a range of polygons. Use spotty paper to record results.
- Classify polygons (including a range of quadrilaterals) using criteria such as the number of right angles, whether or not they are regular and their symmetrical properties.
- Identify and sketch lines of symmetry in 2D shapes and patterns.
- Visualise 3D objects from 2D nets and drawings and make nets of common solids.
- Find examples of shapes and symmetry in the environment and in art.

Position and movement

- Describe and identify the position of a square on a grid of squares where rows and columns are numbered and/or lettered.
- Know that angles are measured in degrees and that one whole turn is 360° or four right angles; compare and order angles less than 180°.
- Devise the directions to give to follow a given path.

Measure

Length, mass and capacity

- Choose and use standard metric units and their abbreviations (km, m, cm, mm, kg, g, *l* and m*l*) when estimating, measuring and recording length, weight and capacity.
- Know and use the relationships between familiar units of length, mass and capacity; know the meaning of 'kilo', 'centi' and 'milli'.

- ➢ Where appropriate, use decimal notation to record measurements, e.g. 1.3 m, 0.6 kg, 1.2 *l*.
- ➢ Interpret intervals/divisions on partially numbered scales and record readings accurately.
   Time
- ➢ Read and tell the time to nearest minute on 12-hour digital and analogue clocks.
- ➢ Use am, pm and 12-hour digital clock notation.
- ➢ Read simple timetables and use a calendar.
- ➢ Choose units of time to measure time intervals.
   Area and perimeter
- ➢ Draw rectangles, and measure and calculate their perimeters.
- ➢ Understand that area is measured in square units, e.g. cm².
- ➢ Find the area of rectilinear shapes drawn on a square grid by counting squares.

Handling data
Organising, categorising and representing data
- ➢ Answer a question by identifying what data to collect, organising, presenting and interpreting data in tables, diagrams, tally charts, frequency tables, pictograms (symbol representing 2, 5, 10 or 20 units) and bar charts (intervals labelled in twos, fives, tens or twenties).
- ➢ Compare the impact of representations where scales have different intervals.
- ➢ Use Venn diagrams or Carroll diagrams to sort data and objects using two or three criteria.

Problem solving
Using techniques and skills in solving mathematical problems
- ➢ Choose appropriate mental or written strategies to carry out calculations involving addition or subtraction.
- ➢ Understand everyday systems of measurement in length, weight, capacity and time and use these to solve simple problems as appropriate.
- ➢ Check the results of adding numbers by adding them in a different order or by subtracting one number from the total.
- ➢ Check subtraction by adding the answer to the smaller number in the original calculation.
- ➢ Check multiplication using a different technique, e.g. check 6 x 8 = 48 by doing 6 x 4 and doubling.
- ➢ Check the result of a division using multiplication, e.g. multiply 4 by 12 to check 48 ÷ 4.
- ➢ Recognise the relationships between 2D shapes and identify the differences and similarities between 3D shapes.
- ➢ Estimate and approximate when calculating, and check working.
Using understanding and strategies in solving problems
- ➢ Make up a number story for a calculation, including in the context of measures.
- ➢ Explain reasons for a choice of strategy when multiplying or dividing.
- ➢ Choose strategies to find answers to addition or subtraction problems; explain and show working.
- ➢ Explore and solve number problems and puzzles, e.g. logic problems.
- ➢ Use ordered lists and tables to help to solve problems systematically.
- ➢ Describe and continue number sequences, e.g. 7, 4, 1, –2, ... identifying the relationship between each number.
- ➢ Identify simple relationships between shapes, e.g. these polygons are all regular because ...
- ➢ Investigate a simple general statement by finding examples which do or do not satisfy it.
- ➢ Explain methods and reasoning orally and in writing; make hypotheses and test them out.