



***Maths Makes Sense***

**2**

***Medium-term plan***

OXFORD

# Maths Makes Sense 2 Block 1

## End-of-block objectives

### Arithmetic 1

- ✧ Copy and calculate vertical additions and subtractions with up to 4-digit whole numbers (no 'tricky' columns)

$$\begin{array}{r} 4321 \\ + 245 \\ \hline 4566 \end{array}$$

- ✧ Copy and calculate addition, subtraction, multiplication and division Maths Stories with 1-digit whole numbers, including zero,  $\frac{1}{2}$  and  $\frac{1}{4}$ , e.g.  $4 - 2 + 0 + \frac{1}{2} + \frac{1}{2} = 3$ .

### Geometry

- ✧ Read information from grids to find the number of sticks, sides, lengths of sides and perimeter of closed shapes
- ✧ Identify a line of symmetry in 2D shapes
- ✧ Use the vocabulary 'line of symmetry' and 'not a line of symmetry'.

### Data and Measure

- ✧ Draw hands on a clock face to show the time to the quarter hour, e.g. quarter to six, five forty-five
- ✧ Read the time from an analogue clock to the quarter hour, saying it as *o'clock* or *past/to* the hour, e.g. *quarter to six*, and in hours and minutes, e.g. *five forty-five*
- ✧ Write the 12-hour time in figures, to the quarter hour, e.g. 5:45.

### Arithmetic 2

- ✧ Look at an embellished Real-Life Story involving addition, subtraction or multiplication and identify what the basic Real-Life Story is 'about', e.g. apples (I peeled one apple to make a pie. I peeled another two apples for the pie. My pie had three apples in it.)
- ✧ Look at an embellished Real-Life Story involving addition, subtraction or multiplication and write the implied Maths Story, e.g.  $1 + 2 = 3$  (I peeled one apple to make a pie. I peeled another two apples for the pie. My pie had three apples in it.)

### Reasoning

- ✧ Know that the inverse of add is take away, and, for an addition Maths Story, write two related subtraction Maths Stories, e.g. for  $3 + 2 = 5$ , write  $5 - 2 = 3$  and  $5 - 3 = 2$
- ✧ For an addition Maths Story, use the commutative law to write the related addition Maths Story, e.g. for  $3 + 2 = 5$ , write  $2 + 3 = 5$
- ✧ For a multiplication Maths Story, use the commutative law to write the related multiplication Maths Story, e.g. for  $2 \times 3 = 6$ , write  $3 \times 2 = 6$ .

## Daily practice

- ✧ Practise writing vertical additions and subtractions with up to 4-digit whole numbers accurately
- ✧ Practise writing addition, subtraction, multiplication and division Maths Stories with 1-digit whole numbers and zero,  $\frac{1}{2}$  and  $\frac{1}{4}$  accurately
- ✧ Practise adding or taking away 10 or 20, and finding 10 or 20 more than or less than
- ✧ Order 1- and 2-digit numbers on a number line.
- ✧ Chant the two, five and ten times tables from memory
- ✧ Recall multiplication facts for the two, five and ten times tables
- ✧ Copy and complete vertical additions and subtractions
- ✧ Copy and complete the Maths Story
- ✧ Draw short and long hands on clock faces
- ✧ Memorise the months of the year
- ✧ Memorise the number of days in each month
- ✧ Complete the questions on the 'I can' pages in Progress Book 2A
- ✧ Discuss achievements in Progress Book 2A and fill in the chart

## Resources

### **Maths Makes Sense Toolkit**

- ✧ Whole cups, half cups, quarter cups, pupil tables, pupil whole, half and quarter cups, dm sticks, 0-99 Grid, place value cards, wooden stand

### **Other**

- ✧ Flipchart, lined exercise books, clock, 15-cm rulers, pencils, thin sticks, 2D cardboard, 3D shapes, scissors, colouring pencils

## Cross-curricular links

### **Throughout the school day**

- ✧ Data and Measure, Practice telling the time using analogue and digital clocks

### **Throughout the school day**

- ✧ Daily practice. Practice saying the 2×, 5× and 10× tables

### **Literacy**

- ✧ Arithmetic. Look for any implied Maths Stories in story books.

## Key vocabulary

commutative law • context • difference between • embellished Real-Life Story • half past • inverse • line of symmetry • months of the year • o'clock • symmetry • quarter past • quarter to

# Maths Makes Sense 2 Block 2

## End-of-block objectives

### Arithmetic 1

- ✧ Copy and calculate vertical additions with up to 4-digit whole numbers and a 'tricky' units column, using funny writing.

### Geometry

- ✧ Measure the length of sides of 2D shapes in millimetres, e.g.  $AB = 45 \text{ mm}$
- ✧ Draw and name diagonals of 2D shapes and measure them in millimetres, e.g. 'miss- one-corner, diagonal  $AB = 49 \text{ mm}$
- ✧ Draw the symbol for a turn
- ✧ Recognise quarter turns in 2D shapes as right angles and draw the symbol for a right angle.

### Data and Measure

- ✧ Select and use measuring tools for length, to measure accurately in cm and in m
- ✧ Select and use measuring tools for mass, to measure accurately in g and in kg
- ✧ Select and use measuring tools for volume, to measure accurately in ml.

### Arithmetic 2

- ✧ Look at a Maths Story based on simple information from a grid, e.g.  $1 + 3 = 4$ , and, for the Maths Story, say a basic Real-Life Story and say what the basic Real-Life Story is about, e.g.  $(1 + 3 = 4)$  One pet add 3 pets equals four pets; the Real-Life Story is about pets

### Reasoning

- ✧ For a multiplication Maths Story, e.g.  $3 \times 2 = 6$ , use the inverse of 'multiply' to write two division Maths Stories, e.g.  $6 \div 3 = 2$  and  $6 \div 2 = 3$
- ✧ Write multiplication Maths Stories and division Maths Stories in a grid in preparation for long multiplication and division.
- ✧ Use times tables to complete a division Maths Stories, e.g.  $18 \div 3 = 6$ .

## Daily practice

- ✧ Practise addition facts selected at random
- ✧ Practise adding 1-digit numbers to 8
- ✧ Practise adding 1-digit numbers to 8, using a number line
- ✧ Practise addition number pairs to 50 involving 8
- ✧ Add 1-digit numbers to nine using cups
- ✧ Add 1-digit whole numbers to nine
- ✧ Use a number line for addition strategies
- ✧ Order numbers and place them on a 0–99 grid
- ✧ Represent repeated addition and multiplication as arrays
- ✧ Practise number pairs with 2-digit totals
- ✧ Copy and complete vertical additions and subtractions
- ✧ Write 2-digit numbers in funny writing
- ✧ Copy and complete vertical additions with a tricky column
- ✧ Rapid practice of the two, five and ten times tables
- ✧ Chant the two times table in two ways
- ✧ Chant the ten times table in two ways
- ✧ Chant the five times table from memory
- ✧ Memorise multiplication facts
- ✧ Recognise a £1 coin as having the same value as 100 pence
- ✧ Read money amounts in pounds and pence, and identify the equivalent in pennies, as well as coins with the same value
- ✧ Measure lines in mm and record measurements
- ✧ Measure the length of sides in diagonals in mm
- ✧ Find explicit and implicit information on a grid
- ✧ Complete the questions on the 'I can' pages in Progress Book 2A
- ✧ Discuss achievements in Progress Book 2A and fill in the chart

## Resources

### Maths Makes Sense Toolkit

- ✧ Whole cups, place value cards, dm sticks, pupil whole cups

### Other

- ✧ Lined exercise books, flipchart and pen, pointer, squared paper
- ✧ 15-cm ruler, two 50p coins, one £1 coin, one hundred 1p coins in a clear bag, bag of one hundred 1p coins, bag of twenty 1p coins, £1 coin, 20p coin
- ✧ Little box made using PCM 13, 5-ml teaspoon, 10-ml dessert spoon, 250-ml beaker, 6 1-l measuring jugs, 6 plastic cups, 6 funnels, 6 large bowls of water, six 1-l transparent plastic containers of different shapes, each marked with three labelled lines – A at 800 ml, B at 500 ml and C at 300 ml, six A4 stand-up cards marked with numbers 1–6
- ✧ Resources listed on PCM 20

## Cross-curricular links

### Science, Design and Technology

- ✧ Data and Measure. Measure length in millimetres, mass in Kg and volume in millilitres.

### ICT

- ✧ Arithmetic. Use ICT to find Maths Stories from information in grids.

### PSCHE

- ✧ Progress Books, 'I can' pages. Practise turn-taking and listening skills when discussing achievements in Progress Books.

## Key vocabulary

analogue scales • capacity • diagonal • digital scales • explicit information • funny writing • implicit information • length • mass • millilitre • millimetre • 'miss-one-corner' diagonal • one quarter of a full turn • right angle (spike turned through a right angle) • side • the inverse of times is 'divided by' • tricky units column • volume

# Maths Makes Sense 2 Block 3

## End-of-block objectives

### Arithmetic 1

- ✧ Copy vertical subtractions with up to 4-digit whole numbers and a 'tricky' units column
- ✧ Calculate vertical subtractions with up to 4-digit whole numbers and a 'tricky' units column using 'funny counting'.

$$\begin{array}{r} \phantom{0}^3 \phantom{0}^1 \\ 83\cancel{4}5 \\ -3227 \\ \hline 5118 \end{array}$$

### Geometry

- ✧ Recognise and name 2D faces in 3D shapes
- ✧ Recognise and name 2D faces in pictures of 3D shapes
- ✧ Use the vocabulary *side* and *corner* for 2D faces
- ✧ Use the vocabulary *edge* and *vertex* for 3D shapes

### Data and Measure

- ✧ Answer 'How many?' and 'Difference between' questions about information presented in a grid or bar chart by recognising related addition and subtraction Maths Stories.

### Arithmetic 2

- ✧ Say and write an addition Maths Story to partition a 2-, 3- or 4-digit whole number, e.g. write  $3246 = 3000 + 200 + 40 + 6$ , and say: *Three thousand, two hundred and forty-six equals three thousand, add two hundred, add forty, add six*
- ✧ Read and copy mixed numbers accurately, e.g. copy  $1\frac{3}{4}$  and read it as one and three quarters
- ✧ Read subtraction Maths Stories as 'difference between' stories

### Reasoning

- ✧ For a simple word problem involving all four operations write what the basic Real-Life Story is about, e.g. pencils
- ✧ For a simple word problem, identify the correct operations and write the addition, subtraction, multiplication or division Maths Story, e.g.  $12 + 7 - 10 = 9$
- ✧ Answer the question in a simple word problem involving addition, subtraction, multiplication or division.

## Daily practice

- ✧ Practise and memorise addition facts selected at random
- ✧ Practise and memorise addition facts with a focus on doubling and the two times table
- ✧ Practise and memorise addition facts up to 20
- ✧ Practise addition number pairs to 20
- ✧ Memorise the two times table
- ✧ Memorise multiplication facts
- ✧ Complete addition and multiplication Maths Stories to 20
- ✧ Memorise the names and number of sides for 2D shapes
- ✧ Read information from calendars
- ✧ Read, spell and write number names 'zero' to 'ten', eleven to twenty
- ✧ Copy a grid
- ✧ Write 2-digit whole numbers using funny counting
- ✧ Name 2D shapes and write the number of sides
- ✧ Copy a bar chart
- ✧ Copy and complete vertical subtractions with a 'tricky' column
- ✧ Copy mixed numbers
- ✧ Recognise repeated addition and multiplication as *Same Value: Different Appearance*
- ✧ Recognise repeated subtraction and division as *Same Value: Different Appearance*
- ✧ Estimate lengths in metres
- ✧ Measure and estimate lengths in centimetres
- ✧ Measure objects using non-standard units
- ✧ Complete the questions on the 'I can' pages in Progress Book 2B
- ✧ Discuss achievements in Progress Book 2B and fill in the chart.

## Resources

### Maths Makes Sense Toolkit

- ✧ 0–99 Grid, place value cards, wooden stand, whole, half and quarter cups, pupil tables, pupil whole, half and quarter cups

### Other

- ✧ Lined exercise books, flipchart, 3D shapes with flat faces (no spheres or cylinders); one 1 dm by 1 dm square of card; one 1 m by 1 dm by 1 dm cube made with card, models of 2D shapes, including a rectangle and a pentagon, model of a cube, 15-cm rulers, pencils, colouring pencils, cm-squared exercise books, plain paper, 30-cm ruler

## Cross-curricular links

### Science, Design and Technology

- ✧ Data and Measure. Measure length in millimetres.

### Art, Design and Technology

- ✧ Geometry. Make models using named 3D shapes.

### ICT

- ✧ Data and Measure. Use ICT to present and examine information in grids.

## Key vocabulary

corner • cube • doubling • edge • face • invisible and • Make the impossible–possible! • mixed number • partition • repeated addition • repeated subtraction • side • vertex

# Maths Makes Sense 2 Block 4

## End-of-block objectives

### Arithmetic 1

- ✧ Analyse and work with word problems associated with simple Real-Life Stories, e.g. write the Maths Stories

### Geometry

- ✧ Judge whether there is a line of symmetry or not on a 2D shape
- ✧ Draw an arc to show turning through an angle and draw a right angle symbol to show turning through a right angle
- ✧ Name and label faces in 3D shapes

### Data and Measure

- ✧ Write a cm length in dm and cm, e.g.  $17\text{ cm} = 1\text{ dm } 7\text{ cm}$ , and a mm length in cm and mm, e.g.  $28\text{ mm} = 2\text{ cm } 8\text{ mm}$
- ✧ Answer word problems by writing the change from £1.

### Arithmetic 2

- ✧ Complete different types of number puzzle
- ✧ Continue a sequence of numbers or shapes and describe the connection between the steps, e.g. for the sequence 1, 4, 7, 10, identify that the next two steps are 13, 16, and that each step is three larger than the previous step.

### Reasoning

- ✧ Write what the basic Real-Life Story in a simple word problem involving addition, subtraction, multiplication or division is about, e.g. pencils
- ✧ Write the addition, subtraction, multiplication or division Maths Story from the word problem, e.g.  $12 + 7 - 10 = 9$
- ✧ Answer the question in a simple word problem involving addition, subtraction, multiplication or division, e.g. There are 12 pencils in a box. Julia puts 7 more pencils in the box. Alan takes out 10 pencils. How many pencils are left in the box? (9)
- ✧ Say whether a division Real Story is Type 1, e.g. six cups, divided by two cups, equals three, or Type 2, e.g. six cups, divided by two, equals three cups.

## Daily practice

- ✧ Practise finding complements of five
- ✧ Practise finding complements of ten
- ✧ See '5' within other 1-digit numbers
- ✧ See 1-digit numbers within ten
- ✧ Add numbers to 10 up to a total of 20
- ✧ Practise calculation strategies for the four operations
- ✧ Practise the four operations
- ✧ Recognise fractions of a whole
- ✧ Find one third and two thirds of quantities
- ✧ Practise division with remainders
- ✧ Practise recognising Type 1 and Type 2 Real Stories for division
- ✧ Draw a Real Story picture and a Maths Story diagram
- ✧ Find a line of symmetry
- ✧ Find the missing number needed to make 10
- ✧ Investigate a general statement about a missing number Maths Story
- ✧ Find the missing numbers to complete a sequence
- ✧ Find the missing numbers to complete a multiplication or division Maths Story
- ✧ Draw the correct symbol to show whether or not an angle is a right angle
- ✧ Use the signs =, > or <
- ✧ Find the missing tens or units number to complete a Maths Story
- ✧ Find the total value of the coins
- ✧ Practise bigger than, smaller than and equals
- ✧ Find, name and shade half of an object
- ✧ Use the inverse of 'times' to find two division Maths Stories
- ✧ Complete the questions on the 'I can' pages in Progress Book 2B
- ✧ Discuss achievements in Progress Book 2B and fill in the chart.

## Resources

### Maths Makes Sense Toolkit

- ✧ Whole cups, half cups, quarter cups,  $\frac{1}{2}$  card,  $\frac{1}{4}$  card,  $\frac{3}{4}$  card, dm sticks (optional), pupil tables, pupil whole cups

### Other

- ✧ Lined exercise books, cm-squared exercise books, plain paper, 15-cm ruler, flipchart, cube, cuboid, metre stick (optional), colouring pencils

## Cross-curricular links

### ICT

- ✧ Geometry. Use programmable devices to make right-angle turns.

### History, Geography

- ✧ Data and Measure. Use coins from different countries, and historical coins in word problems.

### Art

- ✧ Arithmetic. Make collages, 3D work, prints and drawings using patterns and sequences

## Key vocabulary

changing sequence/pattern • instruction • question • remainder • repeating sequence/pattern • sequence • think about the word problem! • type 1 division real story • type 2 division real story

# Maths Makes Sense 2 Block 5

## End-of-block objectives

### Arithmetic 1

- ✧ Calculate answers to one-step word problems using addition, subtraction, multiplication or division, e.g. use addition to work out how far a tortoise walks altogether if it walks 8 m and then 5 m.

### Geometry

- ✧ Recognise 2D shapes and polygons and name individual polygons
- ✧ Recognise and copy the names of 'special' triangles and quadrilaterals, e.g. equilateral, isosceles and right-angled triangles, squares and rectangles.

### Data and Measure

- ✧ Understand information presented in a simple bar chart or pictogram, and use related language, e.g. *title*, *label*, *bar*, *symbol*
- ✧ Answer simple questions and word problems relating to bar charts and pictograms, e.g. Which fruit was the most popular?

### Arithmetic 2

- ✧ Complete a variety of number puzzles
- ✧ Find halves and quarters of numbers and objects

### Reasoning

- ✧ Select and use appropriate measuring tools to solve word problems involving measures
- ✧ Use the 'Think About the Word Problem!' steps to solve real-life measuring problems, e.g. identify instructions and questions

## Daily practice

- ✧ Add 1-digit whole numbers cumulatively
- ✧ Add and subtract 1-digit whole numbers cumulatively
- ✧ Multiply, add and subtract 1-digit whole numbers cumulatively
- ✧ Multiply, add and subtract 1-digit and 2-digit whole numbers cumulatively
- ✧ Solve simple addition and subtraction equations
- ✧ Solve simple multiplication and division equations
- ✧ Round up and down to the nearest 10
- ✧ Compare the mass of five parcels
- ✧ Estimate the answers to calculations
- ✧ Estimate the weight of objects and order them
- ✧ Read a word problem and find the Maths Story to answer it
- ✧ Find the polygons
- ✧ Find information in a pictogram
- ✧ Name different types of triangles
- ✧ Complete number puzzles
- ✧ Colour half of the squares in a grid
- ✧ Answer a word problem
- ✧ Estimate a number of objects
- ✧ Find three quarters of a set of objects
- ✧ Time and compare the duration of events
- ✧ Create and describe number patterns
- ✧ Complete the questions on the 'I can' pages in Progress Book 2C
- ✧ Discuss achievements in Progress Book 2C and fill in the chart.

## Resources

### Maths Makes Sense Toolkit

- ✧ Whole cups, half cups, quarter cups, pupil whole cups, pupil tables, place value cards, dm sticks, wooden stand

### Other

- ✧ Lined exercise books, cm-squared exercise books, flipchart, blank cards, beads or counters, container, five labelled parcels, weighing scales, timer
- ✧ A range of measuring equipment (for measuring distance, mass, volume, time and direction), circular card directional compass (1 per group), metre rules, (2 per group) or reel tape (m), playground chalk, colouring pencils, A3 paper, cooker, digital or analogue kitchen scales (marked in 25 g divisions), timer, wooden spoons, forks, cups, mixing bowl, 5-ml teaspoon, paper cake cases and bun tins, measuring jugs or cylinders (marked in 100-ml divisions), measuring cylinders (marked in 5-ml or 10-ml divisions), funnels, plastic cups, fruit-flavoured squash, playground chalk, metre rulers, reel tape (m), modelling clay, 30-cm rulers, 15-cm ruler, 1-litre container (milk or water)

## Cross-curricular links

### PSCHE

- ✧ Progress Books, 'I can' pages. Practise turntaking and listening skills when discussing achievements in Progress Books.

### Art, Geography

- ✧ Geometry. Use special triangles to make collages of the school and grounds.

### ICT

- ✧ Data and Measure. Use ICT present and examine information in bar charts and pictograms.

## Key vocabulary

equilateral triangle • isosceles triangle • pictogram • polygon •  
right-angled triangle • rounding up • rounding down

# Maths Makes Sense 2 Block 6

## End-of-block objectives

### Arithmetic 1

- ✧ Copy addition and subtraction Maths Stories with up to 4-digit whole numbers as vertical additions or subtractions (with or without a 'tricky' first column) and calculate answers.

$$845 + 154 = \begin{array}{r} 845 \\ + 154 \\ \hline 999 \end{array}$$

$$544 - 325 = \begin{array}{r} \overset{3}{5} \overset{1}{4}4 \\ - 325 \\ \hline 219 \end{array}$$

### Geometry

- ✧ Recognise squares, rectangles, isosceles triangles and equilateral triangles in different orientations
- ✧ Recognise 3D shapes as 'polyhedra' or 'not polyhedra'
- ✧ Recognise prisms and pyramids
- ✧ Use nets to make 3D shapes and identify which nets make cubes

### Data and Measure

- ✧ Measure length in millimetres
- ✧ Record a measurement in mm, in cm and mm, in cm using a decimal point, and to the nearest cm, e.g. 24 mm, 2 cm 4 mm, 2.4 cm and 2 cm
- ✧ Read the time from an analogue clock for any five-minute interval, in hours and minutes, e.g. *five forty*, *eleven thirty-five*
- ✧ Write the 12-hour time for any five-minute interval in figures, e.g. '5:40', '11:35'
- ✧ Work out the time one hour after a 12-hour time, and record the new time in figures

### Arithmetic 2

- ✧ Use the vocabulary of place value, e.g. thousands, hundreds, tens and units
- ✧ Write the number shown on an abacus
- ✧ Sort odd and even numbers using Carroll and Venn diagrams

### Reasoning

- ✧ Use a multiplication Maths Story, e.g.  $3 \times 4 = 12$ , with Type 1 and Type 2 Real Stories, to write Maths Stories about thousand, e.g.  $3000 \times 4 = 12000$  and  $3 \times 4000 = 12000$ ; hundred, e.g.  $300 \times 4 = 1200$  and  $3 \times 400 = 1200$  and 'ty' e.g.  $30 \times 4 = 120$  and  $3 \times 40 = 120$
- ✧ Use the inverse of multiplication to complete division Maths Stories with 1-digit, 2-digit, 3-digit and 4-digit whole numbers

## Daily practice

- ✧ Multiply two 1-digit numbers using a calculator
- ✧ Recognise inequality
- ✧ Use symbols  $>$  and  $<$
- ✧ Practise using a calculator with times tables
- ✧ Practise using a calculator for division
- ✧ Add 1-digit and 2-digit numbers mentally
- ✧ Copy and calculate vertical additions and subtractions
- ✧ Measure in mm, cm and mm, and to the nearest cm
- ✧ Estimate the size of objects and order them
- ✧ Put events in chronological order
- ✧ Write the 4-digit number shown on an abacus
- ✧ Tell the time on a clock face and in digits
- ✧ Estimate a number of objects
- ✧ Identify reflective symmetry in patterns
- ✧ Identify a symmetrical pattern on a chess board
- ✧ Identify time intervals that cross the hour
- ✧ Estimate the answers to calculations
- ✧ Time and compare the durations of events
- ✧ Write the time and the time one hour later
- ✧ Complete a Carroll diagram
- ✧ Complete the questions on the 'I can' pages in Progress Book 2C
- ✧ Discuss achievements in Progress Book 2C and fill in the chart.

## Resources

### Maths Makes Sense Toolkit

- ✧ 0–99 Grid

### Other

- ✧ Calculators, whiteboard calculator (optional), lined exercise books, flipchart, 15-cm rulers, geared clock, A3 sheets of sugar paper (or non-white paper), scissors, glue, models of prisms, pyramids and any other polyhedra (any 3D shapes with flat faces), models of cones, spheres and cylinders and any other 3D shapes that are not polyhedra, colouring pencils

## Cross-curricular links

### Art, Design and Technology

- ✧ Geometry. Make models using shapes that are named 'polyhedra' and 'not polyhedra'.

### Science, Design and Technology

- ✧ Data and Measure. Measure length in centimetres and millimetres.

### Throughout the school day

- ✧ Data and Measure, Practice telling the time using analogue and digital clocks in five minute intervals.

### Speaking and listening

- ✧ Daily Practice. Practice mental addition of 1- and 2-digit numbers (no tricky columns).

## Key vocabulary

abacus • approximate • Carroll diagram • horizontally • net • not odd • not even • polyhedra • polyhedron • prisms • pyramids • to the nearest centimetre • Venn diagram • vertically