Maths Makes Sense

Reasoning Progress Ladder

Maths Makes Sense Foundation End-of-year objectives page 2

Maths Makes Sense 1 – 2 End-of-block objectives page 3

Maths Makes Sense 3 – 4 End-of-block objectives page 4

Maths Makes Sense 5 – 6 End-of-block objectives page 5

OXFORD

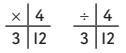
Maths Makes Sense Foundation End-of-year objectives

Counting	Number	Writing
• Participate in stories, songs and rhymes involving number, repetition and actions • Count forwards starting at any number (0–1000) • Count backwards starting at any number (0–1000) • Count up to 10 objects when asked How many...?, and reply with the correct number • Count objects when asked 'How much is there here?' and reply with, for example, [number] cups	• Read, say and match numbers 0–9 • Read, say and match numbers 10–20 • Sequence numbers in order • Match the number of objects to the numeral • Recognise and say numbers greater than 20 in an everyday context • Play simple games that involve use of number	• Recognise and write numbers from 0–9 • Recognise and write numbers from 10 –20 • Recognise and write fractions: ½ ¼ • Copy and write Maths Stories, e.g. 2 + 3 – 4 = 1

Calculating	Shape	Position
• Read what an addition or subtraction Maths Story with 1-digit whole numbers including ½ and ¼ (with a whole-number answer) says • Read what an addition or subtraction Maths Story with 1-digit whole numbers including ½ and ¼ (with a whole-number answer) means • Act the Real Story for an addition or subtraction Maths Story with 1-digit whole numbers including ½ and ¼ with cups • Act out a Real-Life Story an addition or subtraction Maths Story with 1-digit whole numbers including ½ and ¼ using, e.g. pennies • Share objects into equal groups and count how many in each group • Participate in role play prompted by a Maths Story	• Recognise, name and describe 2D shapes • Play simple games that involve use of number, pattern, shape and language	• Follow instructions that involve positional language • Give directions that include positional language

Sorting and data	Measure	Problem-solving
• Sort objects such as playing cards, number cards, coloured objects, 2D and 3D shapes according to criteria • Read information from a simple block graph • Make a simple block graph using blocks or bricks	• Use comparative language, such as bigger/smaller, shorter/ longer, heavier/lighter to compare quantities. • Tell the time using o'clock • Use sand timers to measure minutes	• Use knowledge and skills of counting to solve simple problems, e.g. counting pairs of socks • Use knowledge and skills of songs and rhymes to join in with a modified song or rhyme, e.g. Three Little Dickie Birds • Use knowledge and skills of number and calculating to solve simple problems, e.g. sharing nine cakes between three friends • Use knowledge and skills of shape, position, sorting and measure to solve simple problems, e.g. building a room with construction bricks

Maths Makes Sense 1 – 2 End-of-block objectives

	***Maths Makes Sense* 1**	***Maths Makes Sense* 2**
BLOCK 1	• Distinguish between how **many** and how **much** by responding accurately to the questions *How many cups did I count? e.g. Six and How much is there here? e.g. Six cups* • Distinguish between a half cup and a quarter cup as physical objects and their names, 'a half' and 'a quarter' • Identify and use the phrase *Same Value: Different Appearance* for different arrangements of cups, which have the same value, including half cups and quarter cups • For an addition Maths Story with 1-digit whole numbers, a half and a quarter, look at the Maths Story and read what it says, e.g. *A half, add a half, equals one*; Look at Maths Story and read what it means, e.g. *A half cup, add a half cup, equals one cup* • Write numbers 0–9 accurately.	• 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 × 3 = 6, write 3 × 2 = 6.
BLOCK 2	• Say and show *bigger, smaller* and *the difference between* by encircling cups on the Maths Table • Write numbers 0–9, ½ and ¼ accurately.	• For a multiplication Maths Story, e.g. 3 × 2 = 6, use the inverse of 'times' to write two division Maths Stories, e.g. 6 ÷ 3 = 2 and 6 ÷ 2 = 3 • Write multiplication Maths Stories and division Maths Stories in a grid in preparation for long multiplication and division, e.g.  • Use times tables to complete a division Maths Story, e.g. 18 ÷ 3 = 6.
BLOCK 3	• Use an addition or subtraction Maths Story with 1-digit whole numbers to make up a Real-Life Story about everyday objects or measures, e.g. *Five bananas, take away three bananas, add two bananas, equals four bananas,* and state what the Real-Life Story is about, e.g. *bananas* • Draw a picture to act a Real-Life Story.	• For a simple word problem involving addition, subtraction, multiplication or division, 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.
BLOCK 4	• Use an addition or subtraction Maths Story with 1-digit whole numbers to make up a basic Real-Life Story and an embellished Real-Life Story, e.g. *I went to the shops with mummy. She bought me three apples. We went down the road. We met daddy. He gave me two apples. Altogether I had five apples.* • Say what a basic Real-Life Story is about, e.g. *apples*, and give the context of the embellished Real-Life Story, e.g. *going shopping* • Use everyday vocabulary related to addition and subtraction, e.g. *another, some more, lost, gave away* in embellished Real-Life Stories involving addition and subtraction • Draw a picture of a basic Real-Life Story.	• 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.
BLOCK 5	• Cut shapes into halves and quarters by drawing lines accurately • Shade a half, a quarter and three quarters of a shape.	• 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
BLOCK 6	• Identify which months (January to December) come before or after a particular month • Identify which day numbers (first to thirty-first), come before or after a particular day number • With assistance, and as a group, collect, order and record information to create a bar chart.	• Use a multiplication Maths Story, e.g. 3 × 4 = 12, with Type 1 and Type 2 Real Stories, to write Maths Stories about thousand, e.g. 3000 × 4 = 12000 and 3 × 4000 = 12000; hundred, e.g. 300 × 4 = 1200 and 3 × 400 = 1200 and 'ty', e.g. 30 × 4 = 120 and 3 × 40 = 120 • Use the inverse of multiplication to complete division Maths Stories with 1-digit, 2-digit, 3-digit and 4-digit whole numbers.

Maths Makes Sense 3 – 4 End-of-block objectives

	***Maths Makes Sense* 3**	***Maths Makes Sense* 4**
BLOCK 1	• Calculate total distances shown on sketch maps and grids using vertical addition and subtraction (including a tricky first column) • Calculate total populations for towns shown on grids using vertical addition and subtraction (including a tricky first column) • Write populations and distances in ascending order and descending order.	• Read and write tens, hundreds, thousands, ten thousands, hundred thousands, millions, ten millions, hundred millions, billions in figures and words, e.g. 100 000 is one hundred thousand • Read and write large products of ten as powers of ten, e.g. write 100 000 as 10^5 • Read and write the value of a power of ten, e.g. $10^5 = 100\,000$, one hundred thousand.
BLOCK 2	• Calculate answers to word problems using multiplication Maths Stories • Calculate answers to word problems using division Maths Stories • Solve a word problem using a division Maths Story and state whether the implied basic Real-Life Story is Type 1 or Type 2.	• Calculate products of two multiples of ten using a 1-digit multiplication Maths Story, e.g. use $3 \times 4 = 12$ to calculate $3000 \times 400 = 1\,200\,000$ • Deduce and write division Maths Stories for products of two multiples of ten, e.g. for $3000 \times 400 = 1\,200\,000$, say and write $1\,200\,000 \div 3000 = 400$ and $1\,200\,000 \div 400 = 3000$.
BLOCK 3	• Multiply a 2-digit number by a 1-digit number by partitioning and calculating the sum of the two products, e.g. $52 \times 7 = 50 \times 7 + 2 \times 7 = 350 + 14 = 364$.	• Mentally calculate the product of three 1-digit numbers and write the answer • Copy index notation for powers of ten up to 10^9 • Write the product of tens for index notation up to 10^9 • Use a calculator to calculate and write the product of three numbers, each with a whole number and a decimal fraction.
BLOCK 4	• Use vertical subtraction to calculate answers to 'How much farther' word problems • Use grid multiplication for the product of a 2-digit number and a 1-digit number to calculate answers to word problems • Use multiplication tables to write the answers to divisions with remainders, e.g. $27 \div 4 = 6$ r 3 • Write a ratio as a fraction, e.g. 3 : 7 as $^3/_7$, and use the fraction to write the answers to divisions with remainders as a mixed number, e.g. $31 \div 7 = 4\,^3/_7$.	• Calculate a product of two numbers, each a decimal fraction up to two decimal places, e.g. $.2 \times .04 = .008$.
BLOCK 5	• Calculate a Maths Story using the complement of a multiple of ten to one hundred • Write the fraction shaded and the fraction not shaded for a picture showing a shaded fraction of a shape • Write the sum of two fractions that total one and the difference between one and a shaded fraction using the complement to one • Partition and rearrange numbers to calculate the answer for sums or differences of two 2-digit numbers.	• Identify and calculate the value of each term in an expression, use the values to add and subtract from left to right, and complete the Maths Story.
BLOCK 6	• Calculate answers to word problems using division Maths Stories • Solve a word problem using a division Maths Story and state whether the implied basic Real-Life Story is Type 1 or Type 2 • Identify odd and even numbers • Complete sequences of odd and even numbers • Carry out simple calculations using addition or multiplication and say whether the sum or product is odd or even • Calculate total costs and differences between prices in a grid • Convert puzzles into simple drawings and answer related questions.	• For algebraic expressions using the symbols x and y, add and subtract terms, working from left to right, to write an expression with *Same Value: Different Appearance*, e.g. $5y + 2x - 3y$ has the *Same Value: Different Appearance* as $2y + 2x$.

Maths Makes Sense 5 – 6 End-of-block objectives

	***Maths Makes Sense* 5**	***Maths Makes Sense* 6**
BLOCK 1	• Write a.m./p.m. times using 24-hour clock notation • Write 24-hour times as a.m./p.m. times • Calculate the mean number of days in four consecutive years • Calculate the duration between two times written using 24-hour notation.	• Calculate the mean, median, mode and range of a sample.
BLOCK 2	• Solve algebraic equations that have an expression which is the sum of two terms using algebraic methods, one term being solely 'x' and the other term a 1-digit number, e.g. $x + 2 = 5$ • Solve algebraic equations that have an expression which consists of one term using algebraic methods, a product of 'x' and a 1-digit number, e.g. $2x = 6$.	• Measure the probability of events, e.g. the probability of rolling a 3 on a fair dice numbered 1–6 is $^1/_6$.
BLOCK 3	• Solve problems involving measures and fractions by exploring patterns and relationships in diagrams • Solve one-, two- and three-step word problems involving money.	• Interpret a distance-time graph for distance travelled and time taken • Interpret a distance-time graph for faster and slower (speed) • Interpret a temperature-time graph for rise, fall and difference in temperature.
BLOCK 4	• Solve puzzles by calculating quantities, e.g. numbers of bricks, and dimensions, e.g. lengths and heights, using pictures of 2D and 3D shapes.	• Identify terms and products in expressions • Evaluate expressions with and without brackets, e.g. $3 + 2 \times 3 = 9$, $(3 + 2) \times 3 = 15$ • Insert brackets in an expression for it to take a specified value, e.g. insert brackets so that the expression $3 + 2 \times 3$ has the value 15.
BLOCK 5	• Carry out investigations involving shapes, numbers and real-life situations using the '*What if Not*' approach.	• Solve linear equations that involve one operation with whole and decimal numbers.
BLOCK 6	• Calculate durations of shop opening times from information in a grid • Use information in a grid about duration of tracks on a CD to calculate differences between durations, total durations and mean durations • Calculate equivalences and fractions of periods of time using years, days, hours, minutes and seconds.	• Express vulgar fractions as percentages.