Maths Makes Sense

Arithmetic 1 Progress Ladder

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OXFORD

Maths Makes Sense Foundation End-of-year objectives

Counting

- 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

Number

- 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

Writing

- 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

- 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

Shape

- Recognise, name and describe 2D shapes
- Play simple games that involve use of number, pattern, shape and language

Position

- Follow instructions that involve positional language
- Give directions that include positional language

Sorting and data

- 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

Measure

- 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

Problem-solving

- 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	• Copy addition and subtraction Maths Stories with 1-digit whole numbers, zero, a half and a quarter, e.g. 2 + ½ + ½ = 3 • Act the Real Story for addition and subtraction Maths Stories with 1-digit whole numbers, zero, a half and a quarter, e.g. 2 + ½ + ½ = 3 • Look at a Maths Story and read what it says, e.g. *Two, add a half, add a half, equals three.* Look at a Maths Story and read what it means, e.g. *Two **cups**, add a half **cup**, add a half **cup**, equals three **cups**.*	• Copy and calculate vertical additions and subtractions with up to 4-digit whole numbers (no 'tricky' columns) 4321 + 245 = 4566 • Copy and calculate addition, subtraction, multiplication and division Maths Stories with1-digit whole numbers, including zero, ½ and ¼, e.g. 4 – 2 + 0 + ½ + ½ = 3.
BLOCK 2	• Copy a written addition Maths Story with multiples of ten, a hundred or a thousand, e.g. 200 + 500 = 700 • Look at an addition Maths Story with multiples of ten, a hundred or a thousand and read what it says, e.g. *Two (pause) **hundred**, add five (pause) **hundred**, equals seven (pause) **hundred**.*	• Copy and calculate vertical additions, with up to 4-digit whole numbers and a 'tricky' units column using funny writing. 3739 + 2222 = 5961
BLOCK 3	• Copy, on squared paper, vertical additions with 2-digit whole numbers 45 + 24 = • Calculate answers to vertical additions with 2-digit whole numbers (no tricky columns) using number pairs for assistance. 45 + 24 = 69	• 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'. 8715 − 3227 = 5118
BLOCK 4	• Copy vertical additions and subtractions with 2-digit and 3-digit whole numbers, e.g. 425 + 14 = 728 − 15 = • Use the correct operation and calculate answers to vertical additions and subtractions with 2-digit and 3-digit whole numbers (no tricky columns), e.g. 425 + 14 = 439 728 − 15 = 713	• Analyse and work with word problems associated with simple Real-Life Stories, e.g. writing the Maths Story.
BLOCK 5	• Copy vertical additions and subtractions with any pair of 2-digit, 3-digit or 4-digit whole numbers, e.g. 2357 + 21 = 4545 − 11 = • Use the correct operation and calculate additions and subtractions with any pair of 2-digit, 3-digit or 4-digit whole numbers (no tricky columns), e.g. 2357 + 21 = 2378 4545 − 11 = 4534	• 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.
BLOCK 6	• Copy vertical additions and subtractions with 2-digit, 3-digit or 4-digit whole numbers (no tricky columns), e.g. 2357 + 21 = 4545 − 11 = • Use the correct operation and calculate vertical additions and subtractions with 2-digit, 3-digit or 4-digit whole numbers (no tricky columns), e.g. 2357 + 21 = 2378 4545 − 11 = 4534	• 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 = 999 544 − 325 = 219

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

	***Maths Makes Sense* 3**	***Maths Makes Sense* 4**
BLOCK 1	• Respond to *I will act the Real Story, you write the Maths Story* (including the answer), for addition and subtraction of 1-digit numbers, halves, quarters and mixed numbers, e.g. 1½ + 2 – ¼ = 3¼ • Copy and calculate the answers to vertical additions and subtractions with tricky unit columns, with reference to written number pairs if necessary.	• Calculate Maths Stories for all four operations with mixed numbers, 1-digit whole numbers, halves and quarters using pupil tables and pupil cups, e.g. 2½ – 1¼ + ¼ + 3¼ = 4¾ • Mentally calculate Maths Stories combining addition, subtraction and multiplication with mixed numbers, 1-digit whole numbers, halves and quarters, e.g. ½ × 4 – ¼ × 3 = 1¼ • Mentally calculate Maths Stories for all operations with vulgar fractions (and mixed numbers) and negative numbers, e.g. $^{-}2 \times 3 + {}^{-}1 \times 4 = {}^{-}10$.
BLOCK 2	• Write Maths Stories for all four operations (+, –, ×, ÷) using fifths • Write Maths Stories as vertical additions and subtractions and calculate with tricky tens columns, using number pairs for reference, if necessary.	• Read and write decimal fractions to three decimal places, e.g. 0.1, .01, .41, .041, .421 • Read and write numbers written in decimal notation (to three places) as vulgar fractions using tenths, hundredths or thousandths as the denomination, e.g. read .1 as one tenth and write it as 1/10 • Mentally calculate addition and subtraction combined with multiplication Maths Stories with decimal fractions, e.g. .02 × 3 – .01 × 4 = .02 • Mentally calculate division Maths Stories with decimal fractions (not tricky), e.g. .06 ÷ .02 = 3 • Mentally calculate each of the four operations, and combinations of addition and subtraction with multiplication, using vulgar fractions, mixed numbers and negative numbers (no tricky examples), e.g. ½ × 3 – ¼ × 2 = 1, $2^{3}/_{5} - 1^{1}/_{5} = 1^{2}/_{5}$, $^{-}4 - {}^{-}2 + {}^{-}3 = {}^{-}5$
BLOCK 3	• Write Maths Stories for all four operations (+, –, ×, ÷) including fifths and sevenths with mixed numbers (no mixed denominations) • Write addition Maths Stories as vertical additions (with tricky units and tens columns) and calculate answers • Write subtraction Maths Stories as vertical subtractions (with tricky units or tens columns) and calculate answers.	• Mentally calculate Maths Stories using fractions, mixed numbers and negative numbers (no tricky examples), e.g. $^{3}/_{5} \times 6 = {}^{18}/_{5}$, $^{11}/_{5} + {}^{32}/_{5} = {}^{43}/_{5}$ and $^{-}4 - {}^{-}2 + {}^{-}3 = {}^{-}5$ • Say the value of any indicated digit or combination of digits in a 4-digit whole number and in a 4-digit number to the third decimal place, e.g. the value of the '6' in 3618 is six hundred • Calculate 4-digit whole number vertical additions and subtractions (no tricky columns) • Calculate vertical additions and subtractions with decimal fractions (no tricky columns) • Use a grid to multiply two 2-digit numbers (TU by TU), e.g. 23 × 21 = 483
BLOCK 4	• Write addition, subtraction, multiplication and division Maths Stories, including negative numbers (no combining positive and negative numbers unless the result is zero) • Write addition, subtraction, multiplication and division Maths Stories including fifths, sevenths and other denominations with mixed numbers (no tricky denominations), e.g. $^{24}/_{5} + {}^{13}/_{5} = {}^{42}/_{5}$ • Write Maths Stories as vertical additions and subtractions (with tricky units or tens columns) and calculate answers, e.g. $2^{4}/_{5} + 1^{3}/_{5} = 3^{7}/_{5} = 4^{2}/_{5}$	• Complete vertical additions and subtractions with decimal fractions (any column tricky) • Use a grid for long division, dividing a 2-digit or 3-digit number by a 1-digit number (TU ÷ U or HTU ÷ U), using both remainders and fractions.
BLOCK 5	• Write addition and subtraction Maths Stories, including negative numbers (with tricky examples), combining positive and negative numbers to give results other than zero • Write addition, subtraction, multiplication and division Maths Stories using fifths and other denominations with mixed numbers (no tricky denominations) • Write Maths Stories as vertical additions and subtractions (with tricky units, tens or hundreds columns) and calculate answers.	• Mentally calculate whole number percentages of a whole number quantity (no tricky examples), e.g. 4% of 800 = 32 • For a decimal number percentage of a whole number quantity, use a calculator to complete the calculation, e.g. 5.3% of 400 = 21.2 • Round a decimal fraction using tenths or tenths and hundredths to the nearest whole number, e.g. 15.2 ≈ 15.
BLOCK 6	• Write Maths Stories for all four operations including negative numbers (with tricky examples for addition and subtraction) • Write Maths Stories for all four operations using fifths and other denominations with mixed numbers (no tricky denominations) • Write Maths Stories as vertical additions and subtractions (with one tricky units, tens or hundreds column) and calculate answers.	• Use 'one add negative one equals zero' ($1 + {}^{-}1 = 0$) with tricky addition and subtraction, e.g. $3 + {}^{-}2 = 1$ and $4 - {}^{-}2 = 6$ • Use a grid to multiply two 2-digit whole numbers (TU × TU), e.g. 45 × 23 = 1035 • Use a grid for long division, dividing a 3-digit whole number by a 1-digit whole number (HTU ÷ U) using both remainders and fractions, e.g. $727 \div 6 = 121^{1}/_{6}$.

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

	Maths Makes Sense 5	*Maths Makes Sense* 6
BLOCK 1	• Write two or three 4-digit whole numbers vertically and calculate (with more than one tricky column) using addition and subtraction • Use the three operations, +/–/÷, with vulgar fractions or mixed numbers with the same denominator • Multiply and divide vulgar fractions and mixed numbers by a whole number	• Use a grid for long multiplication of HTU by TU, e.g. 324 × 23 = 7452 • Estimate the value of products by rounding each factor • Use the product of a 3-digit whole number and a 2-digit whole number and, using approximation, work out a related product of decimal numbers
BLOCK 2	• Write two or three 4-digit decimal numbers vertically, with up to three decimal places, and calculate with more than one tricky column, using addition and subtraction • Multiply two vulgar fractions where the denominator of one and the numerator of the other are equal	• Use a grid for long division of ThHTU by U, e.g. 6342 ÷ 6 = 1057 • Estimate the value of quotients by rounding • Use the quotient of a 4-digit whole number and a 1-digit whole number and, using approximation, work out a related quotient of decimal numbers, e.g. 63.42 ÷ .6 = 105.7
BLOCK 3	• Use a/b and a ÷ b interchangeably, e.g. 5/8 and 5 ÷ 8 • Use the division button on a calculator to convert vulgar fractions to finite decimal fractions (no vulgar fractions with infinite decimal equivalents) • Use the four operations (+/–/×/÷) with combinations of positive and negative numbers, including tricky examples (but not the product of two negative numbers)	• Use equivalent fractions in calculations using each of the four operations
BLOCK 4	• Use a grid for long multiplication with up to 2-digit by 2-digit whole numbers • Use a grid for long multiplication with up to 3-digit by 2-digit decimal numbers (one or two decimal places), with answers up to three decimal places	• Calculate with negative numbers using the four operations (using 1 + –1 = 0 with tricky examples) • Calculate with vulgar fractions using the four operations (using equivalent fractions and improper fractions with tricky examples)
BLOCK 5	• Use a grid for long division including numbers with up to 3-digits divided by 1-digit whole numbers	• Use the formulae for diameter, circumference and area of a circle • Use the formula for the area of a triangle • Use the formula for the volume of a cuboid and a cylinder
BLOCK 6	• Multiply decimal numbers with up to three decimal places by multiples of powers of 10 (product no more than three decimal places), using the 'logic of the language' • Divide decimal numbers by multiples of powers of 10 (no numbers with more than three decimal places), using the 'logic of the language' • Use derived products to calculate multiplication and division	• Write a vulgar fraction as a decimal fraction to three decimal places, using a calculator for division, e.g. 7/11 = .636 • Convert decimal fractions to vulgar fractions using tenths, hundredths and thousandths, e.g. .625 = 625/1000 • Write recurring infinite decimals as abbreviations using the conventional notation of 'dots' above one or two digits, e.g. write .833 333 33 as .83 (with a 'dot' above the digit/series of digits that are recurring)