PHEASEY PARK FARM
Primary School &
Early Years Centre

DIVISION

PHEASEY PARK FARM
Primary School &
Early Years Centre

Key Objective

Solve one-step division problems using concrete objects, pictorial representations and arrays with the support of the teacher.

Key Vocabulary

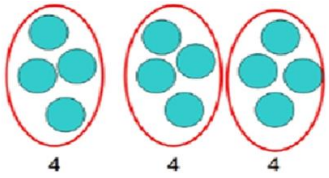
share, share equally, one each, two each..., group, groups of, lots of, array

1

There are __ groups of __ pencils.

There are __ groups of __ flowers.

2 **Sharing:**



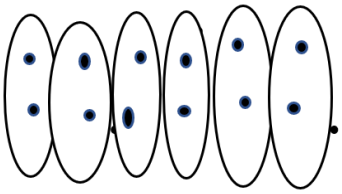
12 shared between 3 is 4

3 **Division problems in a familiar context**

There are 6 people on the table and there are 18 pieces of fruit to share between us, if we share them all equally how many will we get?

18 shared by 6 = 3

4 Introduce Arrays 12 shared by 2 = 6



Key skills for division at Y1:

-Solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations arrays with the support of the teacher

-Through grouping and sharing small quantities, pupils begin to understand, division, and finding simple fractions of objects, numbers and quantities.

-They make connections between arrays, number patterns, and counting in twos, fives and tens.

Year 1

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Key Objective

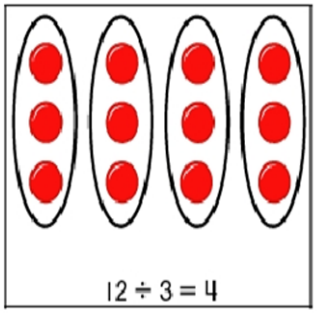
Solve problems involving division using mental methods and multiplication and division facts.

Key Vocabulary

share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over

1

Arrays:



This represents **12 ÷ 3, posed as** how many groups of 3 are in 12?

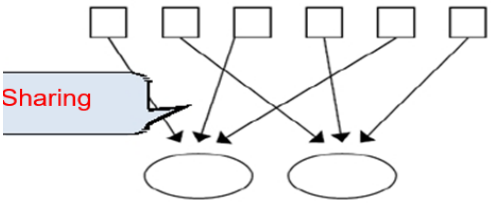
Pupils should also show that the same array can represent **12 ÷ 4 = 3** if grouped horizontally.

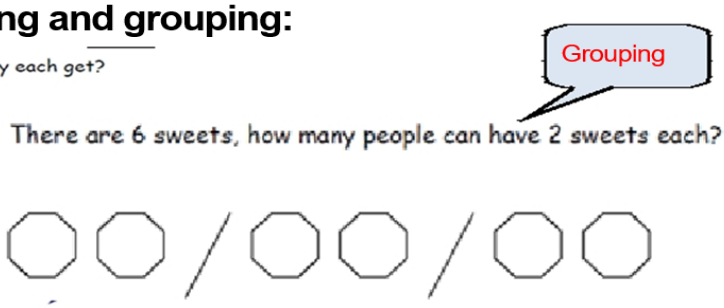
12 shared by 3 = 4

2

Know and understand sharing and grouping:

6 sweets shared between 2 people, how many do they each get?

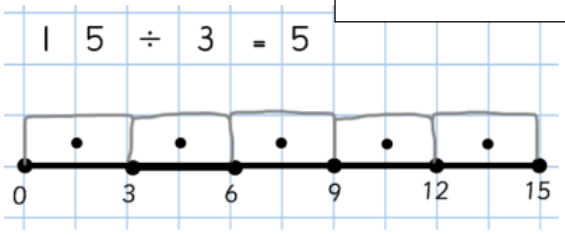


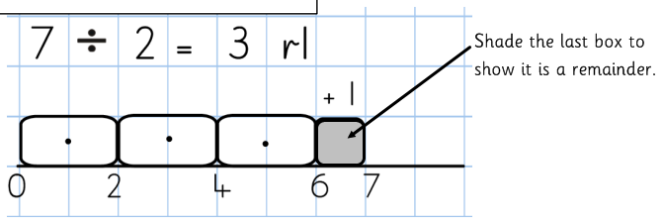


Children should be taught to recognise whether problems require sharing or grouping.

3

Dividing using a number line





Year 2

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Key skills for division at Y2:

-Count in steps of 2, 3, and 5 from 0

-Recall and use multiplication and division facts for the **2, 5 and 10** multiplication tables, including recognising odd and even numbers.

-Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the x, ÷ and = signs.

-Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.

-Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

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Key Objective

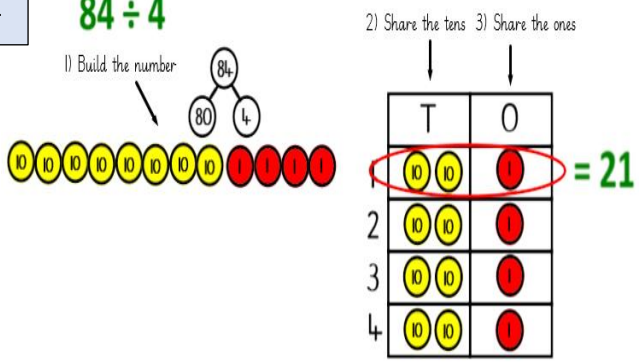
Write and calculate mathematical statements for division using mental and progressing to formal written methods. Divide a 2digit by a single digit

Key Vocabulary

share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, **inverse, short division, carry', multiple, remainder,**

Dividing using counters and partitioning – do practically not drawings

1



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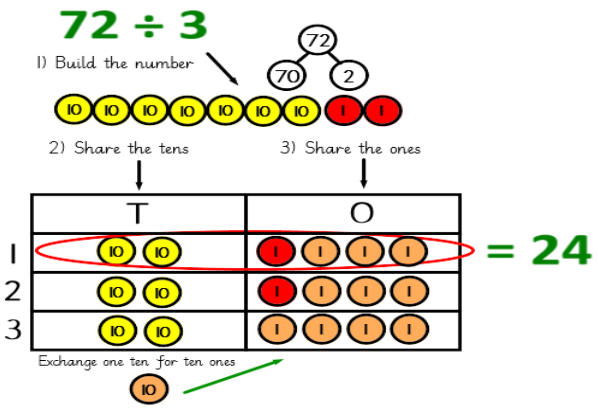

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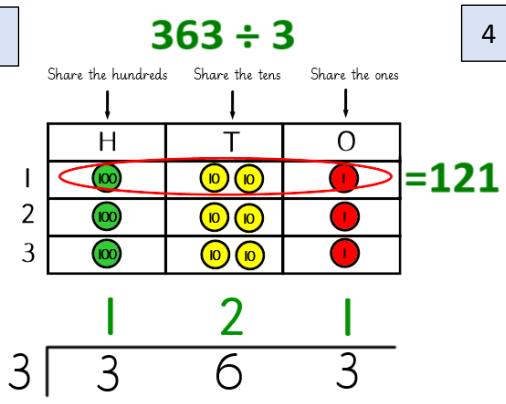
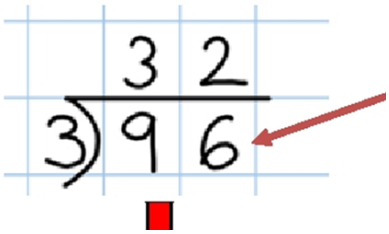


4

Short division: Limit numbers to **NO** remainders in the answer **OR** carried (each digit must be a multiple of the divisor).



Once children are secure with division as grouping and demonstrate this using number lines, arrays etc., **short division** for larger 2-digit numbers should be introduced, initially with carefully selected examples requiring no calculating of remainders at all. Start by introducing the layout of short division by comparing it to an array.

Year 3

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Key skills for division at Y3:

- Recall and use multiplication and division facts for the 2, 3, 4, 5, 8 and 10 multiplication tables (through doubling, connect the 2, 4 and 8s).

-Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.

-Solve problems, in contexts, and including missing number problems, involving multiplication and division.

-Pupils develop efficient mental methods, for example, using multiplication and division facts (e.g. using 3 × 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (30 × 2 = 60, so 60 ÷ 3 = 20 and 20 = 60 ÷ 3).

-Pupils develop reliable written methods for division, starting with calculations of 2-digit numbers by 1-digit numbers and progressing to the formal written method of short division.

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Key Objective

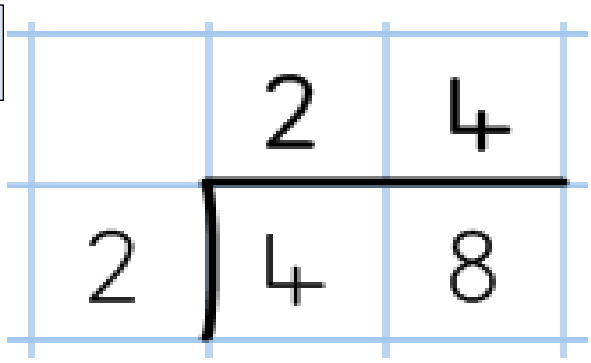
Divide two-digit and three-digit numbers by a one-digit number using formal written layout

Key Vocabulary

share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, „carry", remainder, multiple, **divisible by, factor**

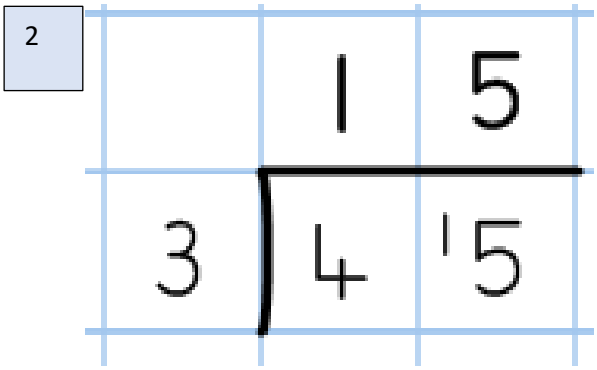
Short division with no carrying

1



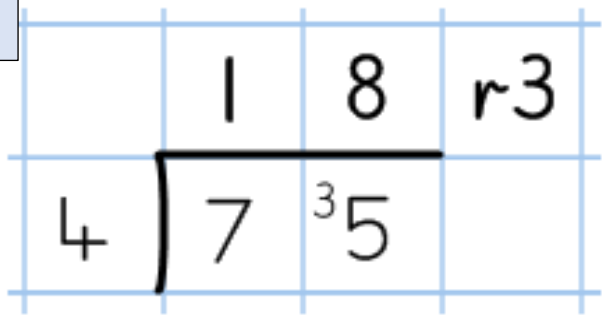
Short division -carrying

2



Short division with remainders

3



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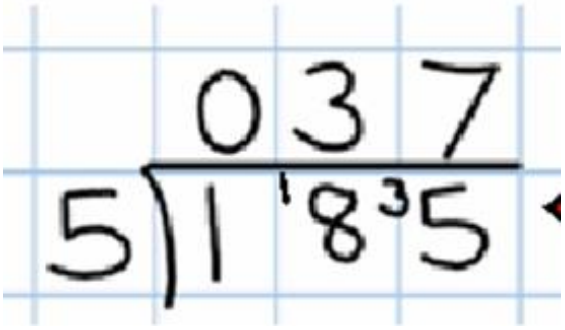

Year 4

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Key skills for division at Y4:

-Recall multiplication and division facts for all numbers up to 12 x 12.

-Use place value, known and derived facts to multiply and divide mentally, including: multiplying and dividing by 10 and 100 and 1.

-Pupils practise to become fluent in the formal written method of short division with exact answers when dividing by a one-digit number

-Pupils practise mental methods and extend this to three-digit numbers to derive facts, for example 200 × 3 = 600 so 600 ÷ 3 = 200

-Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as three cakes shared equally between 10 children.

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Key Objective

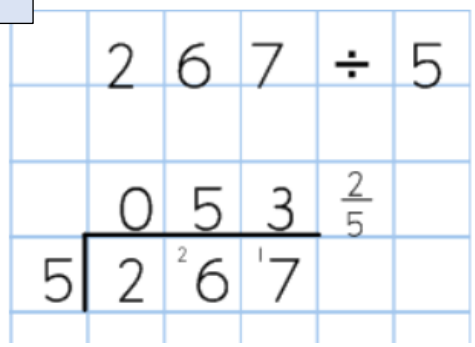
Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Key Vocabulary

share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, „carry", remainder, multiple, divisible by, factor, inverse, quotient, prime number, prime factors, composite number (non-prime)

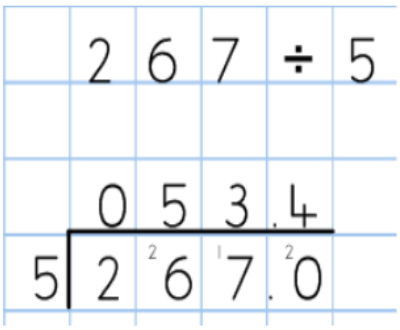
Short Division – fractions

1



Short division – decimal points

2



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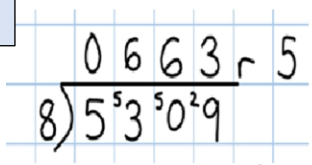
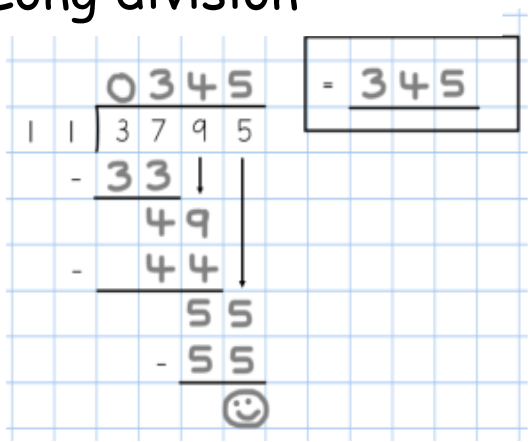


The answer to 5309 ÷ 8 could be expressed as 663 and five eighths, 663 r 5, as a decimal, or rounded as appropriate to the problem involved.

Short division with remainders: Now that pupils are introduced to examples that give rise to remainder answers, division needs to have a real life problem solving context, where **pupils consider the meaning of the remainder and how to express it,** ie. as a fraction, a decimal, or as a rounded number or value , depending upon the context of the problem.

See Y6 for how to continue the short division to give a decimal answer for children who are confident.

4 Long division



Year 5

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Key skills for division at Y5:

- Recall multiplication and division facts for all numbers up to 12 x 12 (as in Y4).
-Multiply and divide numbers mentally, drawing upon known facts.
-Identify multiples and factors, including finding all factor pairs of a number, and common factors of two number.
-Solve problems involving multiplication and division where larger numbers are decomposed into their factors.
-Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
-Use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.

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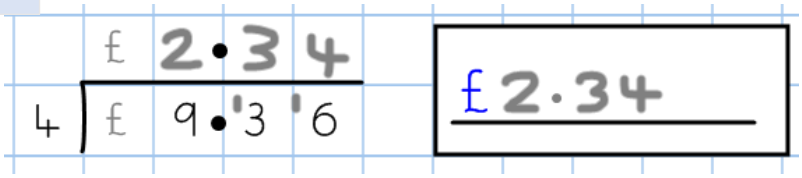
Key Objectives

Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and short division

Key Vocabulary

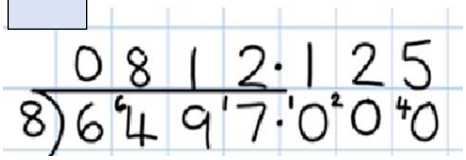
As previously & common factor

1.



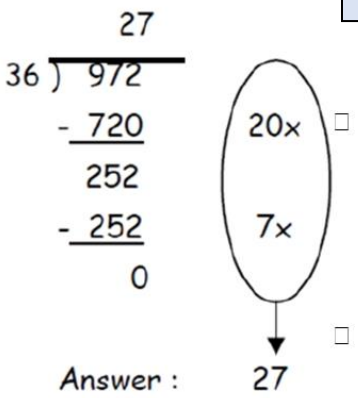
Context of money
e.g. £9.36 ÷ 4 = **£2.34**

2 Short division



Calculating a decimal remainder: In this example, rather than expressing the remainder as **r 1**, a decimal point is added after the units because there is still a remainder, and the one remainder is carried onto zeros after the decimal point (to show there was no decimal value in the original number). Keep dividing to an appropriate degree of accuracy for the problem being solved.

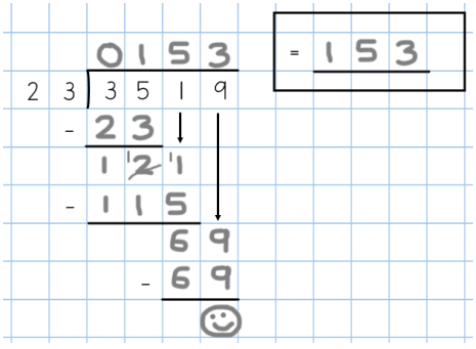
3



4

3519 ÷ 23 = 153

Mental working out							
2	3	x	1	=	2	3	
2	3	x	2	=	4	6	
2	3	x	3	=	6	9	
2	3	x	4	=	9	2	
2	3	x	5	=	1	1	5



Year 6

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Key skills for division at Y6:

- Recall and use multiplication and division facts for all numbers to 12 x 12 for more complex calculations
-Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. (Use short division where appropriate.)
-Perform mental calculations, including with mixed operations and large numbers.
-Identify common factors, common multiples and prime numbers.
-Solve problems involving all 4 operations.
-Use estimation to check answers to calculations and determine accuracy, in the context of a problem.
-Use written division methods in cases where the answer has up to two decimal places.
-Solve problems which require answers to be rounded to specified degrees of accuracy.