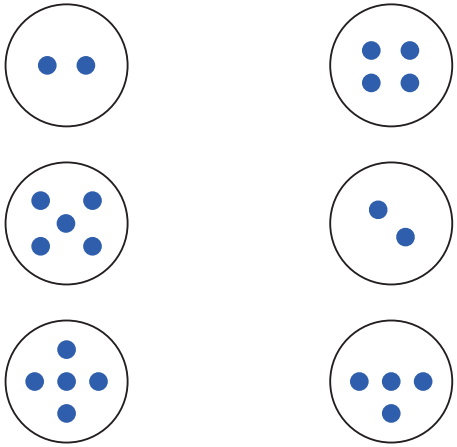
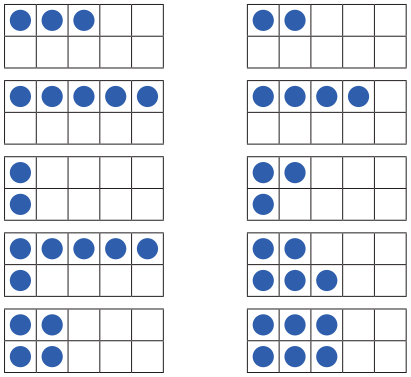
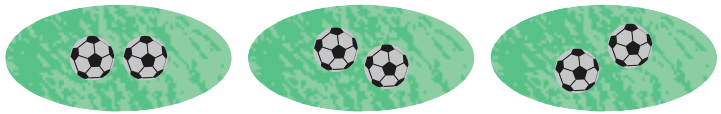
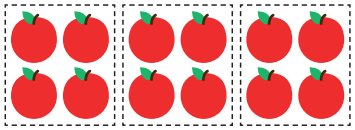
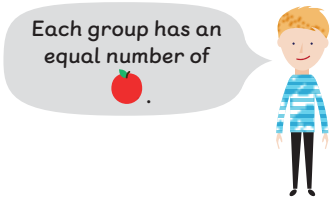
Division Calculation Policy

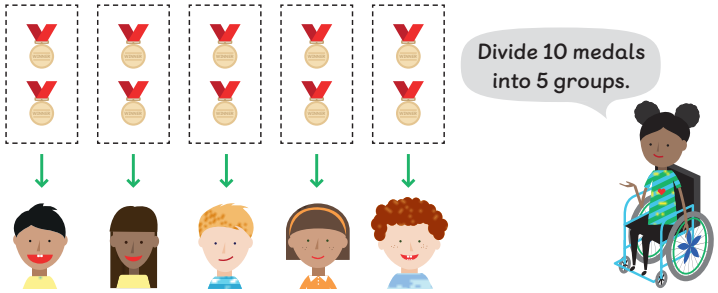
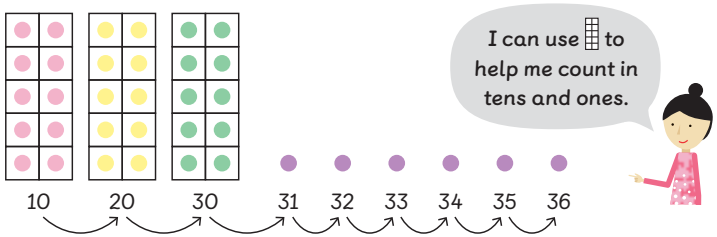
Reception

Year	Topic/Strand	Representation	Key Idea
Reception	**Equal Groups**		Pupils learn to recognise groups that are equal in quantity, initially using like items and then progressing to different items. Pupils understand that equal groups can be represented by concrete items, diagrams and written numbers. Pupils need to be secure in the abstraction principle of counting the quantity of items regardless of the items' properties or characteristics, in order to recognise equal groups in a range of situations.
Reception	**Subtraction**		Subtraction and equal groups are concepts that underpin division. During Reception, pupils make equal groups and use equal groups when doubling numbers. While they are doubling numbers, they will see that the whole amount can be partitioned into 2 equal groups.

Division Calculation Policy

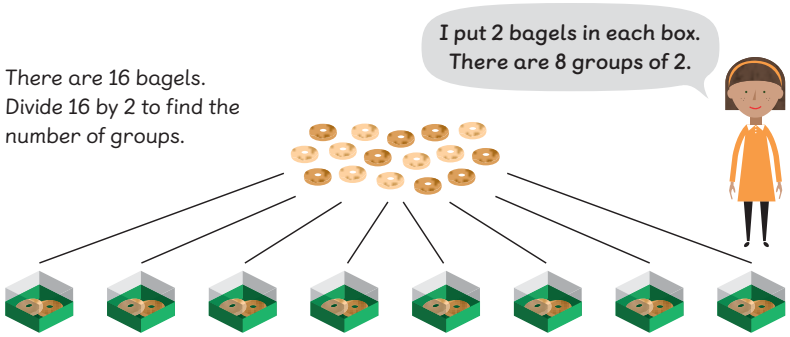
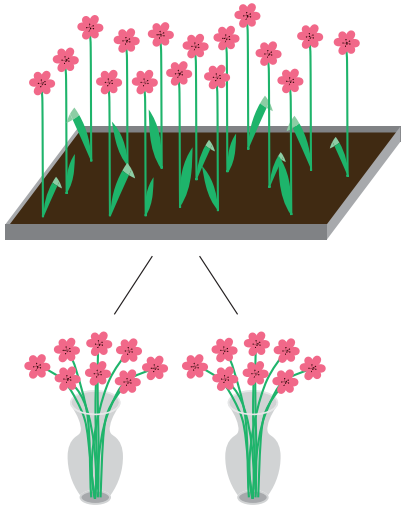
Year 1

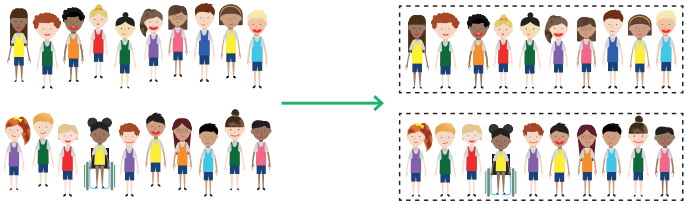
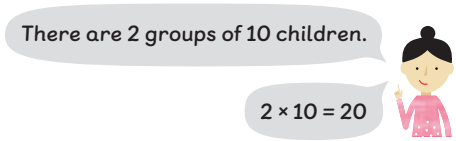
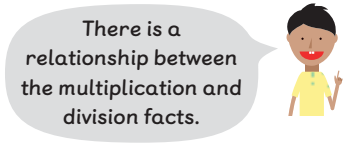
Year	Topic/Strand	Representation	Key Idea
Year 1	**Equal Groups**	 There are 2 ⚽ in each group. Each group has an equal number of ⚽. The balls are in equal groups. 	Pupils learn to recognise groups that are equal in quantity, initially using like items and then progressing to different items. Pupils understand that equal groups can be represented by concrete items, diagrams and written numbers. Pupils need to be secure in the abstraction principle of counting the quantity of items regardless of the items' properties or characteristics, in order to recognise equal groups in a range of situations.
Year 1	**Grouping**	Sam has 12 apples. He puts the apples into groups of 4.  How many groups does he make? Sam makes ▭ groups. 	Pupils initially use grouping for division. They put items into equal groups to find the number of equal groups that can be made from a set amount.

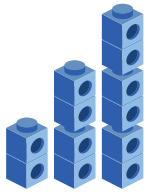
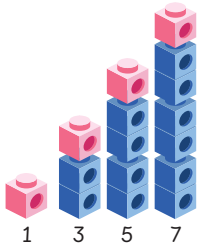
Year	Topic/Strand	Representation	Key Idea
Year 1	**Sharing**	*10 medals are shared equally among 5 friends.* *How many medals does each friend get?*  *Each friend gets 2 medals.*	Pupils move from division through grouping to division through sharing. They share a set amount of items equally between a number of groups. The number of groups is known and pupils find the number of items in each group.
Year 1	**Counting in 2s, 5s and 10s**	 	Pupils start to count in multiples of 2 and multiples of 10, then progress to counting in multiples of 2, 5 and 10 supported by discrete, countable representations.

Division Calculation Policy

Year 2

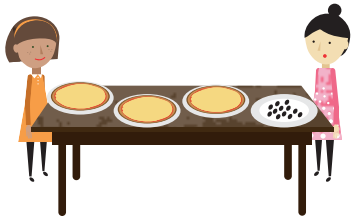
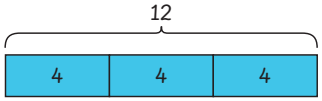
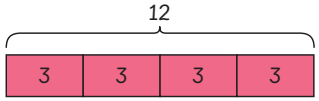
Year	Topic/Strand	Representation	Key Idea
Year 2	**Grouping**	There are 16 bagels. Divide 16 by 2 to find the number of groups. 	Pupils initially use grouping for division. They put items into equal groups to find the number of equal groups that can be made from a set amount.
Year 2	**Sharing**	There are 16 flowers. Elliott cuts the flowers and puts them equally into 2 vases.  There are 8 flowers in each vase. 16 ÷ 2 = 8	Pupils move from division through grouping to division through sharing. They share a set amount of items equally between a number of groups. The number of groups is known and pupils find the number of items in each group.

Year	Topic/Strand	Representation	Key Idea
Year 2	**Division by 2, 5 and 10**	*20 children can be put into teams of 10.*  $20 \div 10 = 2$ *There are 2 equal teams.*  $10 \times 2 = 20$ $\quad 20 \div 2 = 10$ $2 \times 10 = 20$ $\quad 20 \div 10 = 2$  *This is a multiplication and division fact family.*	Pupils start to make the connection between division and multiplication. They see amounts as equal groups and relate this to multiplication.

Year	Topic/Strand	Representation	Key Idea
Year 2	**Odd and Even Numbers**	 2 4 6 2 cubes can be put into a group of 2. 4 cubes can be put into groups of 2. 6 cubes can be put into groups of 2. 2, 4 and 6 are even numbers.  1 3 5 7 1 cube cannot be put into a group of 2. 3 cubes cannot be put into groups of 2. 5 cubes cannot be put into groups of 2. 7 cubes cannot be put into groups of 2. 1, 3, 5 and 7 are odd numbers.	Pupils develop an understanding that even numbers can be put into groups of 2 exactly. Numbers that can be put into groups of 2 and have 1 remaining are described as odd numbers.

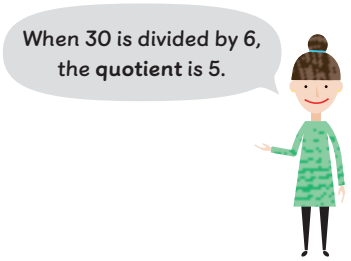
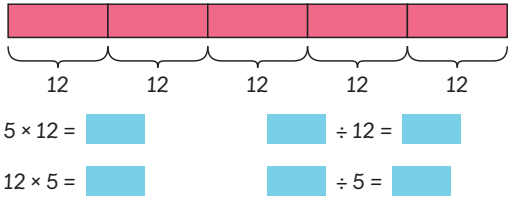
Division Calculation Policy

Year 3

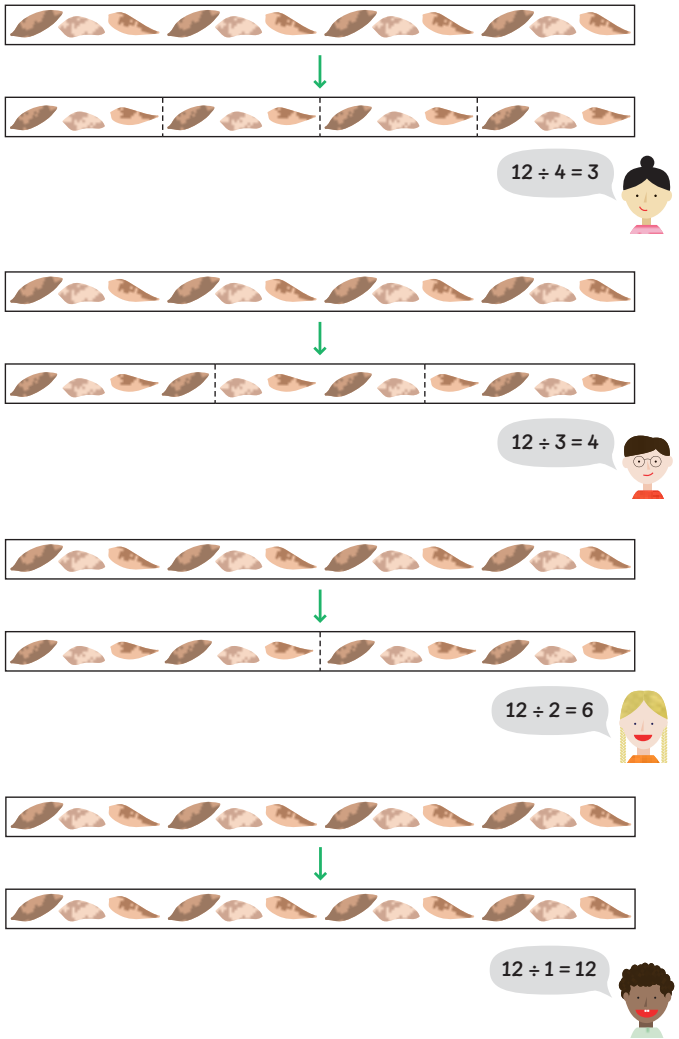
Year	Topic/Strand	Representation	Key Idea
Year 3	**Dividing by 3, 4 and 8**	Sam put 32 cobs of corn into 4 equal groups.  4 groups of 8 is 32. 4 × 8 = 32  32 ÷ 4 = 8 Each group has 8 cobs of corn.	Pupils are introduced to the division of numbers by 3, 4 and 8 using grouping initially. They make groups of 3, 4 and 8 and then move on to sharing a total.
Year 3	**Division within Word Problems**	Amira and Ruby are making pizzas. They have 12 olives. They want to put 3 or 4 olives on each pizza. Can we make a family of multiplication and division equations to help them?   12 4 times 3 is 12, so 12 divided by 3 is 4. 12 divided into groups of 4 is equal to 3.  12 3 times 4 is 12, so 12 divided by 4 is 3. 12 shared between 4 is equal to 3.	Pupils extend their understanding of division by relating the division facts to multiplication facts, creating a multiplication and division fact family. Word problems get increasingly more complex and bar models are used to represent problems involving division.

Division Calculation Policy

Year 4

Year	Topic/Strand	Representation	Key Idea
Year 4	**Dividing by 6, 7 and 9**	 30 ÷ 6 = 5 6 × 5 = 30 *Each packet can hold 5 pencils.* 	Pupils are given division word problems and immediately relate the division used to solve the problem to the multiplication fact they have previously learned. The language associated with division is given, with pupils understanding that when the number is divided, the outcome is called the quotient.
Year 4	**Dividing by 11 and 12**		Arrays and bar models are used to show the relationship between multiplication and division when learning to multiply and divide by 11 and 12, building on the relationship already learned when dividing by 6, 7 and 9.

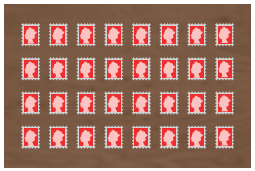
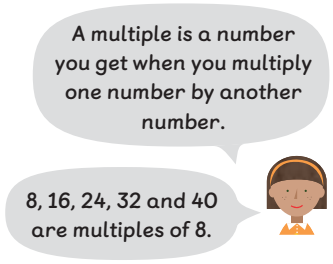
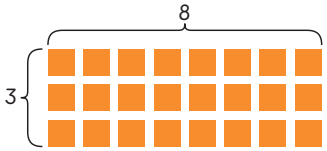
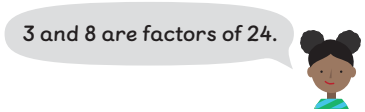
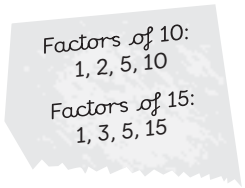
Year	Topic/Strand	Representation	Key Idea
Year 4	**Dividing with Remainders**	There are 13 flowers.  13 ÷ 3 = 4 with 1 left over The quotient is 4. The remainder is 1.	Pupils learn that when dividing into equal groups, we can be left with a number of items less than the group size. This is introduced as the remainder. Initially, the remainder is shown as a whole number.
Year 4	**Word Problems Involving Division**	 6 units → £54 1 unit → £54 ÷ 6 = £9	Division word problems are supported by the use of arrays and bar models, reinforcing the idea of equal groups. Pupils relate the representations of the problems to the equations given. Comparison division models are also used to determine amounts when two separate amounts are compared.

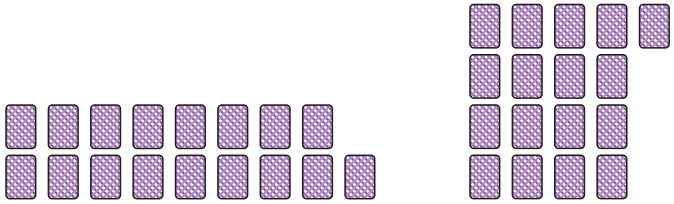
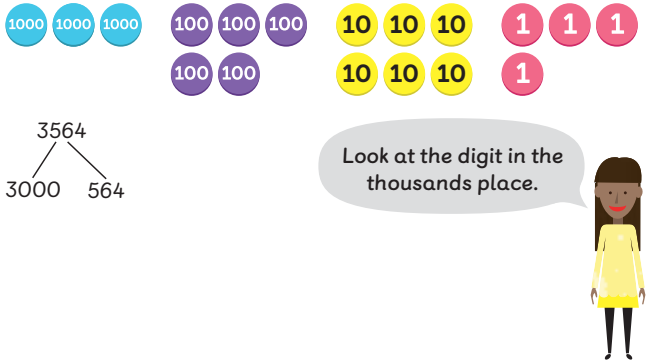
Year	Topic/Strand	Representation	Key Idea
Year 4	Dividing by 1		Pupils look for a pattern and generalise about dividing by 1. They systematically work through dividing a single amount by 4, 3, 2 and finally 1 to make observations about the number of groups and the size of each group.

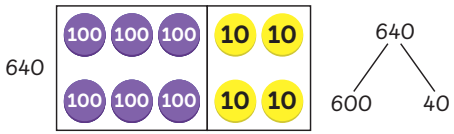
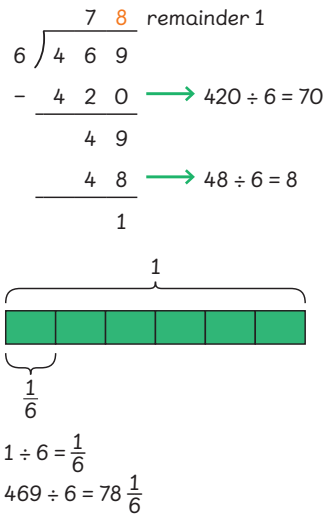
Year	Topic/Strand	Representation	Key Idea
Year 4	Dividing 2-Digit Numbers	Step 1 Divide 4 tens by 2.  4 tens ÷ 2 = 2 tens 40 ÷ 2 = 20 Step 2 Divide 6 ones by 2.  6 ones ÷ 2 = 3 ones 6 ÷ 2 = 3 46 ÷ 2 = 23 20 2 2) 4 6 – 4 0 2 3 2) 4 6 – 4 0 6 6 0	Pupils initially use place–value counters to support the division of 2-digit numbers, then move on to use a long formal written method. The long written method shows the systematic division of parts of the dividend resulting in the quotient.
Year 4	Dividing 3-Digit Numbers	306 ÷ 3 =  	The same procedure used for dividing 2-digit numbers is used for dividing 3-digit numbers. Place–value counters are used to represent the problem before moving on to use the long formal written method.

Division Calculation Policy

Year 5

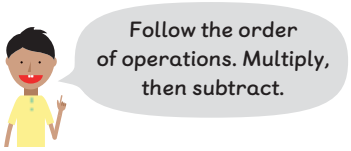
Year	Topic/Strand	Representation	Key Idea
Year 5	**Finding Multiples**	 4 rows of 8 stamps. 4 × 8 = 32 	Pupils use arrays to recognise multiples as the total number once a number is multiplied by another number. Skip counting is related to multiples as it is shown on a number line. Pupils also look for patterns when identifying multiples on number squares.
Year 5	**Finding Factors**	 3 rows of 8 tiles 3 × 8 = 24 	The same rectangular arrangement that was used to find multiples is used to identify factors. The pictorial representation leads to an understanding that factors are the numbers we multiply to produce a product.
Year 5	**Find Common Factors**		Pupils learn that when multiple numbers share the same factors, we can describe those factors as common factors. Pupils will begin to generalise about common factors. For example, all whole numbers ending in zero will have 5 as a multiple.

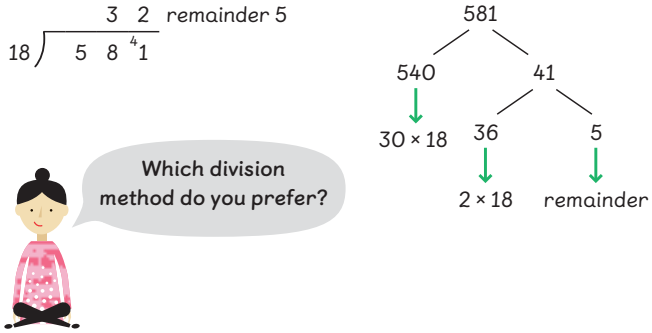
Year	Topic/Strand	Representation	Key Idea
Year 5	**Prime and Composite Numbers**	 *This is a rectangle.*  *These are not rectangles.* *There is only one way to arrange 17 cards.* $17 = 1 \times 17$ *17 only has two factors, 1 and itself. 17 is a prime number.*	Pupils use their understanding of rectangular arrays to look for prime numbers. They learn that any number that can only be made into a single rectangular array is a prime number. In describing this array, they make the connection that prime numbers only ever have two factors, itself and 1. They also learn that numbers with two or more factors can be described as composite numbers.
Year 5	**Dividing by 10, 100 and 1000**	*How many groups of 1000 can we make from 3564?* 	Place–value counters and numbers bonds are initially used to represent division problems involving dividing by 10, 100 and 1000. Pupils use their understanding of place value to support the division calculations. For example, 35 hundreds ÷ 1 hundred = 35.

Year	Topic/Strand	Representation	Key Idea
Year 5	Dividing without Remainder		Pupils use place–value counters and number bond diagrams to support their understanding of the long formal written method for division. Pupils are shown how numbers can be partitioned into known multiples before carrying out the division.
Year 5	Dividing with Remainder		The same procedure used for dividing without a remainder is used for dividing with a remainder but once pupils have made the maximum possible number of equal groups, they have a quantity remaining that is less than the equal group size. This is the remainder. Initially, the remainder is shown as a whole number. This progresses to showing the remainder as a fraction. This progression is supported pictorially with a bar model. Pupils should also start to become aware that the representation of the remainder will be determined by the context of the problem.

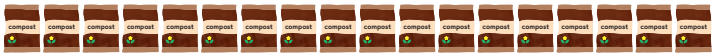
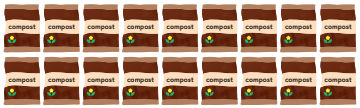
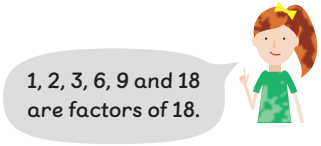
Division Calculation Policy

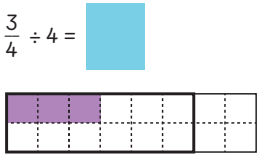
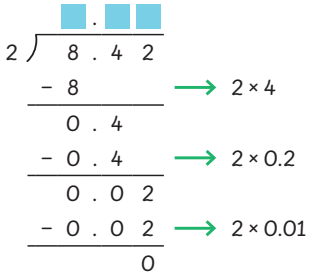
Year 6

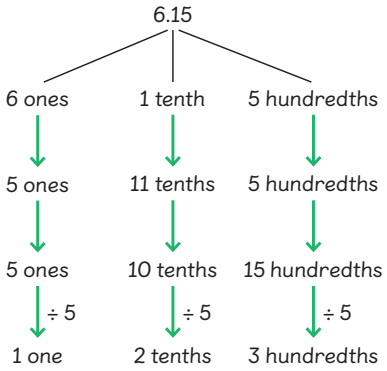
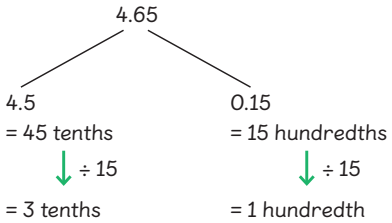
Year	Topic/Strand	Representation	Key Idea
Year 6	Order of Operations	$15 - 4 \times 3 = 15 - 12$ $= 3$ 	Pupils understand the order to calculate expressions and equations that have multiple operations.
Year 6	Dividing by a 2-Digit Number without Remainder	$450 \div 15 =$ ☐ 45 tens ÷ 15 = 3 tens 450 ÷ 15 = 30 	Pupils use simple division to help them calculate more complex division. Initially, pupils understand that if the dividend increases by a factor of 10 and the divisor remains the same, the quotient will also increase by a factor of 10. So, if 45 ÷ 15 = 3, then 450 ÷ 15 = 30. Pupils also use their understanding of factors to divide. They progress to show division using a long formal written method. Once the long method is understood, pupils move on to divide using a short formal written method. While the process remains the same, the notation changes to keep it within the short division structure.

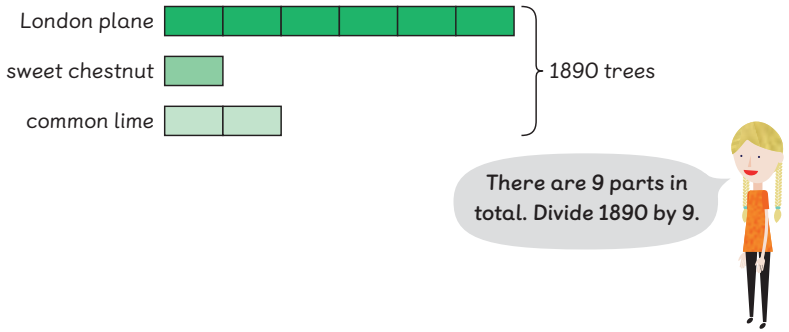
Year	Topic/Strand	Representation	Key Idea
Year 6	**Dividing by a 2-Digit Number with Remainder**		The process used when dividing by a 2-digit number without a remainder stays the same when dividing with remainders. The process results in remainders that cannot be put into the equal group size as whole numbers. The context of the problem suggests the form that the remainder will take and pupils decide on the best representation for the remainder depending on the context. Pupils also use a unitary method of division to solve more complex word problems. Within these problems, they also use brackets to show the partitioning of numbers and how this can be used to support calculation in division problems.
Year 6	**Common Multiples**		Pupils work systematically through problems looking for common multiples of given numbers.

Multiples of 4	4	8	12	16	20	24	28	32	36	40	44	48
Multiples of 6	6	12	18	24	30	36	42	48	54	60	66	72
Multiples of 8	8	16	24	32	40	48	56	64	72	80	88	96

Year	Topic/Strand	Representation	Key Idea
Year 6	Common Factors	 1 row of 18 bags 1 × 18 = 18  2 rows of 9 bags 2 × 9 = 18  3 rows of 6 bags 3 × 6 = 18 	Pupils use long division to find common factors of given numbers. The method used to find common factors progresses to arrays and using tables to systematically find possible common factors.
Year 6	Prime Numbers	Elliott has 7 square tiles.  Elliott can only make 1 rectangular arrangement.  1 row of 7 1 × 7 = 7 The factors of 7 are 1 and 7. 7 is a **prime number**.	Arrays are used as they have been previously, looking for rectangular patterns. Pupils see that numbers that can only be made into 1 rectangular arrangement are prime numbers with factors of itself and 1.

Year	Topic/Strand	Representation	Key Idea
Year 6	**Dividing Fractions by Whole Numbers**	$\frac{3}{4} \div 4 =$  $\frac{3}{4} \div 4 = \frac{1}{4} \times \frac{3}{4} = \frac{3}{16}$	Pupils relate dividing fractions by a whole number to multiplying by its reciprocal. So, dividing by 4 is related to multiplying by $\frac{1}{4}$. We also read this as '$\frac{1}{4}$ of'. The procedure of dividing fractions by whole numbers is supported by the use of bar models and pictorial representation.
Year 6	**Dividing Decimals without Renaming**		Initially, place–value counters are used to show the division procedure that should be well known by pupils at this stage. The long formal written method is then used to divide decimal numbers without renaming the dividend. The procedure for long division does not change. Pupils need to be mindful of the placement of the digits and remember that the decimal point does not represent a place. Simply, the decimal point separates the whole and fractional parts of a number.

Year	Topic/Strand	Representation	Key Idea
Year 6	**Dividing Decimals with Renaming**	 6.15 ÷ 5 = 1.23	Initially, place–value counters are used to show the division procedure that should be well known by pupils at this stage. The long formal written method is then used to divide decimal numbers without a remainder. The procedure for long division with renaming does not change from what pupils have experienced previously. Pupils need to be mindful of the placement of the digits and remember that the decimal point does not represent a place. Simply, the decimal point separates the whole and fractional parts of a number.
Year 6	**Dividing Decimals by a 2-Digit Whole Number**	4.65 kg ÷ 15 =   3 tenths + 1 hundredth = 0.3 + 0.01 = 0.31 4.65 ÷ 15 = 0.31	Pupils initially divide decimal numbers by 2-digit whole numbers where the dividend is easily broken into multiples of the divisor. Number bonds demonstrate the partitioning in order to divide using long and short formal written methods of division.

Year	Topic/Strand	Representation	Key Idea
Year 6	**Ratio**		Pupils use a unitary method involving division to determine quantities in ratio problems. This approach is supported by the use of bar models.
Year 6	**Algebra**		Pupils use their understanding of division to determine unknown values with algebraic expressions and equations.

x	18	3	90
$\frac{x}{3}$			