Maths - Year 6

Calculating 10: Introducing long written methods of dividing

Key Vocabulary

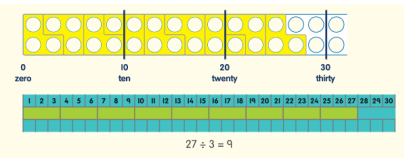
Short method	A written method to solve dividing problems when dividing by a single digit number.
Long method	A written method to solve dividing problems when dividing by a number with more than one digit.
Decimal	A number that has a whole number and a fractional part separated by a decimal point e.g. 34.7.
Partitioning	Splitting a number in different ways, usually to help with calculating, e.g. 27 can be partitioned into 2 tens (20) and 7 ones (7).
Grouping	Arranging numbers into groups by place value to make it easier to carry out operations.
Exchanging	Transferring digits from one place value column to another to support calculating.
Remainder	Something that is left over when other parts have been used, such as the amount left over in a dividing calculation, e.g. 22 ÷ 5 = 4 remainder 2.
Factor	A number that divides into another number exactly, e.g. 4 is a factor of 8.
Multiple	The product of two whole numbers larger than one, e.g. 15 is a multiple of 3 and of 5, 5 x 3 = 15.
Common factor	A whole number that divides into two or more other numbers exactly, e.g. 3 is a common factor of 6, 9 and 12.
Dividend	The number that is being divided.
Divisor	The number you are dividing by.
Quotient	The result of dividing one number by another.
Product	The result of multiplying one number by another.

Mathematical Skills

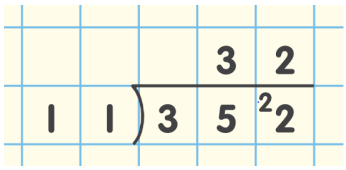
- Use the short method of dividing to solve problems efficiently.
- Use the two long methods of dividing, explaining steps clearly.
- Explain/describe dividing in terms of the sharing or grouping structure (as appropriate).
- Review numbers when dividing to decide whether to use the short or long (or a mental) method.
- Use estimating to predict and check the reasonableness of the results of dividing.
- Identify the inverse of dividing and use it to check answers.
- Interpret a remainder correctly according to the context, rounding the result up or down or expressing the remainder as a fraction or decimal.
- Use understanding of common factors to express a remainder as a fraction in its simplest form.

Mathematical Methods

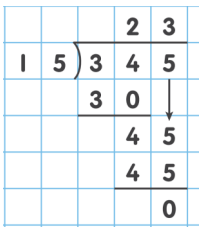
- Dividing in context - the sharing and grouping structures e.g. A class of 27 children is going on a trip to the theatre. The teacher asks them to do some preparatory work in groups of 3. How many groups of 3 will there be?



- Introducing the long written method of dividing—sharing structure e.g. We have 352 seats to share between 11 sections.



OR 345 seats to share between 15 sections.



- Introducing the long written method of dividing—grouping structure e.g. At the theatre, the manager wants to order 1720 ice creams to sell during intervals. The ice creams come in boxes of 15. How many boxes should the manager order?

			1	1	4	r 10
1	5	1	7	2	0	
		1	5	0	0	(15 × 100)
			2	2	0	
			1	5	0	(15 × 10)
				7	0	
				6	0	(15 × 4)
				1	0	

- Developing the long written method of dividing for grouping e.g. the theatre holds 2496 people altogether, with 24 seats in each row. How many rows of seats are there?

			1	0	4	
2	4	2	4	9	6	
		2	4	0	0	(24 × 100)
				9	6	
				9	6	(24 × 4)
					0	

- Developing the long written method of dividing for sharing, and expressing remainders as fractions when sharing or grouping e.g. a group of children are mixing red and yellow paint to make orange, and storing it in small paint pots. They have made 1712ml of orange paint, and each paint pot holds 48ml. How many pots will the children fill?

				3	5	$\frac{2}{3}$
4	8	1	7	1	2	
		1	4	4	0	
			2	7	2	
			2	4	0	
				3	2	($\frac{32}{48} = \frac{2}{3}$)

- Expressing remainders as decimals when sharing or grouping e.g. A café has 6986ml or juice concentrate and every 56ml makes 1 litre of a juice drink. How many litres of the drink can be made?

		1	2	4	
5	6	6	9	8	6
		5	6	0	0 (56 × 100)
		1	3	8	6
		1	1	2	0 (56 × 20)
			2	6	6
			2	2	4 (56 × 4)
				4	2

			1	2	4 • 7	5
5	6	6	9	8	6	
		5	6	0	0	(56 × 100)
		1	3	8	6	
		1	1	2	0	(56 × 20)
			2	6	6	
			2	2	4	(56 × 4)
				4	2	($\frac{42}{56} = \frac{3}{4}$)

- Dividing decimals by whole numbers.

		0 • 9	6	
3	2 • 8	8		
	2	7	↓	
		1	8	
		1	8	
			0	

or

		0 • 9	6
3	2 • ^{2}8	^{1}8	

Can you..?

- How many books will each class get?

- Solve 2853 ÷ 36