

Reasoning and Problem Solving

Step 7: Long Division 3

National Curriculum Objectives:

Mathematics Year 6: (6C7c) [Divide numbers up to 4 digits by a 2-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](#)

Mathematics Year 6: (6C8) [Solve problems involving addition, subtraction, multiplication and division](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Solve a word problem involving long division of a 3-digit number by a 2-digit number no greater than 20. Key multiplication facts given. Includes remainders.

Expected Solve a word problem involving long division of a 3-digit number by a 2-digit number. Key multiplication facts grid partially completed. Includes remainders.

Greater Depth Solve a word problem involving long division of a 3-digit number by a 2-digit number. No key multiplication facts grids given. Includes remainders.

Questions 2, 5 and 8 (Problem Solving)

Developing Identify and correct the errors in long division calculations dividing a 3-digit number by 2-digit numbers no greater than 20. Key multiplication facts given. Includes remainders.

Expected Identify and correct the errors in long division calculations dividing a 3-digit number by 2-digit numbers. Key multiplication facts grid partially completed. Includes remainders.

Greater Depth Identify and correct the errors in long division calculations dividing a 3-digit number by 2-digit numbers. No key multiplication facts grids given. Includes remainders.

Questions 3, 6 and 9 (Reasoning)

Developing Explain calculation methods when dividing a 3-digit number by 2-digit numbers no greater than 20. Key multiplication facts given. Includes remainders.

Expected Explain calculation methods when dividing a 3-digit number by 2-digit numbers. Key multiplication facts grid partially completed. Includes remainders.

Greater Depth Explain calculation methods when dividing a 3-digit number by 2-digit numbers. No key multiplication facts grids given. Includes remainders.

More [Year 6 Four Operations](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Long Division 3

1a. Use long division to solve the problem below.

231 pupils go on a residential trip. They all need a bed to sleep in. Each room contains 12 beds. How many rooms are needed to ensure every child has a bed to sleep in?



Key facts	
$1 \times 12 =$	12
$2 \times 12 =$	24
$3 \times 12 =$	36
$4 \times 12 =$	48
$5 \times 12 =$	60
$10 \times 12 =$	120



PS

Long Division 3

1b. Use long division to solve the problem below.

262 bicycles are being sent to a showroom. Each lorry can hold 15 bicycles. How many lorries will be needed to deliver all of the bicycles to the showroom?



Key facts	
$1 \times 15 =$	15
$2 \times 15 =$	30
$3 \times 15 =$	45
$4 \times 15 =$	60
$5 \times 15 =$	75
$10 \times 15 =$	150



PS

2a. Find and correct the mistakes in the calculation below.

			1	7	r3	
1	1		1	9	5	
		-	1	1	0	(x 10)
				8	0	
		-		7	7	(x 7)
					3	

Key facts	
$1 \times 11 =$	11
$2 \times 11 =$	22
$3 \times 11 =$	33
$4 \times 11 =$	44
$5 \times 11 =$	55
$10 \times 11 =$	110



PS

2b. Find and correct the mistakes in the calculation below.

			0	2	3	r2
1	2		2	9	0	
		-	2	4	↓	
			0	5	0	
		-		4	8	
				0	2	

Key facts	
$1 \times 12 =$	12
$2 \times 12 =$	24
$3 \times 12 =$	36
$4 \times 12 =$	48
$5 \times 12 =$	60
$10 \times 12 =$	120



PS

3a. Ben is calculating $236 \div 12$.

He says,



There won't be any remainders as they are both even numbers.

Is he correct?
Explain your answer.

Key facts	
$1 \times 12 =$	12
$2 \times 12 =$	24
$3 \times 12 =$	36
$4 \times 12 =$	48
$5 \times 12 =$	60
$10 \times 12 =$	120



R

3b. Stella is calculating $224 \div 11$.

She says,



I think that there will be a remainder because 224 is only a little greater than 20×11

Is she correct?
Explain your answer.

Key facts	
$1 \times 11 =$	11
$2 \times 11 =$	22
$3 \times 11 =$	33
$4 \times 11 =$	44
$5 \times 11 =$	55
$10 \times 11 =$	110



R

Long Division 3

4a. Use long division to solve the problem below.

672 honey bees need a new home. Each bee hive has room for 18 bees. How many bee hives will the bee keeper need to ensure that every bee has a place to stay?



Key facts	
$2 \times 18 =$	36
$5 \times 18 =$	90
$10 \times 18 =$	180
$20 \times 18 =$	360



PS

Long Division 3

4b. Use long division to solve the problem below.

498 apples have been harvested from the orchard. They all need to be packed away in boxes. If each box can hold 15 apples, how many boxes will the farmer need?



Key facts	
$2 \times 15 =$	30
$5 \times 15 =$	75
$10 \times 15 =$	150
$20 \times 15 =$	300



PS

5a. Find and correct the mistakes in the calculation below.

			5	1	r24
1	4	7	3	8	
	-	7	0	0	(x 50)
		0	3	8	
	-		1	4	(x 1)
			2	4	

Key facts	
$2 \times 14 =$	28
$5 \times 14 =$	70
$10 \times 14 =$	140
$20 \times 14 =$	280



PS

5b. Find and correct the mistakes in the calculation below.

			3	6	r3
1	6	5	8	3	
	-	4	8	↓	
		0	1	0	3
	-		9	6	
			1	3	

Key facts	
$2 \times 16 =$	32
$5 \times 16 =$	80
$10 \times 16 =$	160
$20 \times 16 =$	320



PS

6a. James is calculating $696 \div 13$.

He says,



I think the remainder will be 14.

Is he correct?
Explain your answer.

Key facts	
$2 \times 13 =$	26
$5 \times 13 =$	65
$10 \times 13 =$	130
$20 \times 13 =$	260



R

6b. Punita is calculating $485 \div 15$.

She says,



I think that the answer will have no remainders because 485 and 15 both have 5 as a factor.

Is she correct?
Explain your answer.

Key facts	
$2 \times 15 =$	30
$5 \times 15 =$	75
$10 \times 15 =$	150
$20 \times 15 =$	300



R

Long Division 3

7a. Use long division to solve the problem below.

789 golf balls need collecting from the course. One bucket can hold 17 golf balls. How many buckets will be needed to collect every golf ball on the course?



PS

Long Division 3

7b. Use long division to solve the problem below.

948 guests have been invited to a special concert. Invitations come in boxes of 15. How many boxes are needed to ensure that every guest receives an invitation?



PS

8a. Find and correct the mistakes in the calculation below.

			3	3	r17	
1	9	5	2	1		
	-	3	8	0	(x 20)	
		1	2	6	1	
	-	1	9	0	(x 10)	
		0	7	4		
	-		5	7	(x 3)	
			1	7		



PS

8b. Find and correct the mistakes in the calculation below.

			4	1	r22	
2	3	9	6	1		
	-	9	2	↓		
		0	4	1		
	-		2	3		
			2	2		



PS

9a. Hector is calculating $985 \div 25$.

He says,



By partitioning 985 into 900 and 85, I can tell there will be a remainder.

Is he correct?
Explain your answer.



R

9b. Bella is calculating $698 \div 27$.

She says,



If the remainder is larger than 26, the answer cannot be correct.

Is she correct?
Explain your answer.



R

Reasoning and Problem Solving

Long Division 3

Developing

1a. 20 rooms

2a. $195 \div 11 = 17 \text{ r}8$. In the incorrect calculation, the $5 - 0$ has not been calculated correctly.

3a. Ben is incorrect. $236 \div 12 = 19 \text{ r}8$.

Expected

4a. 38 beehives

5a. $738 \div 14 = 52 \text{ r}10$. In the incorrect calculation, the remainder is greater than the divisor.

6a. James is incorrect. $696 \div 13 = 53 \text{ r}7$

Greater Depth

7a. 47 buckets

8a. $521 \div 19 = 27 \text{ r}8$. In the incorrect calculation, the first subtraction has not been worked out correctly.

9a. Hector is correct. $985 \div 25 = 39 \text{ r}10$

Reasoning and Problem Solving

Long Division 3

Developing

1b. 18 lorries

2b. $290 \div 12 = 24 \text{ r}2$. In the incorrect calculation, 48 has been written as 3 lots of 12 rather than 4.

3b. Stella is correct. $224 \div 11 = 20 \text{ r}4$.

Expected

4b. 34 boxes

5b. $583 \div 16 = 36 \text{ r}7$. In the incorrect calculation, the final subtraction giving the remainder contains an error.

6b. Punita is incorrect. $485 \div 15 = 32 \text{ r}5$

Greater Depth

7b. 64 boxes

8b. $961 \div 23 = 41 \text{ r}18$. In the incorrect calculation, the final subtraction giving the remainder contains an error.

9b. Bella is correct. The remainder cannot be greater than the divisor. $698 \div 27 = 25 \text{ r}23$