# Reasoning and Problem Solving Step 7: Long Division 3

## National Curriculum Objectives:

Mathematics Year 6: (6C7c) <u>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) <u>Solve problems involving addition, subtraction, multiplication</u> and division</u>

## **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 <u>Year 6 Four Operations</u> resources.

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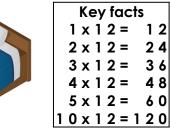
## Long Division 3

# **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. Home many rooms are needed to ensure every child has a bed

to sleep in?



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?



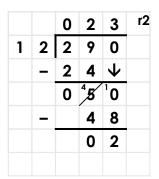


2a. Find and correct the mistakes in the calculation below.

			1	7	r3	
1	1	1	9	5		
	_	1	1	0	(x	10)
			<sup>7</sup> 8	<sup>1</sup> 0		
	_		7	7	(x	7)
				3		

Key fa	cts
1 x 1 1 =	: 11
2 x 1 1 =	2 2
3 x 1 1 =	= 33
4 x 1 1 =	4 4
5 x 1 1 =	5 5
10x11=	110

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





3a. Ben is calculating 236 ÷ 12.

He says,



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

ls he correct? Explain your answer.

	Key fact	S
	1 x 1 2 =	1 2
	2 x 1 2 =	2 4
	3 x 1 2 =	3 6
	4 x 1 2 =	48
	5 x 1 2 =	60
1	$0 \times 12 = 1$	20

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3b. Stella is calculating 224 ÷ 11.

She says,



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

ls she correct? Explain your answer.

	1	X	1	1	=		1	1
	2	X	1	1	=		2	2
	3	X	1	1	=		3	3
	4	X	1	1	=		4	4
	5	X	1	1	=		5	5
1	0	X	1	1	=	1	1	0

**Key facts** 





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## **Long Division 3**

# **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?



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?



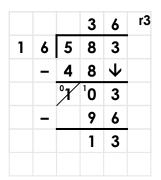
Key facts	<u> </u>	
2 x 1 5 =	3	0
5 x 1 5 =	7	5
$10 \times 15 = 1$	5	0
$20 \times 15 = 3$		



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

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

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





6a. James is calculating 696 ÷ 13.

He says,



I think the remainder will be 14.

Is he correct?
Explain your answer.

		Κe	y:	f	ac	:ts	3	
	2	X	1	3	=		2	6
	5	X	1	3	=		6	5
1	0	X	1	3	=	1	3	0
2	0	X	1	3	=	2	6	0

6b. Punita is calculating 485 ÷ 15.

She says,



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

ls she correct? Explain your answer.

Key facts 2 x 1 5 = 3 0 5 x 1 5 = 7 5 1 0 x 1 5 = 1 5 0 2 0 x 1 5 = 3 0 0





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## Long Division 3

# **Long Division** 3

7b. Use long division to solve the problem

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

concert. Invitations come in boxes of 15.

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?

948 guests have been invited to a special How many boxes are needed to ensure that every guest receives an invitation?



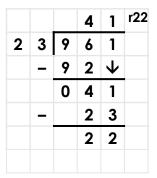


below.

Ba. Find and	d correct	the m	istake	es in	the
calculation	below.				

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

			3	3	r17	
1	9	5	2	1		
	-	3	8	0	(x	20)
		<b>12</b>	16	1		
	-	1	9	0	(x	10)
		0	7	4		
	-		5	7	(x	3)
			1	7		







9a. Hector is calculating 985 ÷ 25.

He says,



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

Is he correct? Explain your answer. 9b. Bella is calculating 698 ÷ 27.

She says,



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

Is she correct? Explain your answer.







# Reasoning and Problem Solving Long Division 3

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### **Developing**

1a. 20 rooms

2a.  $195 \div 11 = 17 \text{ r8}$ . In the incorrect calculation, the 5 - 0 has not been calculated correctly.

3a. Ben is incorrect.  $236 \div 12 = 19 \text{ r8}.$ 

### **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 ÷ 13 = 53 r7

### **Greater Depth**

7a. 47 buckets

8a.  $521 \div 19 = 27 \text{ r8}$ . In the incorrect calculation, the first subtraction has not been worked out correctly.

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

## **Developing**

1b. 18 lorries

2b. 290 ÷ 12 = 24 r2. In the incorrect calculation, 48 has been written as 3 lots of 12 rather than 4.

3b. Stella is correct. 224 ÷ 11 = 20 r4.

### **Expected**

4b. 34 boxes

5b.  $583 \div 16 = 36 \text{ r7}$ . In the incorrect calculation, the final subtraction giving the remainder contains an error.

6b. Punita is incorrect. 485 ÷ 15 = 32 r5

### **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.  $698 \div 27 = 25$  r23

