

# Reasoning and Problem Solving

## Step 7: Divide with Remainders

Teaching note: We have included grids for short division and recommend that this resource is printed in colour or greyscale.

### National Curriculum Objectives:

Mathematics Year 5: (5C7b) [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](#)

### Differentiation:

Questions 1, 4 and 7 (Reasoning)

**Developing** Identify whether a calculation is correct and explain why. No use of zero as a place holder and no exchanges. Short method of division supported by place value grid showing grouping.

**Expected** Identify the correct statement and explain why. Some use of zero as a place holder and includes up to two exchanges.

**Greater Depth** Identify the correct statement and explain why. Use of zero as a place holder and includes up to three exchanges.

Questions 2, 5 and 8 (Problem Solving)

**Developing** Solve a word problem. No use of zero as a place holder and no exchanges. Short method of division supported by place value grid showing grouping.

**Expected** Solve a word problem. Some use of zero as a place holder and includes up to two exchanges.

**Greater Depth** Solve a word problem. Use of zero as a place holder and includes up to three exchanges where some numbers within calculations are incomplete.

Questions 3, 6 and 9 (Problem Solving)

**Developing** Arrange number cards to create a calculation with a given remainder. No use of zero as a place holder and no exchanges.

**Expected** Arrange number cards to create a calculation with a given remainder. Some use of zero as a place holder and includes up to two exchanges.

**Greater Depth** Arrange number cards to create a calculation with a given remainder. Use of zero as a place holder and includes up to three exchanges where some numbers within calculations are incomplete.

More [Year 5 Multiplication and Division](#) resources.

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



## Divide with Remainders

4a. Sean and Gabriel are calculating  $7,987 \div 6$ .



Sean

The answer is 1,331 r1.



Gabriel

The answer is 1,332 r1.

Who is correct? Explain your reasoning.



R

## Divide with Remainders

4b. Hannah and Alice are calculating  $8,359 \div 8$ .



Hannah

The answer is 1,043 r15.



Alice

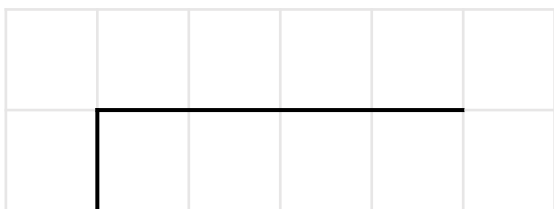
The answer is 1,044 r7.

Who is correct? Explain your reasoning.



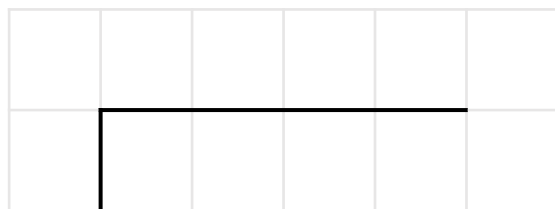
R

5a. Oranges are packed into nets. One net holds 5 oranges. There are 2,307 oranges. How many nets are needed to hold all the oranges?



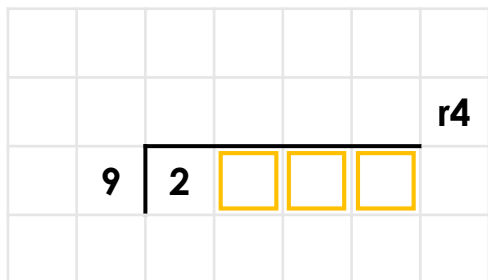
PS

5b. Eggs are packed into boxes. One box holds 8 eggs. There are 9,621 eggs. How many boxes are needed to hold all the eggs?



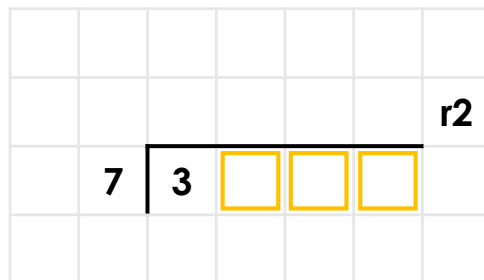
PS

6a. Arrange the number cards below to create a calculation which has a remainder of 4. Complete the calculation.



PS

6b. Arrange the number cards below to create a calculation which has a remainder of 2. Complete the calculation.



PS

## Divide with Remainders

7a. Cian and Jake have been exploring the 1-digit number that 3,455 has been divided by to get the answer 575 r5.



Cian

The divisor is  
7.

The divisor is  
6.



Jake

Who is correct?  
Explain your reasoning.



R

## Divide with Remainders

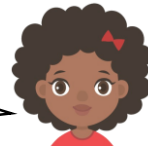
7b. Sinead and Isabel have been exploring the 1-digit number that 4,332 has been divided by to get the answer 866 r2.



Sinead

The divisor is  
8.

The divisor is  
5.



Isabel

Who is correct?  
Explain your reasoning.



R

8a. There are 3,170 cupcakes packed into less than 500 trays with 2 left over. How many cupcakes fit into a tray, and how many trays would there be?




PS

8b. There are 2,012 pears packed into less than 300 bags with 3 left over. How many pears fit into a bag, and how many bags would there be?




PS

9a. Arrange the number cards below to create a division with a remainder of 4. Discover the number hidden by the splat and complete the calculation.




r4



PS

9b. Arrange the number cards below to create a division with a remainder of 3. Discover the number hidden by the splat and complete the calculation.




r3



PS

## Reasoning and Problem Solving Divide with Remainders

### Developing

- 1a. Johnny is incorrect because  $3,665 \div 4 = 916 \text{ r}1$ .
- 2a.  $4,886 \div 4 = 1,221 \text{ r}2$ ; 1,112 tubes will be needed.
- 3a.  $8,485 \div 4 = 2,121 \text{ r}1$

### Expected

- 4a. Sean is correct. Gabriel has miscalculated how many times 7 can be grouped into 6.
- 5a.  $2,307 \div 5 = 461 \text{ r}2$ ; 462 nets will be needed.
- 6a. Various answers, for example:  
 $2,767 \div 9 = 307 \text{ r}4$ ,  $2,776 \div 9 = 308 \text{ r}4$

### Greater Depth

- 7a. Jake is correct. Cian's divisor would give an answer of 493 r4.
- 8a. 8 cupcakes per tray and 396 trays.
- 9a. Various answers, for example:  
 $5,541 \div 7 = 791 \text{ r}4$

## Reasoning and Problem Solving Divide with Remainders

### Developing

- 1b. Steph is incorrect because  $2,243 \div 2 = 1,121 \text{ r}1$ .
- 2b.  $4,847 \div 4 = 1,211 \text{ r}3$ ; 1,212 packets will be needed.
- 3b.  $6,697 \div 3 = 2,232 \text{ r}1$

### Expected

- 4b. Alice is correct. Hannah has miscalculated how many times 39 can be grouped into 8 so her remainder is bigger than her divisor.
- 5b.  $9,621 \div 8 = 1,202 \text{ r}5$ , 1,203 boxes will be needed.
- 6b.  $3,544 \div 7 = 506 \text{ r}2$

### Greater Depth

- 7b. Isabel is correct. Sinead's divisor would give an answer of 541 r4.
- 8b. 7 pears per bag and 287 bags.
- 9b. Various answers, for example:  
 $3,153 \div 9 = 350 \text{ r}3$ ,  $3,135 \div 9 = 348 \text{ r}3$