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.

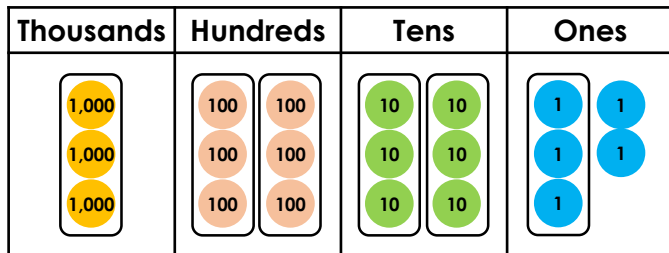Did you like this resource? Don't forget to review it on our website.

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Divide with Remainders

1a. Johnny is calculating 3,665 ÷ 3.

The answer is 1,221 r3.

Johnny

| Thousands	Hundreds	Tens	Ones
1,000 1,000 1,000	100 100 / 100 100 / 100 100	10 10 / 10 10 / 10 10	1 1 / 1 1 / 1

Is he correct? Explain your reasoning.

⭐D

R

2a. Tennis balls are packed into tubes. One tube holds 5 tennis balls. There are 5,557 tennis balls. How many tubes are needed to hold all the tennis balls?
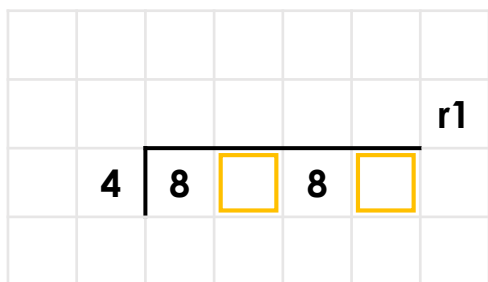
⭐D

PS

3a. Arrange the number cards below to create a calculation which has a remainder of 1. Complete the calculation.

4   5

r1

4 | 8 ☐ 8 ☐

⭐D

PS

Divide with Remainders

1b. Steph is calculating 2,243 ÷ 2.

The answer is 1,121 r3.

Steph

Thousands	Hundreds	Tens	Ones
1,000 1,000	100 100 / 100 100	10 10 / 10 10	1 1 / 1

Is she correct? Explain your reasoning.

⭐D

R
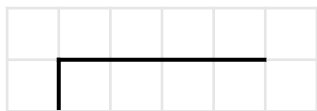
2b. Chocolate bars are packed into packets. One packet holds 4 bars. There are 4,847 bars. How many packets are needed to hold all the bars?
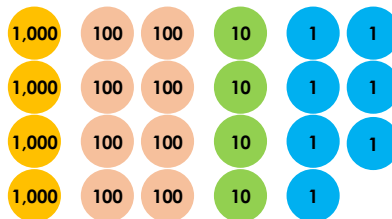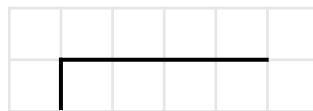
⭐D

PS

3b. Arrange the number cards below to create a calculation which has a remainder of 1. Complete the calculation.
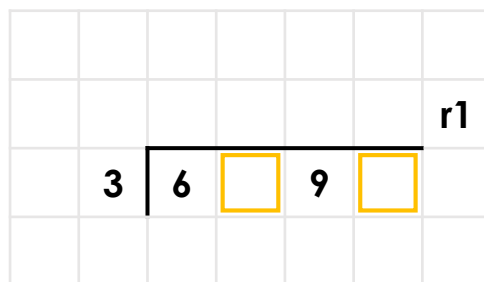
6   7

r1

3 | 6 ☐ 9 ☐

⭐D

PS

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Reasoning and Problem Solving – Divide with Remainders – Year 5 Developing

Divide with Remainders

4a. Sean and Gabriel are calculating 7,987 ÷ 6.

Sean: The answer is 1,331 r1.

Gabriel: The answer is 1,332 r1.

Who is correct? Explain your reasoning.

R

4b. Hannah and Alice are calculating 8,359 ÷ 8.
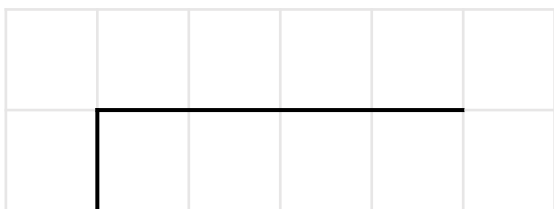
Hannah: The answer is 1,043 r15.

Alice: The answer is 1,044 r7.
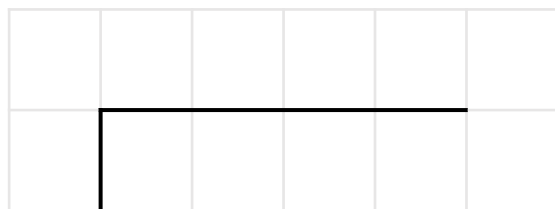
Who is correct? Explain your reasoning.

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?
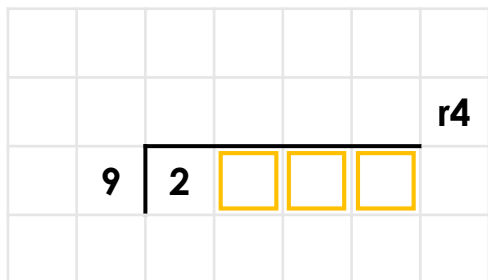
PS

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.

7   7   6

9 | 2 ☐ ☐ ☐   r4

PS

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

4   5   4

7 | 3 ☐ ☐ ☐   r2

PS

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Reasoning and Problem Solving – Divide with Remainders – Year 5 Expected
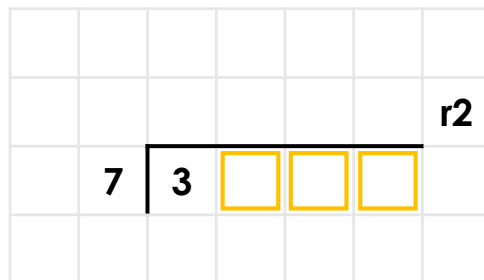
Divide with Remainders

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

The divisor is 7.

Cian

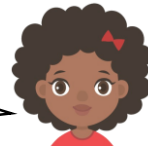The divisor is 6.

Jake

Who is correct?
Explain your reasoning.

R

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

The divisor is 8.

Sinead

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.

5   4   7

r4

5

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.

3   1   9

r3

3

PS

Reasoning and Problem Solving – Divide with Remainders – Year 5 Greater Depth

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Developing

1a. Johnny is incorrect because 3,665 ÷ =1,221 r2.

2a. 4,886 ÷ 4 = 1,221 r2; 1,112 tubes will be needed.

3a. 8,485 ÷ 4 = 2,221 r1

Expected

4a. Sean is correct. Gabriel has miscalculated how many times 7 can be grouped into 6.

5a. 2,307 ÷ 5 = 461 r2; 462 nets will be needed.

6a. Various answers, for example: 2,767 ÷ 9 = 307 r4, 2,776 ÷ 9 = 308 r4

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 ÷ 7 = 791 r4

Developing

1b. Steph is incorrect because 2,243 ÷ 2 = 1,121 r1.

2b. 4,847 ÷ 4 = 1,211 r3; 1,212 packets will be needed.

3b. 6,697 ÷ 3 = 2,232 r1

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 ÷ 8 = 1,202 r5, 1,203 boxes will be needed.

6b. 3,544 ÷ 7 = 506 r2

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 ÷ 9 = 350 r3, 3,135 ÷ 9 = 348 r3

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Reasoning and Problem Solving – Divide with Remainders ANSWERS