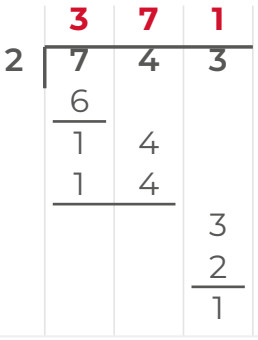
Long Division (5): Division with Remainder

NAME: _____ CLASS: _____ DATE: _____ SCORE: ☐

WORKED EXAMPLE · THE MATRIX METHOD™

Complete the long division. 743 ÷ 2 = ?



- Divide: 7 ÷ 2 = 3 remainder 1. 3 × 2 = 6, 7 − 6 = 1
- Bring down the 4 to make 14. 14 ÷ 2 = 7. 14 − 14 = 0
- Bring down the 3. 3 ÷ 2 = 1 remainder 1. 3 − 2 = 1
- There is nothing left to bring down.
- The 1 at the bottom is the remainder.
- Check: 1 is smaller than 2, so the remainder is correct.

Ans: 371 R 1

Write the remainder after the letter R. [10 marks]

PART A · The remainder appears only at the last step

(a) 685 ÷ 2 = _____

2 | 6 8 5

(b) 967 ÷ 3 = _____

3 | 9 6 7

(c) 887 ÷ 4 = _____

4 | 8 8 7

(d) 557 ÷ 5 = _____

5 | 5 5 7

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PART B · Remainders are carried along the way — and two that do not follow the pattern

(e) 475 ÷ 2 = _____

2 | 4 7 5

(f) 589 ÷ 3 = _____

3 | 5 8 9

(g) 742 ÷ 4 = _____

4 | 7 4 2

(h) 869 ÷ 5 = _____

5 | 8 6 9

(i) 456 ÷ 4 = _____

4 | 4 5 6

(j) 117 ÷ 4 = _____

4 | 1 1 7

Answer Key — Long Division (5): Division with Remainder

MATRIX METHOD™ · THE STEPS

Step 1: Run the cycle as usual — divide, multiply, subtract, bring down.

Step 2: When there is nothing left to bring down, what is left is the remainder.

Step 3: Check it. The remainder must be smaller than the number you divided by.

(a) 685 ÷ 2 = 342 R 1

- 6 ÷ 2 = 3. 3 × 2 = 6, 6 − 6 = 0
- Bring down 8. 8 ÷ 2 = 4. 4 × 2 = 8, 8 − 8 = 0
- Bring down 5. 5 ÷ 2 = 2 remainder 1. 2 × 2 = 4, 5 − 4 = 1

(b) 967 ÷ 3 = 322 R 1

- 9 ÷ 3 = 3. 3 × 3 = 9, 9 − 9 = 0
- Bring down 6. 6 ÷ 3 = 2. 2 × 3 = 6, 6 − 6 = 0
- Bring down 7. 7 ÷ 3 = 2 remainder 1. 2 × 3 = 6, 7 − 6 = 1

(c) 887 ÷ 4 = 221 R 3

- 8 ÷ 4 = 2. 2 × 4 = 8, 8 − 8 = 0
- Bring down 8. 8 ÷ 4 = 2. 2 × 4 = 8, 8 − 8 = 0
- Bring down 7. 7 ÷ 4 = 1 remainder 3. 1 × 4 = 4, 7 − 4 = 3

(d) 557 ÷ 5 = 111 R 2

- 5 ÷ 5 = 1. 1 × 5 = 5, 5 − 5 = 0
- Bring down 5. 5 ÷ 5 = 1. 1 × 5 = 5, 5 − 5 = 0
- Bring down 7. 7 ÷ 5 = 1 remainder 2. 1 × 5 = 5, 7 − 5 = 2

(e) 475 ÷ 2 = 237 R 1

- 4 ÷ 2 = 2. 2 × 2 = 4, 4 − 4 = 0
- Bring down 7. 7 ÷ 2 = 3 remainder 1. 3 × 2 = 6, 7 − 6 = 1
- Bring down the 5 to make 15. 15 ÷ 2 = 7 remainder 1. 7 × 2 = 14, 15 − 14 = 1

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(f) 589 ÷ 3 = 196 R 1

- 5 ÷ 3 = 1 remainder 2. 1 × 3 = 3, 5 − 3 = 2
- Bring down the 8 to make 28. 28 ÷ 3 = 9 remainder 1. 9 × 3 = 27, 28 − 27 = 1
- Bring down the 9 to make 19. 19 ÷ 3 = 6 remainder 1. 6 × 3 = 18, 19 − 18 = 1

(g) 742 ÷ 4 = 185 R 2

- 7 ÷ 4 = 1 remainder 3. 1 × 4 = 4, 7 − 4 = 3
- Bring down the 4 to make 34. 34 ÷ 4 = 8 remainder 2. 8 × 4 = 32, 34 − 32 = 2
- Bring down the 2 to make 22. 22 ÷ 4 = 5 remainder 2. 5 × 4 = 20, 22 − 20 = 2

(h) 869 ÷ 5 = 173 R 4

- 8 ÷ 5 = 1 remainder 3. 1 × 5 = 5, 8 − 5 = 3
- Bring down the 6 to make 36. 36 ÷ 5 = 7 remainder 1. 7 × 5 = 35, 36 − 35 = 1
- Bring down the 9 to make 19. 19 ÷ 5 = 3 remainder 4. 3 × 5 = 15, 19 − 15 = 4

(i) 456 ÷ 4 = 114

- 4 ÷ 4 = 1. 1 × 4 = 4, 4 − 4 = 0
- Bring down 5. 5 ÷ 4 = 1 remainder 1. 1 × 4 = 4, 5 − 4 = 1
- Bring down the 6 to make 16. 16 ÷ 4 = 4. 4 × 4 = 16, 16 − 16 = 0
- Nothing is left over. Write 114. There is no remainder to write.

(j) 117 ÷ 4 = 29 R 1

- 1 is smaller than 4, so the 1 joins the next 1. Work with 11.
- 11 ÷ 4 = 2 remainder 3. 2 × 4 = 8, 11 − 8 = 3
- Bring down the 7 to make 37. 37 ÷ 4 = 9 remainder 1. 9 × 4 = 36, 37 − 36 = 1
- The answer has two digits and a remainder of 1.

COMMON ERROR TO WATCH FOR

Pupils leave a remainder bigger than the divisor — writing 5 R 6 for a division by 4. That always means the last answer digit was too small. Some also write R 0 when the division is exact; if nothing is left over, there is no remainder to write at all.