Whole Numbers and Decimals

Lesson 12 Division with Remainders in Context

Standards 6.NS.B.2

Learning target I can divide multi-digit whole numbers and check the quotient.

Materials Place-value chart, graph paper for long division, pencils.

Lesson Flow 50 Minutes

0–5 Activate prior knowledge. Read the learning target. Ask students what they already know about division with remainders in context. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Estimate the quotient first. Divide, multiply, subtract, and bring down one digit at a time. Keep each quotient digit in its place; write zero when needed. Check dividend = divisor × quotient + remainder. Work through the two examples on the attached instruction page. Have students name the first step before showing it.

17–22 Guided practice. Revisit worked Example 2 with its solution covered. Students propose the next step and explain why it is valid; uncover and compare with the worked solution.

22–45 Independent classwork. Assign the attached 10 questions in order. Check items 1–3 for entry-level understanding, 4–6 for connected procedures, 7–8 for representation and explanation, and 9–10 for application or justification. Ask students to use the instruction-page notes area or extra grids for longer work.

45–50 Check understanding. Use classwork question 10 as an exit discussion: A club has 5087 cards. Each full packet holds 15. How many full packets can it make, and how many cards remain? Compare the result with the answer key and ask a student to defend the method.

Support and Extension

Support Model item 1 together with the listed tools, then have students attempt item 2 independently. Watch decimal place alignment, quotient zero digits, and the difference between GCF and LCM.

Extension Ask students to solve a final item another way, draw a second representation, or create a related problem with a checked answer.

Next step Record which students can explain the target independently. Begin the next teaching session with a brief correction for any recurring error.

Name _____ Date _____

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Learning target I can divide multi-digit whole numbers and check the quotient.

Learn and Discuss

Estimate the quotient first. Divide, multiply, subtract, and bring down one digit at a time. Keep each quotient digit in its place; write zero when needed. Check dividend = divisor × quotient + remainder.

Example 1 Use long division: 90 ÷ 3. Show the algorithm and check.
Solution 30. 9 ÷ 3: write 3, subtract 9, remainder 0; bring down the next digit: 0 ÷ 3: write 0, subtract 0, remainder 0. Check: 3 × 30 = 90.
Example 2 Use long division: 7,931 ÷ 20. Show the algorithm and check.
Solution 396 R 11. 79 ÷ 20: write 3, subtract 60, remainder 19; bring down the next digit: 193 ÷ 20: write 9, subtract 180, remainder 13; bring down the next digit: 131 ÷ 20: write 6, subtract 120, remainder 11. Check: 20 × 396 + 11 = 7931.

Classwork Show Your Work

Complete the 10 problems on the following page. Refer to the examples, draw models, and check your results.

My Notes or Second Method

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Name _____ Show calculations, models, and units.

1. Use long division: 450 ÷ 6. Show the algorithm and check.

2. Use long division: 264 ÷ 3. Show the algorithm and check.

3. Use long division: 240 ÷ 6. Show the algorithm and check.

4. Use long division: 3,864 ÷ 21. Show the algorithm and check.

5. Use long division: 5,670 ÷ 35. Show the algorithm and check.

6. Use long division: 9,600 ÷ 32. Show the algorithm and check.

7. Use long division: 15,623 ÷ 39. Show the algorithm and check.

8. Use long division: 6,248 ÷ 35. Show the algorithm and check.

9. A club has 7318 cards. Each full packet holds 31. How many full packets can it make, and how many cards remain?

10. A club has 5087 cards. Each full packet holds 15. How many full packets can it make, and how many cards remain?

Division with Remainders in Context

Whole Numbers and Decimals

1. 75
Reasoning 45 ÷ 6: write 7, subtract 42, remainder 3; bring down the next digit: 30 ÷ 6: write 5, subtract 30, remainder 0. Check: 6 × 75 = 450.

2. 88
Reasoning 26 ÷ 3: write 8, subtract 24, remainder 2; bring down the next digit: 24 ÷ 3: write 8, subtract 24, remainder 0. Check: 3 × 88 = 264.

3. 40
Reasoning 24 ÷ 6: write 4, subtract 24, remainder 0; bring down the next digit: 0 ÷ 6: write 0, subtract 0, remainder 0. Check: 6 × 40 = 240.

4. 184
Reasoning 38 ÷ 21: write 1, subtract 21, remainder 17; bring down the next digit: 176 ÷ 21: write 8, subtract 168, remainder 8; bring down the next digit: 84 ÷ 21: write 4, subtract 84, remainder 0. Check: 21 × 184 = 3864.

5. 162
Reasoning 56 ÷ 35: write 1, subtract 35, remainder 21; bring down the next digit: 217 ÷ 35: write 6, subtract 210, remainder 7; bring down the next digit: 70 ÷ 35: write 2, subtract 70, remainder 0. Check: 35 × 162 = 5670.

6. 300
Reasoning 96 ÷ 32: write 3, subtract 96, remainder 0; bring down the next digit: 0 ÷ 32: write 0, subtract 0, remainder 0; bring down the next digit: 0 ÷ 32: write 0, subtract 0, remainder 0. Check: 32 × 300 = 9600.

7. 400 R 23
Reasoning 156 ÷ 39: write 4, subtract 156, remainder 0; bring down the next digit: 2 ÷ 39: write 0, subtract 0, remainder 2; bring down the next digit: 23 ÷ 39: write 0, subtract 0, remainder 23. Check: 39 × 400 + 23 = 15623.

8. 178 R 18
Reasoning 62 ÷ 35: write 1, subtract 35, remainder 27; bring down the next digit: 274 ÷ 35: write 7, subtract 245, remainder 29; bring down the next digit: 298 ÷ 35: write 8, subtract 280, remainder 18. Check: 35 × 178 + 18 = 6248.

9. 236 full packets; 2 cards remain
Reasoning 7318 = 31 × 236 + 2.

10. 339 full packets; 2 cards remain
Reasoning 5087 = 15 × 339 + 2.