Whole Numbers and Decimals

Lesson 1 Long Division and Place Value

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 long division and place value. 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 3245 cards. Each full packet holds 12. 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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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: 138 ÷ 6. Show the algorithm and check.
Solution 23. 13 ÷ 6: write 2, subtract 12, remainder 1; bring down the next digit: 18 ÷ 6: write 3, subtract 18, remainder 0. Check: 6 × 23 = 138.
Example 2 Use long division: 12,183 ÷ 34. Show the algorithm and check.
Solution 358 R 11. 121 ÷ 34: write 3, subtract 102, remainder 19; bring down the next digit: 198 ÷ 34: write 5, subtract 170, remainder 28; bring down the next digit: 283 ÷ 34: write 8, subtract 272, remainder 11. Check: 34 × 358 + 11 = 12183.

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

Lesson 1 Long Division and Place Value

Name _____ Show calculations, models, and units.

1. Use long division: 438 ÷ 6. Show the algorithm and check.

2. Use long division: 175 ÷ 7. Show the algorithm and check.

3. Use long division: 252 ÷ 6. Show the algorithm and check.

4. Use long division: 14,174 ÷ 38. Show the algorithm and check.

5. Use long division: 3,388 ÷ 14. Show the algorithm and check.

6. Use long division: 12,408 ÷ 33. Show the algorithm and check.

7. Use long division: 5,492 ÷ 29. Show the algorithm and check.

8. Use long division: 5,575 ÷ 21. Show the algorithm and check.

9. A club has 2351 cards. Each full packet holds 15. How many full packets can it make, and how many cards remain?

10. A club has 3245 cards. Each full packet holds 12. How many full packets can it make, and how many cards remain?

Long Division and Place Value

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1. 73
Reasoning 43 ÷ 6: write 7, subtract 42, remainder 1; bring down the next digit: 18 ÷ 6: write 3, subtract 18, remainder 0. Check: 6 × 73 = 438.

2. 25
Reasoning 17 ÷ 7: write 2, subtract 14, remainder 3; bring down the next digit: 35 ÷ 7: write 5, subtract 35, remainder 0. Check: 7 × 25 = 175.

3. 42
Reasoning 25 ÷ 6: write 4, subtract 24, remainder 1; bring down the next digit: 12 ÷ 6: write 2, subtract 12, remainder 0. Check: 6 × 42 = 252.

4. 373
Reasoning 141 ÷ 38: write 3, subtract 114, remainder 27; bring down the next digit: 277 ÷ 38: write 7, subtract 266, remainder 11; bring down the next digit: 114 ÷ 38: write 3, subtract 114, remainder 0. Check: 38 × 373 = 14174.

5. 242
Reasoning 33 ÷ 14: write 2, subtract 28, remainder 5; bring down the next digit: 58 ÷ 14: write 4, subtract 56, remainder 2; bring down the next digit: 28 ÷ 14: write 2, subtract 28, remainder 0. Check: 14 × 242 = 3388.

6. 376
Reasoning 124 ÷ 33: write 3, subtract 99, remainder 25; bring down the next digit: 250 ÷ 33: write 7, subtract 231, remainder 19; bring down the next digit: 198 ÷ 33: write 6, subtract 198, remainder 0. Check: 33 × 376 = 12408.

7. 189 R 11
Reasoning 54 ÷ 29: write 1, subtract 29, remainder 25; bring down the next digit: 259 ÷ 29: write 8, subtract 232, remainder 27; bring down the next digit: 272 ÷ 29: write 9, subtract 261, remainder 11. Check: 29 × 189 + 11 = 5492.

8. 265 R 10
Reasoning 55 ÷ 21: write 2, subtract 42, remainder 13; bring down the next digit: 137 ÷ 21: write 6, subtract 126, remainder 11; bring down the next digit: 115 ÷ 21: write 5, subtract 105, remainder 10. Check: 21 × 265 + 10 = 5575.

9. 156 full packets; 11 cards remain
Reasoning 2351 = 15 × 156 + 11.

10. 270 full packets; 5 cards remain
Reasoning 3245 = 12 × 270 + 5.