Whole Numbers and Decimals

Lesson 8 Decimal Quotients and Checks

Standards 6.NS.B.3

Learning target I can divide by a decimal using an equivalent whole-number divisor.

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 decimal quotients and checks. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Multiply both dividend and divisor by the same power of 10 so the divisor is a whole number. Then use long division, adding zeros to the dividend as needed. Check by multiplication. 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 container has 0.768 kg of seed. Each bag holds 0.24 kg. How many bags can be filled? 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 by a decimal using an equivalent whole-number divisor.

Learn and Discuss

Multiply both dividend and divisor by the same power of 10 so the divisor is a whole number. Then use long division, adding zeros to the dividend as needed. Check by multiplication.

Example 1 Use the standard algorithm: 50.4 ÷ 0.7. Show your regrouping or division steps.
Solution 72. Multiply both numbers by 10: 504 ÷ 7 = 72. Check: 0.7 × 72 = 50.4.
Example 2 Use the standard algorithm: 2.92 ÷ 0.4. Show your regrouping or division steps.
Solution 7.3. Multiply both numbers by 10: 29.2 ÷ 4 = 7.3. Check: 0.4 × 7.3 = 2.92.

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 the standard algorithm: 40.5 ÷ 0.9. Show your regrouping or division steps.

2. Use the standard algorithm: 20.1 ÷ 0.3. Show your regrouping or division steps.

3. Use the standard algorithm: 23.7 ÷ 0.3. Show your regrouping or division steps.

4. Use the standard algorithm: 10 ÷ 2.5. Show your regrouping or division steps.

5. Use the standard algorithm: 13.68 ÷ 2.4. Show your regrouping or division steps.

6. Use the standard algorithm: 6 ÷ 2.4. Show your regrouping or division steps.

7. Use the standard algorithm: 0.825 ÷ 0.15. Show your regrouping or division steps.

8. Use the standard algorithm: 0.8 ÷ 0.25. Show your regrouping or division steps.

9. A container has 2.368 kg of seed. Each bag holds 0.64 kg. How many bags can be filled?

10. A container has 0.768 kg of seed. Each bag holds 0.24 kg. How many bags can be filled?

Decimal Quotients and Checks

Whole Numbers and Decimals

1. 45
Reasoning Multiply both numbers by 10: 405 ÷ 9 = 45. Check: 0.9 × 45 = 40.5.

2. 67
Reasoning Multiply both numbers by 10: 201 ÷ 3 = 67. Check: 0.3 × 67 = 20.1.

3. 79
Reasoning Multiply both numbers by 10: 237 ÷ 3 = 79. Check: 0.3 × 79 = 23.7.

4. 4
Reasoning Multiply both numbers by 10: 100 ÷ 25 = 4. Check: 2.5 × 4 = 10.

5. 5.7
Reasoning Multiply both numbers by 10: 136.8 ÷ 24 = 5.7. Check: 2.4 × 5.7 = 13.68.

6. 2.5
Reasoning Multiply both numbers by 10: 60 ÷ 24 = 2.5. Check: 2.4 × 2.5 = 6.

7. 5.5
Reasoning Multiply both numbers by 100: 82.5 ÷ 15 = 5.5. Check: 0.15 × 5.5 = 0.825.

8. 3.2
Reasoning Multiply both numbers by 100: 80 ÷ 25 = 3.2. Check: 0.25 × 3.2 = 0.8.

9. 3.7 bags
Reasoning Multiply both numbers by 100: 236.8 ÷ 64 = 3.7. Check: 0.64 × 3.7 = 2.368.

10. 3.2 bags
Reasoning Multiply both numbers by 100: 76.8 ÷ 24 = 3.2. Check: 0.24 × 3.2 = 0.768.