Rates and Percents

Lesson 10 Finding the Whole

Standards 6.RP.A.3c

Learning target I can find the whole when a part and percent are known.

Materials Ratio tables, price labels, pencils, optional double number lines.

Lesson Flow 50 Minutes

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

5–17 Teach and model. Write part = decimal rate × whole. Divide the part by the decimal rate to find the whole. Check by taking the stated percent of your answer. 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: 120 students are 60% of a school’s enrollment. Find the enrollment. 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 rate units, reference wholes, and confusing percent with its decimal form.

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 find the whole when a part and percent are known.

Learn and Discuss

Write part = decimal rate × whole. Divide the part by the decimal rate to find the whole. Check by taking the stated percent of your answer.

Example 1 20% of a number is 8. Find the number and check.
Solution 40. Whole = 8 ÷ 1/5 = 40. Check 20% × 40 = 8.
Example 2 125% of a number is 50. Find the number and check.
Solution 40. Whole = 50 ÷ 5/4 = 40. Check 125% × 40 = 50.

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 10 Finding the Whole

Name _____ Show calculations, models, and units.

1. 20% of a number is 8. Find the number and check.

2. 10% of a number is 22. Find the number and check.

3. 50% of a number is 110. Find the number and check.

4. 30% of a number is 60. Find the number and check.

5. 15% of a number is 30. Find the number and check.

6. 25% of a number is 55. Find the number and check.

7. 9 students are 15% of a school’s enrollment. Find the enrollment.

8. 18 students are 30% of a school’s enrollment. Find the enrollment.

9. 12 students are 30% of a school’s enrollment. Find the enrollment.

10. 120 students are 60% of a school’s enrollment. Find the enrollment.

Finding the Whole

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1. 40
Reasoning Whole = 8 ÷ 1/5 = 40. Check 20% × 40 = 8.

2. 220
Reasoning Whole = 22 ÷ 1/10 = 220. Check 10% × 220 = 22.

3. 220
Reasoning Whole = 110 ÷ 1/2 = 220. Check 50% × 220 = 110.

4. 200
Reasoning Whole = 60 ÷ 3/10 = 200. Check 30% × 200 = 60.

5. 200
Reasoning Whole = 30 ÷ 3/20 = 200. Check 15% × 200 = 30.

6. 220
Reasoning Whole = 55 ÷ 1/4 = 220. Check 25% × 220 = 55.

7. 60
Reasoning Whole = 9 ÷ 3/20 = 60. Check 15% × 60 = 9.

8. 60
Reasoning Whole = 18 ÷ 3/10 = 60. Check 30% × 60 = 18.

9. 40
Reasoning Whole = 12 ÷ 3/10 = 40. Check 30% × 40 = 12.

10. 200
Reasoning Whole = 120 ÷ 3/5 = 200. Check 60% × 200 = 120.