Solving Real-World Problems with Fraction Multiplication

Solving Real-World Problems with Fraction Multiplication: Find, Fix, and Work Backward

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

"Of" often means multiplication. Multiply the fraction of a portion by the size of the portion. For equal groups, multiply the number of groups by the amount in 1 group. Name the whole and keep track of the unit.

Worked example

A bottle holds $\frac{2}{5}$ L. Jo pours out $\frac{3}{8}$ of that water. How much does Jo pour?

1. The fraction $\frac{3}{8}$ applies to the $\frac{2}{5}$ L in the bottle.
2. $\frac{3}{8} \times \frac{2}{5} = \frac{6}{40} = \frac{3}{20}$ L.
3. It is less than $\frac{2}{5}$ L, so the answer fits the story.
Answer: $\frac{3}{20}$ L.

Practice Problems

Show your thinking.

1. Mae finds $\frac{2}{3}$ of $\frac{4}{5}$ of a garden by adding tops and bottoms. Correct her result.

2. A baker uses $\frac{3}{4}$ cup per batch. An order uses exactly 3 cups. Use quarter-cups to find the batch count.

3. A bottle holds $\frac{3}{4}$ L and Sam pours $\frac{2}{3}$ of its contents. Sam says the bottle now holds $\frac{1}{2}$ L. What did Sam calculate, and what remains?

4. A painter uses $\frac{5}{8}$ L on each of 3 benches. Write and find the amount for just the second and third benches.

5. One serving is $\frac{2}{9}$ kg. A tray uses $\frac{10}{9}$ kg in equal servings. Find the missing number of servings.

6. A student says four $\frac{3}{5}$-meter strips require $\frac{3}{20}$ m. Explain the mistake and find the total.

7. Each of 5 bird feeders uses $\frac{3}{4}$ cup of seeds. Before calculating, explain why the total lies between $2\frac{1}{2}$ and 5 cups. Then find it.

8. For a full batch, mix $\frac{3}{5}$ L of paint. Lina needs $\frac{5}{6}$ of a batch and labels it $\frac{8}{11}$ L. Is the label reasonable? Fix it.

Answer Key

1. $\frac{8}{15}$ of the garden.
2. 4 batches.
3. $\frac{1}{2}$ L poured; $\frac{1}{4}$ L remains.
4. $2 \times \frac{5}{8} = 1\frac{1}{4}$ L.
5. 5 servings.
6. $2\frac{2}{5}$ m; the parts are still fifths.
7. $3\frac{3}{4}$ cups; between the bounds.
8. No; $\frac{1}{2}$ L.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Split each fifth into 3 equal pieces to make 15 equal pieces in the whole.
2. Take 2 pieces in each of the 4 fifths: $2 \times 4 = 8$ pieces.
3. The result is $\frac{8}{15}$, not $\frac{6}{8}$.

Problem 2

1. $3 \times 4 = 12$ quarter-cups are available.
2. Each batch needs 3 quarter-cups, so $12 \div 3 = 4$ batches.
3. Check: $4 \times \frac{3}{4} = 3$ cups.

Problem 3

1. Poured: $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$ L.
2. Write $\frac{1}{2} = \frac{2}{4}$ to subtract from the original amount.
3. Remaining: $\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$ L.

Problem 4

1. Two of the benches are included.
2. Two groups of 5 eighths give 10 eighths.
3. $\frac{10}{8} = \frac{5}{4} = 1\frac{1}{4}$ L.

Problem 5

1. There are 10 ninth-kilogram parts altogether.
2. Group the parts by 2: $10 \div 2 = 5$ servings.
3. Check: $5 \times \frac{2}{9} = \frac{10}{9}$ kg.

Problem 6

1. Four equal groups of 3 fifths give $4 \times 3 = 12$ fifths.
2. The strips did not change the size of a fifth.
3. $\frac{12}{5} = 2\frac{2}{5}$ m.

Problem 7

1. $\frac{1}{2} < \frac{3}{4} < 1$, so five portions lie between $5 \times \frac{1}{2}$ and 5×1.
2. The bounds are $2\frac{1}{2}$ and 5 cups.
3. The exact total is $5 \times \frac{3}{4} = \frac{15}{4} = 3\frac{3}{4}$ cups.

Problem 8

1. A partial batch must use less than $\frac{3}{5}$ L; $\frac{8}{11} > \frac{3}{5}$ since $8 \times 5 = 40 > 33 = 3 \times 11$.
2. Multiply the batch fraction by the original amount: $\frac{5}{6} \times \frac{3}{5} = \frac{15}{30}$.
3. $\frac{15}{30} = \frac{1}{2}$ L, which is less than $\frac{3}{5}$ L.

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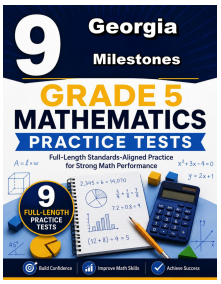

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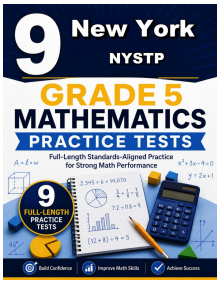

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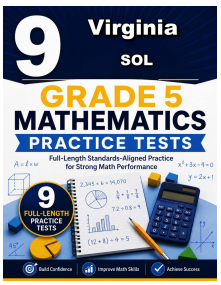

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