Solving Real-World Problems with Fraction Multiplication

Solving Real-World Problems with Fraction Multiplication: Apply, Compare, and Design

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. A recipe uses $\frac{5}{8}$ cup per batch. Will 3 cups make 4 batches? Find the leftover amount.

2. Of a $\frac{3}{4}$-acre meadow, $\frac{2}{5}$ is for flowers. Half the flower area is for sunflowers. How many acres are for sunflowers?

3. Design two equal half-batches of a recipe that uses $\frac{5}{6}$ cup per full batch. Find the amount for each and show the total.

4. Two clubs each paint part of their own wall. Club A paints $\frac{3}{5}$ of $\frac{5}{6}$ square meter; Club B paints $\frac{4}{9}$ of $\frac{3}{4}$ square meter. Who paints more, and by how much?

5. Choose a whole-number count of $\frac{3}{8}$-L bottles to hold exactly 3 L. Use eighths of a liter to explain your choice.

6. A bag starts with $2\frac{2}{3}$ kg of flour. One class uses $\frac{3}{8}$ of it. A second class uses $\frac{1}{2}$ of what remains. How much does the second class use?

7. A scout cuts three $\frac{7}{10}$-meter cords from a 2-meter roll. Is the plan possible without joining another piece? Give the extra amount needed or left.

8. A baker has $2\frac{1}{4}$ cups of oats. She needs $\frac{2}{3}$ cup per full batch. She plans one full batch and three half-batches. Find how much she uses and how much is left.

Answer Key

1. Yes; $\frac{1}{2}$ cup left.
2. $\frac{3}{20}$ acre.
3. $\frac{5}{12}$ cup each; $\frac{5}{6}$ cup total.
4. Club A by $\frac{1}{6}$ square meter.
5. 8 bottles.
6. $\frac{5}{6}$ kg.
7. No; $\frac{1}{10}$ m more is needed.
8. $1\frac{2}{3}$ cups used; $\frac{7}{12}$ cup left.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. $4 \times \frac{5}{8} = \frac{20}{8} = \frac{5}{2}$ cups needed.
2. $3 = \frac{6}{2}$ cups, more than $\frac{5}{2}$ cups.
3. $\frac{6}{2} - \frac{5}{2} = \frac{1}{2}$ cup remains.

Problem 2

1. Flower area: $\frac{2}{5} \times \frac{3}{4} = \frac{6}{20} = \frac{3}{10}$ acre.
2. Sunflower area: $\frac{1}{2} \times \frac{3}{10} = \frac{3}{20}$ acre.
3. Check: doubling the sunflower area returns $\frac{3}{10}$ acre.

Problem 3

1. Each: $\frac{1}{2} \times \frac{5}{6} = \frac{5}{12}$ cup.
2. Both: $2 \times \frac{5}{12} = \frac{10}{12}$ cup.
3. $\frac{10}{12} = \frac{5}{6}$ cup, the full amount.

Problem 4

1. A paints $\frac{3}{5} \times \frac{5}{6} = \frac{1}{2}$ square meter.
2. B paints $\frac{4}{9} \times \frac{3}{4} = \frac{1}{3}$ square meter.
3. $\frac{1}{2} - \frac{1}{3} = \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$ square meter.

Problem 5

1. 3 L equals 24 eighths of a liter.
2. Each bottle holds 3 eighths, so $24 \div 3 = 8$ bottles.
3. $8 \times \frac{3}{8} = 3$ L verifies the plan.

Problem 6

1. First class: $\frac{3}{8} \times \frac{8}{3} = 1$ kg.
2. The bag has $\frac{8}{3} - 1 = \frac{5}{3}$ kg left.
3. Second class: $\frac{1}{2} \times \frac{5}{3} = \frac{5}{6}$ kg.

Problem 7

1. Three cords need $3 \times \frac{7}{10} = \frac{21}{10}$ m.
2. The roll has $2 = \frac{20}{10}$ m.
3. $\frac{21}{10} - \frac{20}{10} = \frac{1}{10}$ m more is needed.

Problem 8

1. Total batch size: $1 + 3 \times \frac{1}{2} = \frac{5}{2}$ batches.
2. Oats used: $\frac{5}{2} \times \frac{2}{3} = \frac{5}{3}$ cups.
3. Left: $\frac{9}{4} - \frac{5}{3} = \frac{27}{12} - \frac{20}{12} = \frac{7}{12}$ cup.

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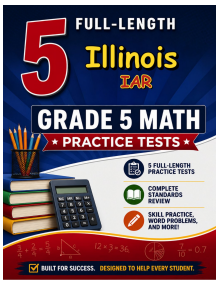

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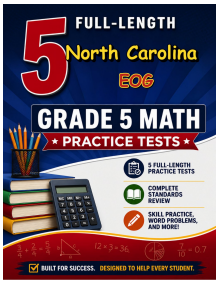

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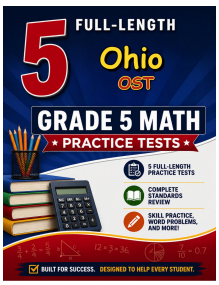

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