Multiplying Fractions by Whole Numbers

Apply the skill to decisions and designs

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

QUICK REVIEW

A whole number times a fraction means equal groups: $3 \times \frac{2}{5} = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5} = 1\frac{1}{5}$. Multiply the numerator by the group count; do not multiply the denominator.

Worked example

Find $4 \times \frac{3}{8}$ using equal groups.

1. 4 equal groups give $\frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8}$.

2. The numerator count is $4 \times 3 = 12$, so the product is $\frac{12}{8}$.

3. $\frac{12}{8} = 1\frac{1}{2}$; dividing the total by 4 gives $\frac{3}{8}$ per group.

Answer: $1\frac{1}{2}$.

Practice Problems

Show your thinking.

1. Three equal strips are each $\frac{3}{4}$ m. Find the total length.

2. Four equal scoops each hold $\frac{2}{5}$ cup. Find the total.

3. Six equal sections are each $\frac{3}{8}$ km. Find the total distance.

4. Two equal bottles each hold $\frac{7}{10}$ L. Find the combined volume.

5. A planner says four $\frac{3}{5}$-m pieces total $\frac{12}{20}$ m. Repair the total.

6. Design equal $\frac{2}{3}$-m strips totaling 4 m. How many strips?

7. Will 5 pieces each $\frac{3}{8}$ m make at least 2 m? Give the shortage or extra.

8. Mark four groups of $\frac{2}{6}$ on the bars. Each bar is one whole. Find their combined size.



Answer Key

1. $2\frac{1}{4}$ m.
2. $1\frac{3}{5}$ cups.
3. $2\frac{1}{4}$ km.
4. $1\frac{2}{5}$ L.
5. $\frac{12}{5} = 2\frac{2}{5}$ m.
6. 6 strips.
7. No; $\frac{1}{8}$ m short.
8. $\frac{8}{6} = 1\frac{1}{3}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. 3 equal groups give $\frac{3}{4} + \frac{3}{4} + \frac{3}{4}$.
2. The numerator count is $3 \times 3 = 9$, so the product is $\frac{9}{4}$.
3. $\frac{9}{4} = 2\frac{1}{4}$; dividing the total by 3 gives $\frac{3}{4}$ per group.

Problem 2

1. 4 equal groups give $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$.
2. The numerator count is $4 \times 2 = 8$, so the product is $\frac{8}{5}$.
3. $\frac{8}{5} = 1\frac{3}{5}$; dividing the total by 4 gives $\frac{2}{5}$ per group.

Problem 3

1. 6 equal groups give $\frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8}$.
2. The numerator count is $6 \times 3 = 18$, so the product is $\frac{18}{8}$.
3. $\frac{18}{8} = 2\frac{1}{4}$; dividing the total by 6 gives $\frac{3}{8}$ per group.

Problem 4

1. 2 equal groups give $\frac{7}{10} + \frac{7}{10}$.
2. The numerator count is $2 \times 7 = 14$, so the product is $\frac{14}{10}$.
3. $\frac{14}{10} = 1\frac{2}{5}$; dividing the total by 2 gives $\frac{7}{10}$ per group.

Problem 5

1. Four groups give $4 \times 3 = 12$ fifths.
2. The denominator remains 5, so the total is $\frac{12}{5}$ m.
3. $\frac{12}{5} = 2\frac{2}{5}$ m; this matches four pieces each more than half a meter.

Problem 6

1. Four meters is $\frac{12}{3}$ m.
2. Each strip uses 2 thirds; $12 \div 2 = 6$ strips.
3. $6 \times \frac{2}{3} = 4$ m checks the design.

Problem 7

1. $5 \times \frac{3}{8} = \frac{15}{8} = 1\frac{7}{8}$ m.
2. The goal is $2 = \frac{16}{8}$ m.
3. $\frac{16}{8} - \frac{15}{8} = \frac{1}{8}$ m short.

Problem 8

1. Mark three pairs of cells in the first bar. Mark a fourth pair in the next bar.
2. $4 \times 2 = 8$ sixths in all.
3. $\frac{8}{6} = \frac{6}{6} + \frac{2}{6} = 1\frac{1}{3}$.

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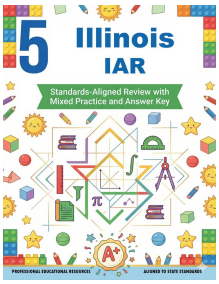

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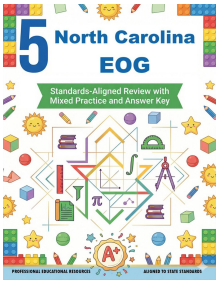

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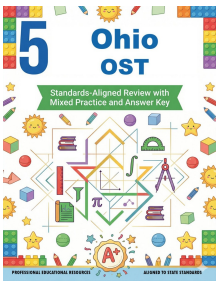

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