Dividing Fractions by Fractions

Dividing fractions by fractions: Applications and decisions

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Division asks how many groups fit. For $\frac{3}{4} \div \frac{1}{4}$, three quarter-size groups fit. Equivalently multiply by the reciprocal: $\frac{3}{4} \times \frac{4}{1} = 3$. Invert the divisor, not the dividend. A non-whole answer can include part of a group.

Worked example

How many $\frac{1}{3}$-cup groups are in $\frac{5}{6}$ cup, including a partial group?

1. Use common-sized pieces: $\frac{5}{6} = \frac{5}{6}$ and $\frac{1}{3} = \frac{2}{6}$.
2. Number of groups $= 5 \div 2 = \frac{5}{2}$.
3. Two groups use $\frac{4}{6}$ cup. The remaining $\frac{1}{6}$ cup is half a $\frac{1}{3}$-cup group.
Answer: $2\frac{1}{2}$ groups.

Practice Problems

Show your thinking.

1. $1\frac{1}{2}$ L of juice fills cups of size $\frac{3}{8}$ L. How many cups?

2. A $1\frac{3}{4}$-m rope is measured in $\frac{1}{2}$-m lengths. Count lengths including a partial one.

3. A recipe uses $\frac{1}{12}$ kg per batch. How many batches from $\frac{5}{6}$ kg?

4. Design equal $\frac{3}{4}$-m strips from $2\frac{1}{4}$ m. How many strips?

5. A tank holds $1\frac{1}{3}$ L; each pour is $\frac{2}{9}$ L. How many pours?

6. A baker says $\frac{5}{8}$ kg makes 2 full $\frac{1}{4}$-kg batches with nothing left. Find the exact batch count.

Answer Key

1. 4 cups.
2. $3\frac{1}{2}$ lengths: three full lengths and half of another.
3. 10 batches.
4. 3 strips.
5. 6 pours.
6. $\frac{5}{2}$. Two full batches and $\frac{1}{8}$ kg left.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Use common-sized pieces: $\frac{3}{2} = \frac{12}{8}$ and $\frac{3}{8} = \frac{3}{8}$.
2. Number of groups $= 12 \div 3 = 4$.
3. Check $4 \times \frac{3}{8} = \frac{3}{2}$.

Problem 2

1. Use common-sized pieces: $\frac{7}{4} = \frac{7}{4}$ and $\frac{1}{2} = \frac{2}{4}$.
2. Number of groups $= 7 \div 2 = \frac{7}{2}$.
3. Check $\frac{7}{2} \times \frac{1}{2} = \frac{7}{4}$.
4. Three half-meter lengths use $\frac{3}{2}$ m. The leftover $\frac{7}{4} - \frac{3}{2} = \frac{1}{4}$ m is half of one length.

Problem 3

1. Use common-sized pieces: $\frac{5}{6} = \frac{10}{12}$ and $\frac{1}{12} = \frac{1}{12}$.
2. Number of groups $= 10 \div 1 = 10$.
3. Check $10 \times \frac{1}{12} = \frac{5}{6}$.

Problem 4

1. Use common-sized pieces: $\frac{9}{4} = \frac{9}{4}$ and $\frac{3}{4} = \frac{3}{4}$.
2. Number of groups $= 9 \div 3 = 3$.
3. Check $3 \times \frac{3}{4} = \frac{9}{4}$.

Problem 5

1. Use common-sized pieces: $\frac{4}{3} = \frac{12}{9}$ and $\frac{2}{9} = \frac{2}{9}$.
2. Number of groups $= 12 \div 2 = 6$.
3. Check $6 \times \frac{2}{9} = \frac{4}{3}$.

Problem 6

1. Use common-sized pieces: $\frac{5}{8} = \frac{5}{8}$ and $\frac{1}{4} = \frac{2}{8}$.
2. Number of groups $= 5 \div 2 = \frac{5}{2}$.
3. Check $\frac{5}{2} \times \frac{1}{4} = \frac{5}{8}$.
4. Two batches use $2 \times 1/4 = 1/2$ kg; leftover $= 5/8 - 1/2 = 1/8$ kg.

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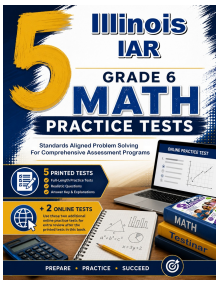

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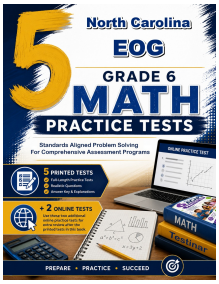

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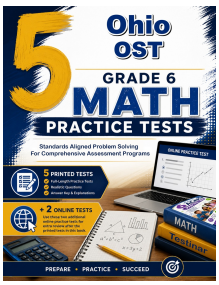

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