Dividing Fractions by Fractions

Dividing fractions by fractions: Mistakes and missing information

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. Correct multiplying straight across for $\frac{3}{5} \div \frac{2}{5}$.

2. Find x in $x \times \frac{1}{4} = \frac{7}{8}$.

3. A student flips the dividend for $\frac{2}{3} \div \frac{5}{6}$. Find the correct quotient.

4. Find x in $\frac{5}{8}x = 1\frac{1}{4}$.

5. Is the quotient $\frac{1}{2} \div \frac{3}{4}$ greater than $\frac{1}{2}$? Calculate to decide.

6. Recover x: $x \times \frac{2}{3} = \frac{8}{9}$.

Answer Key

1. $\frac{3}{2}$.
2. $\frac{7}{2}$.
3. $\frac{4}{5}$.
4. 2.
5. $\frac{2}{3}$. Yes, $\frac{2}{3} > \frac{1}{2}$.
6. $\frac{4}{3}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

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

Problem 2

1. Use common-sized pieces: $\frac{7}{8} = \frac{7}{8}$ and $\frac{1}{4} = \frac{2}{8}$.
2. Number of groups $= 7 \div 2 = \frac{7}{2}$.
3. Check $\frac{7}{2} \times \frac{1}{4} = \frac{7}{8}$.

Problem 3

1. Use common-sized pieces: $\frac{2}{3} = \frac{4}{6}$ and $\frac{5}{6} = \frac{5}{6}$.
2. Number of groups $= 4 \div 5 = \frac{4}{5}$.
3. Check $\frac{4}{5} \times \frac{5}{6} = \frac{2}{3}$.

Problem 4

1. Use common-sized pieces: $\frac{5}{4} = \frac{10}{8}$ and $\frac{5}{8} = \frac{5}{8}$.
2. Number of groups $= 10 \div 5 = 2$.
3. Check $2 \times \frac{5}{8} = \frac{5}{4}$.

Problem 5

1. Use common-sized pieces: $\frac{1}{2} = \frac{2}{4}$ and $\frac{3}{4} = \frac{3}{4}$.
2. Number of groups $= 2 \div 3 = \frac{2}{3}$.
3. Check $\frac{2}{3} \times \frac{3}{4} = \frac{1}{2}$.
4. $2/3 - 1/2 = 1/6 > 0$, so dividing by $3/4$ increased the starting amount.

Problem 6

1. Use common-sized pieces: $\frac{8}{9} = \frac{8}{9}$ and $\frac{2}{3} = \frac{6}{9}$.
2. Number of groups $= 8 \div 6 = \frac{4}{3}$.
3. Check $\frac{4}{3} \times \frac{2}{3} = \frac{8}{9}$.

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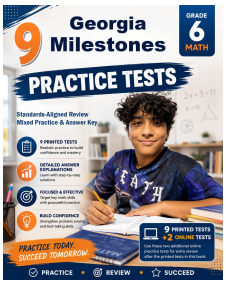

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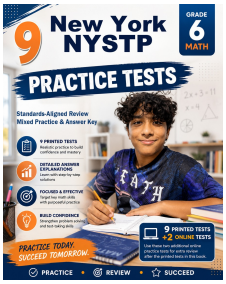

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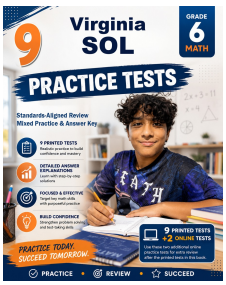

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