Dividing Fractions by Fractions

Dividing fractions by fractions: Models and calculations

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?

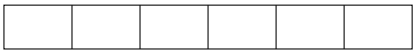
1. Use common-sized pieces: $\frac{5}{6} = \frac{5}{6}$ and $\frac{1}{3} = \frac{2}{6}$.
2. Number of groups $= 5 \div 2 = \frac{5}{2}$.
3. Two groups use $\frac{4}{6}$ cup. The remaining $\frac{1}{6}$ cup is half a $\frac{1}{3}$-cup group.
Answer: $2\frac{1}{2}$ groups.

Practice Problems

Show your thinking.

1. Compute $\frac{3}{4} \div \frac{1}{8}$.

2. Use the blank bar to show how many $\frac{1}{6}$-length pieces make $\frac{2}{3}$. Shade the amount, then count the pieces.



3. Compute $\frac{5}{8} \div \frac{3}{4}$; explain why the result is below 1.

4. Compute $1\frac{1}{6} \div \frac{2}{3}$.

5. A ribbon is $\frac{9}{10}$ m. How many $\frac{3}{5}$-m lengths is that, allowing partial lengths?

6. Correct $\frac{4}{5} \div \frac{2}{5} = \frac{8}{25}$.

Answer Key

1. 6.
2. Four sixth-size pieces.
3. $\frac{5}{6}$.
4. $\frac{7}{4}$.
5. $1\frac{1}{2}$ lengths: one full length and half of another.
6. 2.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

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

Problem 2

1. Use common-sized pieces: $\frac{2}{3} = \frac{4}{6}$ and $\frac{1}{6} = \frac{1}{6}$.
2. The bar has 6 equal parts. Shade 4 of them because $\frac{2}{3} = \frac{4}{6}$; each shaded cell is one whole sixth-size group.
3. Number of groups $= 4 \div 1 = 4$.
4. Check $4 \times \frac{1}{6} = \frac{2}{3}$.

Problem 3

1. Use common-sized pieces: $\frac{5}{8} = \frac{5}{8}$ and $\frac{3}{4} = \frac{6}{8}$.
2. Number of groups $= 5 \div 6 = \frac{5}{6}$.
3. Check $\frac{5}{6} \times \frac{3}{4} = \frac{5}{8}$.
4. $5/8 < 3/4$, so less than one complete divisor fits; $5/6 < 1$.

Problem 4

1. Use common-sized pieces: $\frac{7}{6} = \frac{7}{6}$ and $\frac{2}{3} = \frac{4}{6}$.
2. Number of groups $= 7 \div 4 = \frac{7}{4}$.
3. Check $\frac{7}{4} \times \frac{2}{3} = \frac{7}{6}$.

Problem 5

1. Use common-sized pieces: $\frac{9}{10} = \frac{9}{10}$ and $\frac{3}{5} = \frac{6}{10}$.
2. Number of groups $= 9 \div 6 = \frac{3}{2}$.
3. Check $\frac{3}{2} \times \frac{3}{5} = \frac{9}{10}$.
4. One full length uses $\frac{3}{5} = \frac{6}{10}$ m. The leftover $\frac{3}{10}$ m is half of another length.

Problem 6

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

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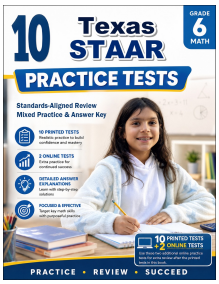

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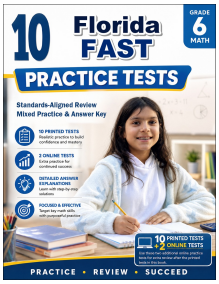

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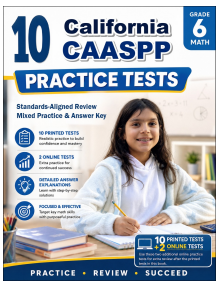

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