Fractions as Multiples of Unit Fractions

Explore ideas and representations

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

QUICK REVIEW

The numerator counts unit fractions: $\frac{5}{8} = 5 \times \frac{1}{8}$. The unit is $\frac{1}{8}$, not $\frac{1}{5}$. This expresses one fraction as a multiple of its own unit fraction.

Worked example

Express $\frac{9}{10}$ as a whole number times a unit fraction.

1. One equal part is $\frac{1}{10}$.
2. The amount contains 9 of these parts, so use multiplier 9.
3. Check: $9 \times \frac{1}{10} = \frac{9}{10}$.
Answer: $\frac{9}{10} = 9 \times \frac{1}{10}$.

Practice Problems

Show your thinking.

1. Write $\frac{3}{7}$ as a whole number times a unit fraction.

2. Complete $\frac{5}{6} = \square \times \frac{1}{6}$.

3. Name the unit fraction and multiplier in $\frac{4}{9}$.

4. The shaded bar shows $\frac{6}{8}$. Express it as a multiple of a unit fraction.



5. Fix: $\frac{3}{5} = 3 \times \frac{1}{3}$.

6. Write 1 as a whole number times $\frac{1}{6}$.

7. Explain why $\frac{4}{8}$ and $\frac{2}{4}$ have different unit-fraction products even though they are equal.

8. Three tenth-liter measures are poured into a jug. Write the volume as a fraction and a product.

Answer Key

1. $\frac{3}{7} = 3 \times \frac{1}{7}$.
2. $\frac{5}{6} = 5 \times \frac{1}{6}$.
3. $\frac{4}{9} = 4 \times \frac{1}{9}$.
4. $\frac{6}{8} = 6 \times \frac{1}{8}$.
5. $\frac{3}{5} = 3 \times \frac{1}{5}$.
6. $1 = 6 \times \frac{1}{6}$.
7. $4 \times \frac{1}{8} = 2 \times \frac{1}{4} = \frac{1}{2}$.
8. $\frac{3}{10}$ L $= 3 \times (\frac{1}{10}$ L$)$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. One equal part is $\frac{1}{7}$.
2. The amount contains 3 of these parts, so use multiplier 3.
3. Check: $3 \times \frac{1}{7} = \frac{3}{7}$.

Problem 2

1. One equal part is $\frac{1}{6}$.
2. The amount contains 5 of these parts, so use multiplier 5.
3. Check: $5 \times \frac{1}{6} = \frac{5}{6}$.

Problem 3

1. One equal part is $\frac{1}{9}$.
2. The amount contains 4 of these parts, so use multiplier 4.
3. Check: $4 \times \frac{1}{9} = \frac{4}{9}$.

Problem 4

1. One equal part is $\frac{1}{8}$.
2. The amount contains 6 of these parts, so use multiplier 6.
3. Check: $6 \times \frac{1}{8} = \frac{6}{8}$.

Problem 5

1. The denominator 5 names fifths, so the unit is $\frac{1}{5}$.
2. Three fifth-sized units total $3 \times \frac{1}{5} = \frac{3}{5}$.
3. The mistaken product is $3 \times \frac{1}{3} = 1$, not $\frac{3}{5}$.

Problem 6

1. One whole contains 6 sixths.
2. The multiplier is therefore 6.
3. $6 \times \frac{1}{6} = \frac{6}{6} = 1$ checks it.

Problem 7

1. The first uses 4 eighth-sized units.
2. The second uses 2 quarter-sized units.
3. $\frac{4}{8} = \frac{2}{4} = \frac{1}{2}$ because two eighths make one quarter.

Problem 8

1. One equal part is $\frac{1}{10}$ L.
2. The amount contains 3 of these parts, so use multiplier 3.
3. Check: $3 \times (\frac{1}{10}$ L$) = \frac{3}{10}$ L.

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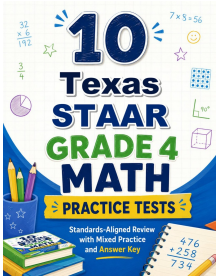

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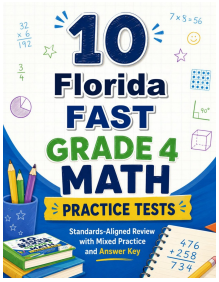

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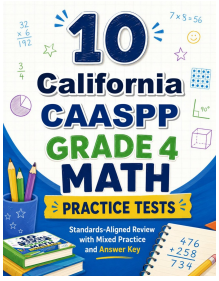

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