Dividing Whole Numbers by Unit Fractions

Dividing Whole Numbers by Unit Fractions: Models and Computation

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

QUICK REVIEW

Dividing a whole number by a unit fraction counts small groups. If one whole has 7 sevenths, multiply the number of wholes by 7 to count the portions. The answer counts portions; it is not the size of a portion.

Worked example

Compute $4 \div \frac{1}{7}$. Explain whether the answer counts groups or gives one share.

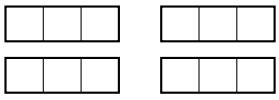
1. Each whole has 7 equal portions of $\frac{1}{7}$.
2. 4 wholes contain $4 \times 7 = 28$ portions.
3. Check: $28 \times \frac{1}{7} = 4$.
Answer: 28.

Practice Problems

Show your thinking.

1. Compute $3 \div \frac{1}{2}$. Explain whether the answer counts groups or gives one share.

2. Use the strips to model $4 \div \frac{1}{3}$. Label a small box and count all such portions.



One whole per strip

3. A 5 L supply fills cups holding $\frac{1}{4}$ L each. How many full cups can be filled?

4. A 2 L supply fills cups holding $\frac{1}{5}$ L each. How many full cups can be filled? Is the cup count greater than 2? Explain why.

5. A student replaces division by multiplication and writes $3 \div \frac{1}{6} = \frac{1}{2}$. Correct the model and result.

6. Find the starting amount: $\square \div \frac{1}{8} = 32$. Use multiplication to check.

Answer Key

1. 6.
2. 12.
3. 20 cups.
4. 10 cups; yes, $10 > 2$.
5. 18.
6. 4.

Step-by-Step Solutions

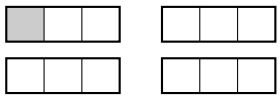
Follow each calculation, then check your own work.

Problem 1

1. Each whole has 2 equal portions of $\frac{1}{2}$.
2. 3 wholes contain $3 \times 2 = 6$ portions.
3. Check: $6 \times \frac{1}{2} = 3$.

Problem 2

1. Each whole has 3 equal portions of $\frac{1}{3}$.
2. 4 wholes contain $4 \times 3 = 12$ portions.
3. Label the shaded box $\frac{1}{3}$ of one whole. Count 3 in each strip: $4 \times 3 = 12$ boxes in all.



Shaded cell = 1/3 of one whole

Problem 3

1. Each whole liter has 4 equal portions of $\frac{1}{4}$ L.
2. 5 liters contain $5 \times 4 = 20$ portions.
3. Check: $20 \times \frac{1}{4} = 5$ L.

Problem 4

1. Each whole liter has 5 equal portions of $\frac{1}{5}$ L.
2. 2 liters contain $2 \times 5 = 10$ portions.
3. Check: $10 \times \frac{1}{5} = 2$ L.
4. Yes: each liter fills $5 > 1$ cups, so $10 > 2$.

Problem 5

1. Each whole has 6 equal portions of $\frac{1}{6}$.
2. 3 wholes contain $3 \times 6 = 18$ portions.
3. Check: $18 \times \frac{1}{6} = 3$.

Problem 6

1. Undo division by multiplying quotient and divisor: $32 \times \frac{1}{8} = 4$ starting units.
2. Each whole has 8 equal portions of $\frac{1}{8}$.
3. 4 wholes contain $4 \times 8 = 32$ portions.
4. Check: $32 \times \frac{1}{8} = 4$.

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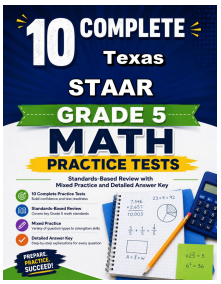

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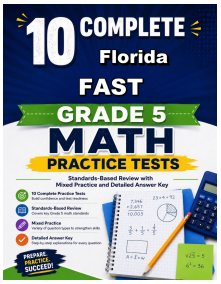

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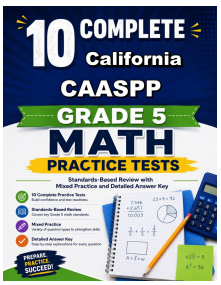

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