Dividing Unit Fractions by Whole Numbers

Dividing Unit Fractions by Whole Numbers: Models and Computation

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

QUICK REVIEW

A unit fraction is one equal part of a whole, such as $\frac{1}{7}$. Sharing that part equally makes smaller pieces. Count how many pieces of that new size would fit in the whole.

Worked example

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

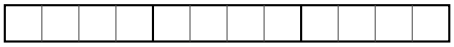
1. Divide the whole into 7 equal parts. Start with one of those parts.
2. Split that part into 4 equal shares: the whole would have $7 \times 4 = 28$ equal pieces.
3. Each share is $\frac{1}{28}$ of the whole. Check: $4 \times \frac{1}{28} = \frac{1}{7}$.
Answer: $\frac{1}{28}$.

Practice Problems

Show your thinking.

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

2. On the strip, mark the starting $\frac{1}{3}$. Shade one of its 4 equal shares and label its fraction of the whole.



One whole

3. A $\frac{1}{4}$ m ribbon is shared equally among 5 children. Find each child's length.

4. A $\frac{1}{5}$ m ribbon is shared equally among 2 children. Find each child's length. Is one share less than $\frac{1}{5}$ m?

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

6. Find the starting amount: $\square \div 4 = \frac{1}{32}$. Use multiplication to check.

Answer Key

1. $\frac{1}{6}$.
2. $\frac{1}{12}$.
3. $\frac{1}{20}$ m per child.
4. $\frac{1}{10}$ m per child; yes, $\frac{1}{10} < \frac{1}{5}$.
5. $\frac{1}{18}$.
6. $\frac{1}{8}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Divide the whole into 2 equal parts. Start with one of those parts.

2. Split that part into 3 equal shares: the whole would have $2 \times 3 = 6$ equal pieces.

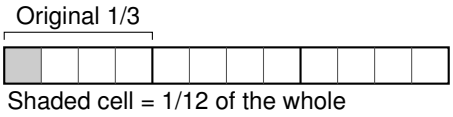
3. Each share is $\frac{1}{6}$ of the whole. Check: $3 \times \frac{1}{6} = \frac{1}{2}$.

Problem 2

1. Divide the whole into 3 equal parts. Start with one of those parts.

2. Split that part into 4 equal shares: the whole would have $3 \times 4 = 12$ equal pieces.

3. The first 4 cells make one original $\frac{1}{3}$. Shade and label the first cell as one share: $\frac{1}{12}$ of the whole.



Shaded cell = 1/12 of the whole

Problem 3

1. Divide a one-meter length into 4 equal parts. The available ribbon is one of those parts.

2. Split that part into 5 equal shares: the whole would have $4 \times 5 = 20$ equal pieces.

3. Each share is $\frac{1}{20}$ m. Check: $5 \times \frac{1}{20} = \frac{1}{4}$.

Problem 4

1. Divide a one-meter length into 5 equal parts. The available ribbon is one of those parts.

2. Split that part into 2 equal shares: the whole would have $5 \times 2 = 10$ equal pieces.

3. Each share is $\frac{1}{10}$ m. Check: $2 \times \frac{1}{10} = \frac{1}{5}$.

4. Yes: one of 2 equal parts is less than the full starting piece, so $\frac{1}{10} < \frac{1}{5}$ m.

Problem 5

1. Divide the whole into 6 equal parts. Start with one of those parts.

2. Split that part into 3 equal shares: the whole would have $6 \times 3 = 18$ equal pieces.

3. Each share is $\frac{1}{18}$ of the whole. Check: $3 \times \frac{1}{18} = \frac{1}{6}$.

Problem 6

1. Undo division by multiplying quotient and divisor: $\frac{1}{32} \times 4 = \frac{1}{8}$ starting units.

2. Divide the whole into 8 equal parts. Start with one of those parts.

3. Split that part into 4 equal shares: the whole would have $8 \times 4 = 32$ equal pieces.

4. Each share is $\frac{1}{32}$ of the whole. Check: $4 \times \frac{1}{32} = \frac{1}{8}$.

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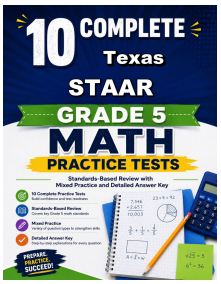

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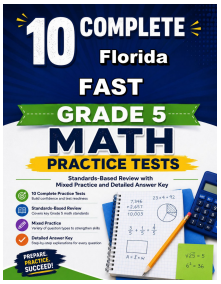

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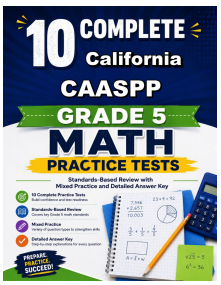

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