Dividing Unit Fractions by Whole Numbers

Dividing Unit Fractions by Whole Numbers: Find, Fix, and Work Backward

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

2. Find the missing whole-number divisor: $\frac{1}{4} \div \square = \frac{1}{12}$.

3. Find the starting amount: $\square \div 2 = \frac{1}{14}$. Use multiplication to check.

4. Compare $\frac{1}{5} \div 4$ with $\frac{1}{5} \div 8$. Which quotient is larger? Explain using the number or size of equal parts.

5. A student replaces division by multiplication and writes $\frac{1}{9} \div 2 = \frac{2}{9}$. Correct the model and result.

6. Find the missing whole-number divisor: $\frac{1}{2} \div \square = \frac{1}{14}$.

Answer Key

1. $\frac{1}{15}$.
2. 3.
3. $\frac{1}{7}$.
4. First $\frac{1}{20}$; second $\frac{1}{40}$; first is larger.
5. $\frac{1}{18}$.
6. 7.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

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

2. Split that part into 5 equal shares: the whole would have $3 \times 5 = 15$ equal pieces.

3. Each share is $\frac{1}{15}$ of the whole. Check: $5 \times \frac{1}{15} = \frac{1}{3}$.

Problem 2

1. The starting part is $\frac{1}{4}$ of a whole. Each final piece is $\frac{1}{12}$, so there are $12 \div 4 = 3$ such pieces in the starting part.

2. Divide the whole into 4 equal parts. Start with one of those parts.

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

4. Each share is $\frac{1}{12}$ of the whole. Check: $3 \times \frac{1}{12} = \frac{1}{4}$.

Problem 3

1. Undo division by multiplying quotient and divisor: $\frac{1}{14} \times 2 = \frac{1}{7}$ starting units.

2. Divide the whole into 7 equal parts. Start with one of those parts.

3. Split that part into 2 equal shares: the whole would have $7 \times 2 = 14$ equal pieces.

4. Each share is $\frac{1}{14}$ of the whole. Check: $2 \times \frac{1}{14} = \frac{1}{7}$.

Problem 4

1. Divide the whole into 5 equal parts. Start with one of those parts.

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

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

4. The changed divisor gives $\frac{1}{5} \div 8 = \frac{1}{40}$; more recipients make smaller shares.

Problem 5

1. Divide the whole into 9 equal parts. Start with one of those parts.

2. Split that part into 2 equal shares: the whole would have $9 \times 2 = 18$ equal pieces.

3. Each share is $\frac{1}{18}$ of the whole. Check: $2 \times \frac{1}{18} = \frac{1}{9}$.

Problem 6

1. The starting part is $\frac{1}{2}$ of a whole. Each final piece is $\frac{1}{14}$, so there are $14 \div 2 = 7$ such pieces in the starting part.

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

3. Split that part into 7 equal shares: the whole would have $2 \times 7 = 14$ equal pieces.

4. Each share is $\frac{1}{14}$ of the whole. Check: $7 \times \frac{1}{14} = \frac{1}{2}$.

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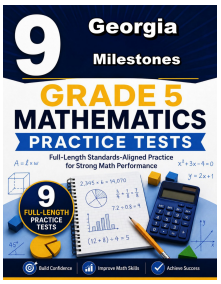

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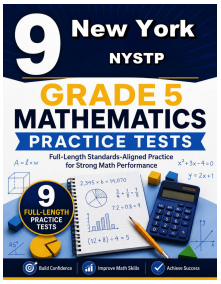

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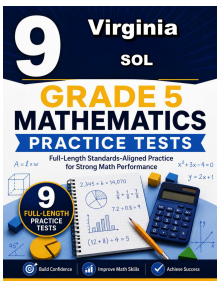

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