Divide Fractions and Mixed Numbers

To find the quotient of two fractions we multiply the first fraction by the reciprocal of the second fraction

$$\frac{a}{b} \div \frac{d}{c} = \frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d} = \frac{ac}{bd}$$

The final answer should be in simplest form or a mixed number.

Buthaina is working on a science project. She needs $\frac{2}{3}$ yd piece of wire for the project. She bought a 6-yd piece of wire at the hardware store. How many $\frac{2}{3}$ yd pieces can she cut from this piece?

STEP 1: Write a division sentence to find this amount.

$$6 \div \frac{3}{2}$$

STEP 2: Use the reciprocal of the divisor to write a multiplication problem.

$$6 \times \frac{2}{3}$$

STEP 3: Simplify.

$$\frac{\cancel{6}^{3}}{1} \times \frac{3}{\cancel{2}} = 9$$

So, Buthaina can cut 9 pieces of wire.

Examples:

A- Find the quotient.

1- $\frac{6}{5} \div \frac{4}{3}$

$\frac{6}{5} \div \frac{4}{3}$

$= \frac{6}{5} \times \frac{3}{4}$

$= \frac{18}{20}$

$= \frac{9}{10}$

2- $\frac{3}{2} \div \frac{15}{4}$

$\frac{3}{2} \div \frac{15}{4}$

$= \frac{3}{2} \times \frac{4}{15}$

$= \frac{12}{30}$

$= \frac{2}{5}$

To find the quotient of two mixed numbers, convert the mixed numbers to fractions then find the product

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Example:

B- Find the quotient.

3) $2\frac{1}{5} \div 3\frac{1}{10}$

$2\frac{1}{5} \div 3\frac{1}{10}$

$= \frac{11}{5} \div \frac{31}{10}$

$= \frac{11}{5} \times \frac{10}{31}$

$= \frac{110}{153}$

$= \frac{9}{10}$