

Dividing Fractions



Goal: Divide fractions and mixed numbers.

Vocabulary

Reciprocals:

Dividing Fractions

Words

To divide by a fraction, multiply by its reciprocal.

Numbers
$$\frac{3}{8} \div \frac{4}{5} = \frac{3}{8} \cdot \boxed{} = \boxed{}$$

Algebra

EXAMPLE 1 Dividing a Fraction by a Fraction

$$\mathbf{a.} \ \frac{9}{10} \div \ \frac{3}{20} = \frac{9}{10} \cdot$$

b.
$$\frac{11}{12} \div \frac{-1}{6} = \boxed{ }$$

Remember that the reciprocal of a negative number is also a negative number.

Find the quotient. Simplify if possible.

1. $\frac{4}{9} \div \left(-\frac{5}{8}\right)$	2. $\frac{9}{4} \div \frac{3}{6}$ 3. $-\frac{5}{2} \div \frac{-11}{6}$ 4. $\frac{3}{2} \div \frac{6}{6}$			
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EXAMPLE 2 Dividing a Fraction by an Integer

Party Favors You are making 10 small bags of mints to use as party favors. You have $\frac{5}{8}$ pound of mints to divide equally. How much should you put in each

Remember that

Solution

$$\frac{5}{8} \div 10 = \frac{5}{8} \cdot \boxed{}$$

Use rule for multiplying fractions.

Divide out common factor.



Multiply.

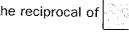
pound of mints in each bag.

Dividing Mixed Numbers

$$4\frac{1}{2} \div \left(-3\frac{3}{4}\right) = \left[\begin{array}{c} \\ \end{array}\right] \div \left(\begin{array}{c} \\ \end{array}\right]$$

Write $4\frac{1}{2}$ and $-3\frac{3}{4}$ as improper fractions.

Multiply by the reciprocal of



Multiply. Divide out common factors.

Multiply.

✓ **Check** Use estimation to check your answer. Because $4 \div (-4)$ is equal



to , you know that is a reasonable answer.

Guided Practice Find the quotient. Simplify if possible.

5. 8 = + 2	6. $-10\frac{4}{5} \div 18$		5 / 12
3 7	A. 102 - 10	7. $8\frac{1}{4} \div 1\frac{5}{6}$	8. $7\frac{5}{7} \div \left(-1\frac{13}{14}\right)$
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EXAMPLE 4. Simplify an Expression with Fractions

$$\frac{\left(\frac{3}{5}\right)\left(\frac{3}{4}\right)^2}{\left(\frac{15}{8}\right)} = \frac{\left(\frac{3}{5}\right)\left(\frac{3}{5}\right)}{\left(\frac{15}{8}\right)}$$

Evaluate power.

Multiply the fractions in the numerator.

Rewrite as a product. Divide out common factors.

Multiply.

Guided Practice Simplify the expression.



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