MULTIPLY AND DIVIDE FRACTIONS

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

Multiplying a fraction by a whole number is repeated addition.

Multiply the numerator. The denominator stays the same.

$3 \times \frac{2}{7} = \frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \frac{6}{7}$



1 Use the bar to complete each multiplication.

a) 

$3 \times \frac{2}{9} = \frac{\square}{\square}$

b) 

$2 \times \frac{3}{8} = \frac{\square}{\square}$

2 Multiply the numerator by the whole number.

a) $5 \times \frac{1}{7} = \frac{\square}{\square}$

b) $3 \times \frac{2}{11} = \frac{\square}{\square}$

c) $4 \times \frac{2}{9} = \frac{\square}{\square}$

d) $\frac{3}{10} \times 3 = \frac{\square}{\square}$

3 Split the shaded parts into equal groups. Then complete.

a) 

$\frac{4}{5} \div 2 = \frac{\square}{\square}$

b) 

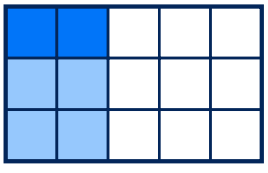
$\frac{6}{7} \div 3 = \frac{\square}{\square}$

4 What fraction of the whole rectangle is dark blue?

The dark blue is a fraction of the light blue part.

a) 

$\frac{1}{2}$ of $\frac{1}{4} = \frac{\square}{\square}$

b) 

$\frac{1}{3}$ of $\frac{2}{5} = \frac{\square}{\square}$

MULTIPLY AND DIVIDE FRACTIONS

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

MULTIPLY	Multiply the numerators. Multiply the denominators.	$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$
DIVIDE	Keep the first fraction, change ÷ to ×, flip the second fraction (its reciprocal).	$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$
MIXED	Change mixed numbers to improper fractions first.	$1\frac{1}{2} \times \frac{2}{3} = \frac{3}{2} \times \frac{2}{3} = 1$

1 Multiply. Write each answer in its simplest form.

In c) and d), change the mixed number to an improper fraction first.

a) $\frac{2}{3} \times \frac{4}{5} = \frac{\square}{\square}$

b) $\frac{5}{6} \times \frac{3}{4} = \frac{\square}{\square}$

c) $1\frac{1}{4} \times \frac{2}{5} = \frac{\square}{\square} \times \frac{2}{5} = \frac{\square}{\square} = \frac{\square}{\square}$

d) $2\frac{1}{3} \times \frac{3}{4} = \frac{\square}{\square} \times \frac{3}{4} = \frac{\square}{\square} = \square\frac{\square}{\square}$

2 Write the reciprocal of each number.

A number multiplied by its reciprocal is 1. Change a mixed number to an improper fraction first.

a) $\frac{3}{8} \rightarrow \frac{\square}{\square}$ b) $5 \rightarrow \frac{\square}{\square}$ c) $\frac{1}{6} \rightarrow \frac{\square}{\square}$ d) $1\frac{3}{4} \rightarrow \frac{\square}{\square}$

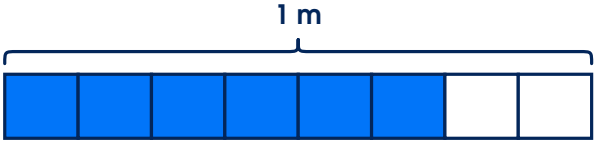
3 Keep, change, flip. Then work out each answer in its simplest form.

a) $\frac{2}{3} \div \frac{4}{5} = \frac{2}{3} \times \frac{\square}{\square} = \frac{\square}{\square}$

b) $\frac{3}{8} \div \frac{1}{4} = \frac{3}{8} \times \frac{\square}{\square} = \frac{\square}{\square}$

4 Mia cuts a ribbon into equal pieces.

The ribbon is $\frac{3}{4}$ m long. Each piece is $\frac{1}{8}$ m long.



a) Number of pieces: ☐

b) $\frac{3}{4} \div \frac{1}{8} =$ ☐

MULTIPLY AND DIVIDE FRACTIONS

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Multiply the numerators and the denominators (simplify first if you can). To divide, multiply by the reciprocal of the second fraction. Change mixed numbers to improper fractions first.

$2\frac{1}{2} \times 1\frac{1}{5} = \frac{5}{2} \times \frac{6}{5} = \frac{30}{10} = 3$

FLUENCY

1 Work out. Give each answer in its simplest form.

a) $\frac{4}{9} \times \frac{3}{8} =$ ☐/☐

b) $\frac{5}{12} \div \frac{2}{3} =$ ☐/☐

c) $2\frac{1}{2} \times 1\frac{3}{5} =$ ☐/☐

d) $3\frac{3}{4} \div 1\frac{1}{4} =$ ☐/☐

e) $1\frac{2}{3} \times \frac{6}{7} =$ ☐/☐

f) $4\frac{1}{2} \div 6 =$ ☐/☐

2 Find the missing fractions.

a) $\frac{3}{5} \times$ ☐/☐ $= \frac{9}{20}$

b) $\frac{7}{8} \div$ ☐/☐ $= 3\frac{1}{2}$

REASONING

3 Decide whether to multiply or divide. Then solve.

a) A plank is $5\frac{1}{4}$ m long. How many pieces $\frac{3}{4}$ m long can be cut from it? ☐

b) A film lasts $2\frac{1}{4}$ hours. Tom watches $\frac{2}{3}$ of it. How many hours is that? ☐/☐

4 Ben makes a claim about division.

Ben says, "Dividing makes numbers smaller, so $\frac{3}{4} \div \frac{1}{2}$ is less than $\frac{3}{4}$."

a) Work out $\frac{3}{4} \div \frac{1}{2}$. ☐/☐

b) Explain why Ben is wrong.

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MULTIPLY AND DIVIDE FRACTIONS

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) Multiplying by a fraction makes a number smaller. ALWAYS SOMETIMES NEVER

b) Dividing 6 by a proper fraction gives less than 6. ALWAYS SOMETIMES NEVER

c) A number multiplied by its reciprocal equals 1. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 Here is a rectangle.



$2\frac{2}{5}$ cm

$3\frac{3}{4}$ cm

a) Area = ☐ cm²

b) A second rectangle has the same area. Its width is $1\frac{1}{2}$ cm.

Its length = ☐ cm

3 Use each digit card once in each calculation.

a) Smallest product: $\frac{\square}{\square} \times \frac{\square}{\square} = \frac{\square}{\square}$

b) Closest to 1: $\frac{\square}{\square} \times \frac{\square}{\square} = \frac{\square}{\square}$

2 3 4 5

★ CHALLENGE FOR ALL

4 A cafe makes drinks in glasses, using bottles of drink.

Each bottle holds $2\frac{1}{4}$ litres of drink. Each glass holds $\frac{3}{8}$ of a litre.

a) How many glasses can be filled from 5 bottles? ☐

b) $\frac{1}{5}$ of each drink is squash. How many litres of squash are in 30 glasses? ☐

MULTIPLY AND DIVIDE FRACTIONS – ANSWERS

ANSWERS

BUILDING BLOCKS

1 a) $\frac{6}{9}$ $(=\frac{2}{3})$ b) $\frac{6}{8}$ $(=\frac{3}{4})$

2 a) $\frac{5}{7}$ b) $\frac{6}{11}$ c) $\frac{8}{9}$ d) $\frac{9}{10}$

3 a) $\frac{2}{5}$ b) $\frac{2}{7}$

4 a) $\frac{1}{8}$ b) $\frac{2}{15}$

SUPPORT

1 a) $\frac{8}{15}$ b) $\frac{15}{24} = \frac{5}{8}$ c) $\frac{5}{4}$; $\frac{10}{20} = \frac{1}{2}$ d) $\frac{7}{3}$; $\frac{21}{12} = \frac{7}{4} = 1\frac{3}{4}$

2 a) $\frac{8}{3}$ b) $\frac{1}{5}$ c) 6 (or $\frac{6}{1}$) d) $1\frac{3}{4} = \frac{7}{4}$, so $\frac{4}{7}$

3 a) $\frac{5}{4}$; $\frac{10}{12} = \frac{5}{6}$ b) $\frac{4}{1}$; $\frac{12}{8} = 1\frac{1}{2}$

4 a) 6 b) 6

CORE

1 a) $\frac{1}{6}$ b) $\frac{5}{8}$ c) $\frac{5}{2} \times \frac{8}{5} = 4$ d) $\frac{15}{4} \times \frac{4}{5} = 3$ e) $\frac{5}{3} \times \frac{6}{7} = \frac{10}{7} = 1\frac{3}{7}$ f) $\frac{9}{2} \times \frac{1}{6} = \frac{3}{4}$

2 a) $\frac{3}{4}$ b) $\frac{7}{8} \div \frac{7}{2} = \frac{7}{8} \times \frac{2}{7} = \frac{1}{4}$

3 a) $\frac{21}{4} \times \frac{4}{3} = 7$ pieces b) $\frac{9}{4} \times \frac{2}{3} = \frac{3}{2} = 1\frac{1}{2}$ hours

4 a) $1\frac{1}{2}$ b) Dividing by a number less than 1 gives a bigger answer: there are $1\frac{1}{2}$ halves in $\frac{3}{4}$.

GREATER DEPTH

1 a) Sometimes: $8 \times \frac{1}{2} = 4$, but $8 \times \frac{3}{2} = 12$ b) Never: e.g. $6 \div \frac{1}{2} = 12$ c) Always (not 0)

2 a) $\frac{15}{4} \times \frac{12}{5} = 9$ cm² b) $9 \div 1\frac{1}{2} = 6$ cm

3 a) $\frac{3}{10}$, e.g. $\frac{2}{5} \times \frac{3}{4}$ b) $\frac{5}{6}$, e.g. $\frac{2}{3} \times \frac{5}{4}$

4 a) $5 \times \frac{9}{4} = \frac{45}{4}$ litres; $\frac{45}{4} \times \frac{8}{3} = 30$ glasses b) $30 \times \frac{3}{8} \times \frac{1}{5} = \frac{9}{4} = 2\frac{1}{4}$ litres