DIVIDE FRACTIONS

BUILDING BLOCKS

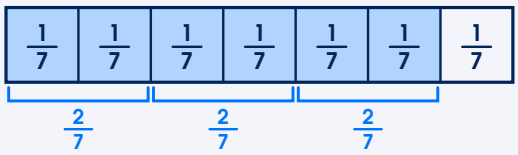
NAME _____ CLASS _____ DATE _____

KEY IDEA

$\frac{6}{7} \div \frac{2}{7}$ **asks:**

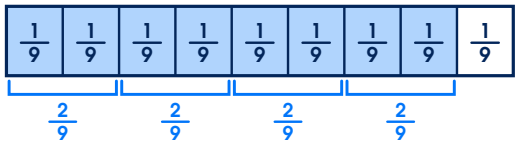
How many lots of $\frac{2}{7}$ fit into $\frac{6}{7}$?

Count the brackets: 3



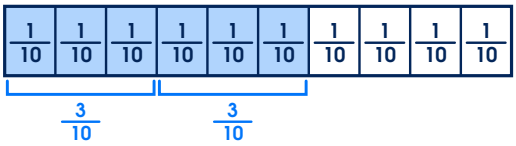
1 How many groups fit? Count the brackets.

a)



$\frac{8}{9} \div \frac{2}{9} = \square$

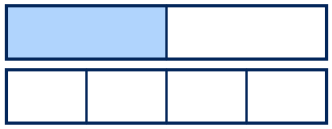
b)



$\frac{6}{10} \div \frac{3}{10} = \square$

2 Shade the bottom bar to match the top bar. Find the missing numerator.

a)



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

b)



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

3 Flip each fraction upside down.

The numerator and the denominator swap places.

a) $\frac{3}{5}$ flip $\frac{\square}{\square}$

b) $\frac{7}{2}$ flip $\frac{\square}{\square}$

c) $\frac{4}{9}$ flip $\frac{\square}{\square}$

4 Multiply the numerators. Multiply the denominators.

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

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

DIVIDE FRACTIONS

SUPPORT

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KEY IDEA

Two ways to work out $\frac{2}{3} \div \frac{4}{9}$

Same denominator: $\frac{6}{9} \div \frac{4}{9} = 6 \div 4 = \frac{6}{4} = \frac{3}{2}$

Reciprocal: $\frac{2}{3} \times \frac{9}{4} = \frac{18}{12} = \frac{3}{2}$

1 The denominators are the same. Divide the numerators.

a) $\frac{9}{11} \div \frac{3}{11} = \frac{\square}{\square}$

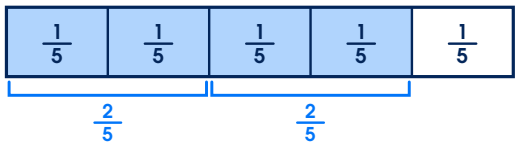
b) $\frac{8}{13} \div \frac{4}{13} = \frac{\square}{\square}$

c) $\frac{5}{9} \div \frac{2}{9} = \frac{\square}{\square}$

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

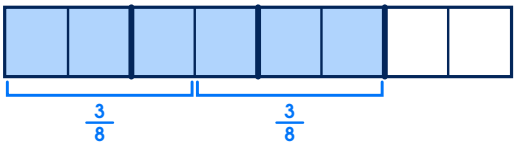
2 Use the bar models. How many brackets fit?

a)



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

b)



$\frac{3}{4} \div \frac{3}{8} = \square$

3 Multiply by the reciprocal of the second fraction.

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

b) $\frac{5}{6} \div \frac{2}{3} = \frac{5}{6} \times \frac{\square}{\square} = \frac{\square}{\square}$

4 Nina has made a mistake.

Nina writes: $\frac{2}{3} \div \frac{4}{5} = \frac{3}{2} \times \frac{4}{5} = \frac{12}{10}$

a) What has Nina done wrong?

b) Work out the correct answer. $\frac{2}{3} \div \frac{4}{5} = \frac{\square}{\square}$

DIVIDE FRACTIONS

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Multiply by the reciprocal of the divisor (the second fraction). When the denominators are already the same, dividing the numerators is quicker.

$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$

$\frac{9}{11} \div \frac{3}{11} = 9 \div 3 = 3$

FLUENCY

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

a) $\frac{4}{9} \div \frac{2}{3} = \frac{\square}{\square}$

b) $\frac{5}{8} \div \frac{3}{4} = \frac{\square}{\square}$

c) $\frac{7}{10} \div \frac{7}{20} = \frac{\square}{\square}$

d) $\frac{5}{12} \div \frac{5}{9} = \frac{\square}{\square}$

e) $\frac{6}{7} \div \frac{3}{14} = \frac{\square}{\square}$

f) $\frac{2}{9} \div \frac{5}{6} = \frac{\square}{\square}$

2 Work out. Write the decimals as fractions first.

a) $\frac{3}{5} \div 0.3 = \square$

b) $0.8 \div \frac{2}{7} = \square$

c) How many times does $\frac{3}{100}$ fit into 0.27? $\square$

REASONING

3 Work out each division. Say which method you chose and why.

a) $\frac{9}{10} \div \frac{3}{10} = \frac{\square}{\square}$ Method: .....

b) $\frac{3}{4} \div \frac{5}{7} = \frac{\square}{\square}$ Method: .....

4 Mo says, "Dividing by a fraction always gives an answer greater than 1." Give an example to show that Mo is wrong.

.....

.....

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) $\frac{a}{b} \div \frac{c}{d} = \frac{c}{d} \div \frac{a}{b}$ ALWAYS SOMETIMES NEVER

b) A proper fraction ÷ a proper fraction is proper. ALWAYS SOMETIMES NEVER

c) $\frac{a}{b} \div \frac{a}{b} = 1$ (a and b are not 0) ALWAYS SOMETIMES NEVER

d) A positive number ÷ a proper fraction is bigger than it. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 A rectangle has an area of five-sixths of a square metre. Its width is two-thirds of a metre.

a) Find the length of the rectangle. ☐

b) Find the perimeter of the rectangle. ☐

3 Find the missing fractions. Give each in its simplest form.

a) $\frac{\square}{\square} \div \frac{3}{4} = \frac{8}{9}$

b) $\frac{5}{6} \div \frac{\square}{\square} = \frac{10}{9}$

★ CHALLENGE FOR ALL

4 Dividing with fractions.

a) $\left(\frac{2}{3} \div \frac{4}{9}\right) \div \left(\frac{5}{6} \div \frac{5}{12}\right) = \frac{\square}{\square}$

Use the digits 1, 2, 5 and 6 once each: $\frac{\square}{\square} \div \frac{\square}{\square}$

b) Make the greatest possible answer. _____

c) Make the smallest possible answer. _____

STEP 7 ANSWERS

ANSWERS

Divide fractions

BUILDING BLOCKS

1a) 4 b) 2

2a) $\frac{2}{4}$ b) $\frac{6}{9}$

3a) $\frac{5}{3}$ b) $\frac{2}{7}$ c) $\frac{9}{4}$

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

SUPPORT

1a) 3 b) 2 c) $\frac{5}{2}$ d) $\frac{1}{2}$

2a) 2 b) 2

3a) $\frac{5}{2}$, $\frac{15}{8}$ b) $\frac{3}{2}$, $\frac{15}{12} = \frac{5}{4}$

4a) She flipped the first fraction instead of the second b) $\frac{10}{12} = \frac{5}{6}$

CORE

1a) $\frac{2}{3}$ b) $\frac{5}{6}$ c) 2 d) $\frac{3}{4}$ e) 4 f) $\frac{4}{15}$

2a) 2 b) $\frac{14}{5} = 2\frac{4}{5}$ c) 9

3a) 3 (same denominators: 9 ÷ 3) b) $\frac{21}{20} = 1\frac{1}{20}$ (reciprocal: $\frac{3}{4} \times \frac{7}{5}$)

4) e.g. $\frac{1}{4} \div \frac{3}{4} = \frac{1}{3}$

GREATER DEPTH

1a) Sometimes (only when the fractions are equal)

b) Sometimes ($\frac{1}{4} \div \frac{1}{2} = \frac{1}{2}$; $\frac{1}{2} \div \frac{1}{4} = 2$) c) Always d) Always

2a) $\frac{5}{4} = 1\frac{1}{4}$ m b) $\frac{23}{6} = 3\frac{5}{6}$ m

3a) $\frac{2}{3}$ b) $\frac{3}{4}$

4a) $\frac{3}{4}$ b) 15, e.g. $\frac{6}{1} \div \frac{2}{5}$ c) $\frac{1}{15}$, e.g. $\frac{1}{6} \div \frac{5}{2}$