

# Divide a Fraction by an Integer

Bar models can be useful when dividing a fraction by an integer.

**Example 1:**  $\frac{3}{5} \div 3 =$



Using lines, split the  $\frac{3}{5}$  into 3 equal parts as shown.

You can see that,  $\frac{3}{5} \div 3 = \frac{1}{5}$



**Example 2:**  $\frac{4}{9} \div 2 =$



Using lines, split the  $\frac{4}{9}$  into 2 equal parts as shown.

You can see that,  $\frac{4}{9} \div 2 = \frac{2}{9}$

Notice, you are dividing the **numerator** by the integer each time but, **not** the **denominator**.

## Activity 1

Divide the fractions by the whole numbers.

a.  $\frac{5}{7} \div 5 =$



d.  $\frac{4}{9} \div 2 =$



b.  $\frac{3}{5} \div 3 =$



e.  $\frac{6}{7} \div 2 =$

c.  $\frac{2}{3} \div 2 =$

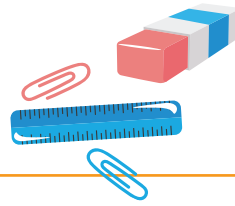


f.  $\frac{8}{11} \div 4 =$

# Divide a Fraction by an Integer

## Activity 2

Work out the missing numbers. Two have been completed for you.



a.  $\frac{14}{24} \div \boxed{2} = \frac{7}{24}$

$14 \div \boxed{\phantom{00}} = 7$ . This can be rearranged to become,  $14 \div 7 = \boxed{2}$

b.  $\frac{12}{15} \div \boxed{\phantom{00}} = \frac{4}{15}$

c.  $\frac{18}{25} \div \boxed{\phantom{00}} = \frac{9}{25}$

d.  $\frac{6}{17} \div 3 = \frac{2}{17}$

$\boxed{\phantom{00}} \div 3 = 2$  This can be rearranged to become,  $3 \times 2 = \boxed{6}$

e.  $\frac{\boxed{\phantom{00}}}{38} \div 4 = \frac{4}{38} = \frac{2}{19}$

f.  $\frac{\boxed{\phantom{00}}}{17} \div 5 = \frac{3}{17}$

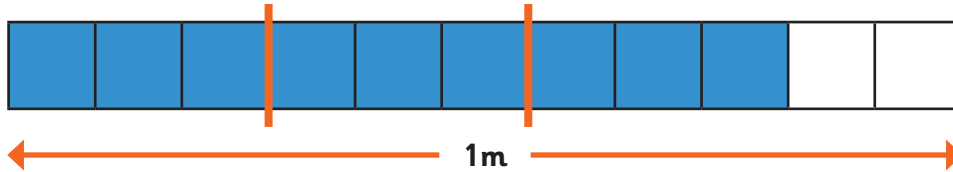
# Divide a Fraction by an Integer

## Activity 3

Look at this example solving a word problem involving division of a fraction.

A piece of ribbon is  $\frac{9}{11}$  of a metre long.

Ramona cuts the ribbon into 3 equal pieces. What fraction of a metre is each piece?



To solve this, you divide  $\frac{9}{11}$  by 3.

$$\frac{9}{11} \div 3 = \frac{3}{11} \quad \text{Each piece of ribbon will be } \frac{3}{11} \text{ of a metre.}$$

Solve the following problems. Draw bar models to help if you need to.

- a. A jug contains  $\frac{8}{10}$  of a litre of water.

What fraction of a litre does each cup hold if the water is shared equally between 8 cups?

- b. Callum uses  $\frac{12}{19}$  of a ball of string to tie up 4 bags of rubbish. He uses an equal length of string each time.

What fraction of the ball of string does he use on each of the 4 bags?

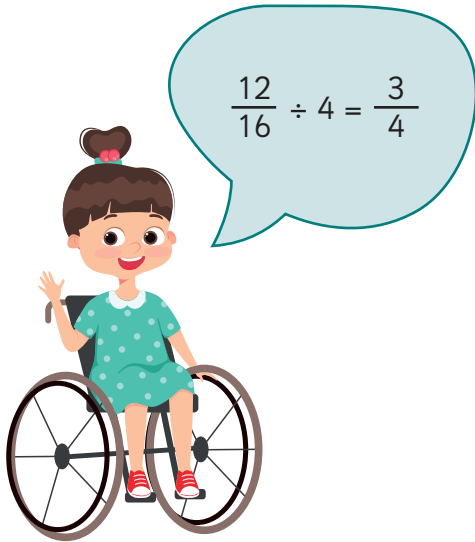


# Divide a Fraction by an Integer

## Activity 4

Solve each problem.

- a. Claire has made a mistake. Can you identify where she has gone wrong? Explain your reasoning.



- b. Work out what the missing numbers could be.

$$\frac{\square}{16} \div 4 = \frac{\square}{16}$$

# Divide a Fraction by an Integer

## Answers

Bar models can be useful when dividing a fraction by an integer.

**Example 1:**  $\frac{3}{5} \div 3 =$



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You can see that,  $\frac{3}{5} \div 3 = \frac{1}{5}$

**Example 2:**  $\frac{4}{9} \div 2 =$



Using lines, split the  $\frac{4}{9}$  into 2 equal parts as shown.

You can see that,  $\frac{4}{9} \div 2 = \frac{2}{9}$

Notice, you are dividing the **numerator** by the integer each time but, **not** the **denominator**.



## Activity 1

Divide the fractions by the whole numbers.

a.  $\frac{5}{7} \div 5 = \frac{1}{7}$



b.  $\frac{3}{5} \div 3 = \frac{1}{5}$



c.  $\frac{2}{3} \div 2 = \frac{1}{3}$



d.  $\frac{4}{9} \div 2 = \frac{2}{9}$



e.  $\frac{6}{7} \div 2 = \frac{3}{7}$



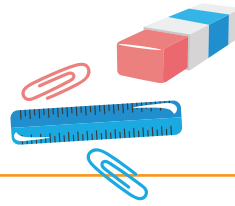
f.  $\frac{8}{11} \div 4 = \frac{2}{11}$

# Divide a Fraction by an Integer

## Answers

### Activity 2

Work out the missing numbers. Two have been completed for you.



a.  $\frac{14}{24} \div \boxed{2} = \frac{7}{24}$

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d.  $\frac{6}{17} \div 3 = \frac{2}{17}$

$\boxed{\phantom{00}} \div 3 = 2$  This can be rearranged to become,  $3 \times 2 = \boxed{6}$

e.  $\frac{\boxed{16}}{38} \div 4 = \frac{4}{38} = \frac{2}{19}$

f.  $\frac{\boxed{15}}{17} \div 5 = \frac{3}{17}$

# Divide a Fraction by an Integer

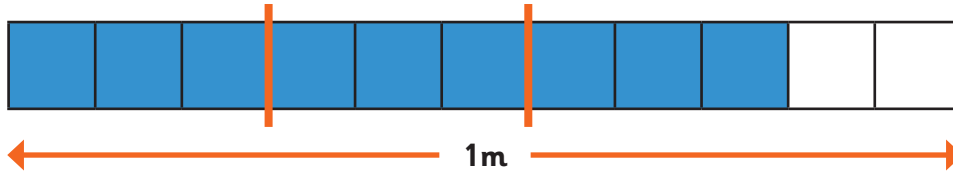
## Answers

### Activity 3

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Solve the following problems. Draw bar models to help if you need to.

- a. A jug contains  $\frac{8}{10}$  of a litre of water.

What fraction of a litre does each cup hold if the water is shared equally between 8 cups?

$$\frac{8}{10} \div 8 = \frac{1}{10} \text{ l}$$

- b. Callum uses  $\frac{12}{19}$  of a ball of string to tie up 4 bags of rubbish. He uses an equal length of string each time.

What fraction of the ball of string does he use on each of the 4 bags?



$$\frac{12}{19} \div 4 = \frac{3}{19}$$

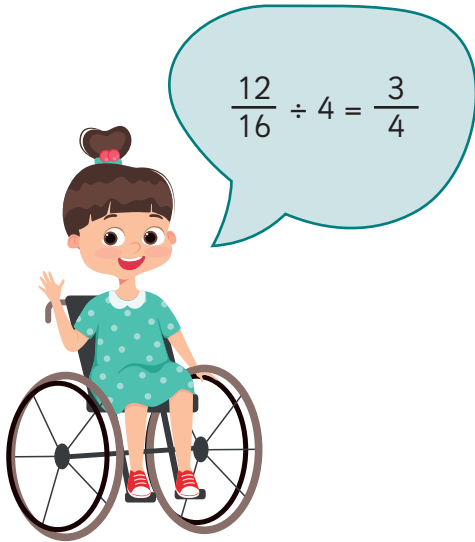
# Divide a Fraction by an Integer

## Answers

### Activity 4

Solve each problem.

- a. Claire has made a mistake. Can you identify where she has gone wrong? Explain your reasoning.



She has divided the numerator **and** the denominator by 4, instead of just the numerator.

The answer should be:  $\frac{3}{16}$

- b. Work out what the missing numbers could be.

$$\frac{\boxed{4}}{16} \div 4 = \frac{\boxed{1}}{16}$$

Could also be 8 and 2, 12 and 3, or 16 and 4