# 5 - 1
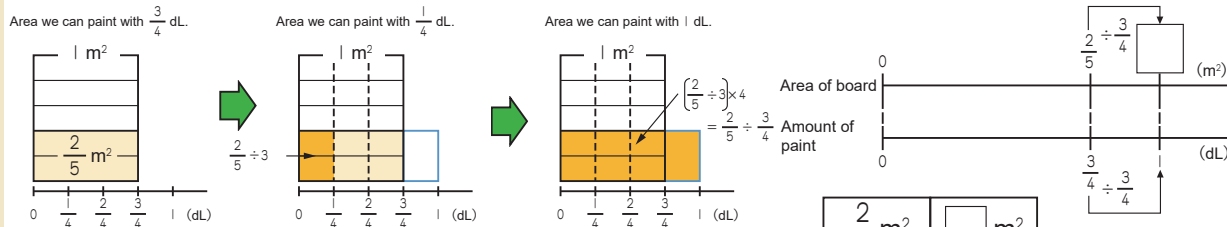
## Dividing by Fractions (1)

**Example** $\frac{2}{5}$ m² can be covered with $\frac{3}{4}$ dL of paint. How much area can be covered with 1 dL of paint?

Area we can paint with $\frac{3}{4}$ dL.

1 m²

$\frac{2}{5}$ m²

0  $\frac{1}{4}$  $\frac{2}{4}$  $\frac{3}{4}$  1 (dL)

Area we can paint with $\frac{1}{4}$ dL.

1 m²

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

0  $\frac{1}{4}$  $\frac{2}{4}$  $\frac{3}{4}$  1 (dL)

Area we can paint with 1 dL.

1 m²

$\left(\frac{2}{5} \div 3\right) \times 4$
$= \frac{2}{5} \div \frac{3}{4}$

0  $\frac{1}{4}$  $\frac{2}{4}$  $\frac{3}{4}$  1 (dL)

Area of board
Amount of paint

| $\frac{2}{5}$ m² | □ m² |
|---|---|
| $\frac{3}{4}$ dL | 1 dL |

$\frac{2}{5} \div \frac{3}{4}$ (m²)

0

3/4 ÷ 3/4 (dL)

**Math sentence**

$\frac{2}{5} \div \frac{3}{4}$

How can we calculate this? We have two ways.

Calculating by converting the divisor into 1 means that we multiply the dividend by the reciprocal of the divisor.

**Calculate by converting the divisor into a whole number**

$= \left(\frac{2}{5} \times 4\right) \div \left(\frac{3}{4} \times 4\right) = \left(\frac{2}{5} \times 4\right) \div 3$

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

**Calculate by converting the divisor into 1**

$= \left(\frac{2}{5} \times \frac{4}{3}\right) \div \left(\frac{3}{4} \times \frac{4}{3}\right)$

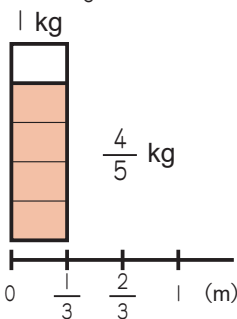$= \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$

**Answer** $\frac{8}{15}$ m²

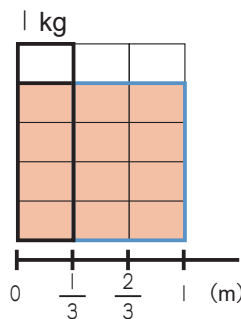To divide by a fraction, we can multiply the dividend by the reciprocal of the divisor.

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

**1** $\frac{1}{3}$ m of lumber weighs $\frac{4}{5}$ kg. How much does 1 m of lumber weigh?
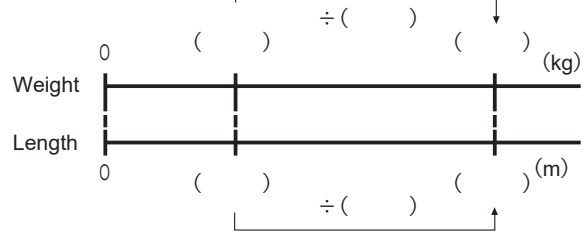
Weight with $\frac{1}{3}$ m of lumber.

1 kg

$\frac{4}{5}$ kg

0  $\frac{1}{3}$  $\frac{2}{3}$  1 (m)

Weight with 1 m of lumber.

1 kg

0  $\frac{1}{3}$  $\frac{2}{3}$  1 (m)

**Math sentence**

Complete the number line diagrams and tables.

| ( ) kg | ( ) kg |
|---|---|
| ( ) m | ( ) m |

÷ ( )

Weight

0  ( )  ( ) (kg)

Length

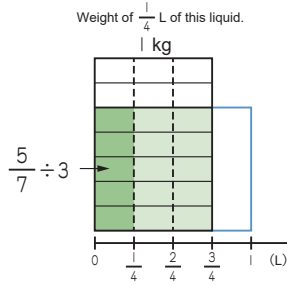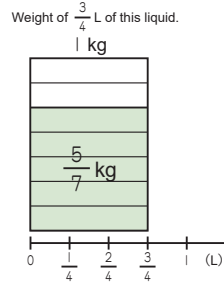0  ( )  ( ) (m)

÷ ( )

**Answer**

**2** There is a $\frac{3}{4}$ L liquid that weighs $\frac{5}{7}$ kg. How much is $1$ L of this liquid weighs?

Weight of $\frac{3}{4}$ L of this liquid.

$1$ kg

$\frac{5}{7}$ kg

0    $\frac{1}{4}$    $\frac{2}{4}$    $\frac{3}{4}$    $1$    (L)

Weight of $\frac{1}{4}$ L of this liquid.

$1$ kg

$\frac{5}{7} \div 3$

0    $\frac{1}{4}$    $\frac{2}{4}$    $\frac{3}{4}$    $1$    (L)

Weight of $1$ L of this liquid.

$1$ kg

$\frac{5}{7} \div 3 \times 4$

0    $\frac{1}{4}$    $\frac{2}{4}$    $\frac{3}{4}$    $1$    (L)

Math sentence

$\div ( \quad )$

(     ) (     ) (kg)

Weight
0

Amount
0

(     ) (     ) (L)

$\div ( \quad )$

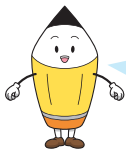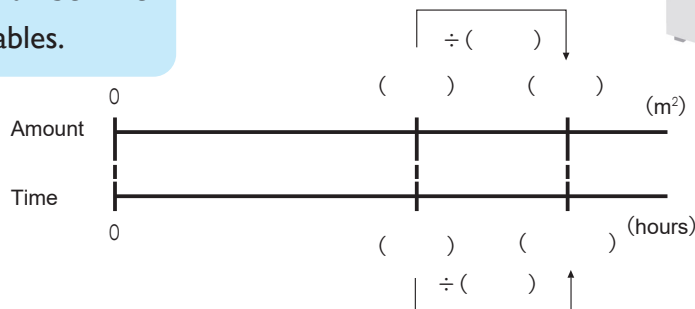| (     ) kg | (     ) kg |
|---|---|
| (     ) L | (     ) L |
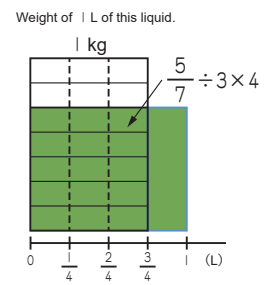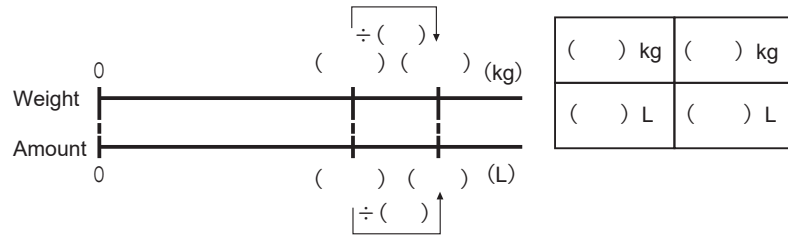
Answer _____

**3** A printer takes $\frac{1}{6}$ of an hour to print $\frac{2}{7}$ m² of paper. How many m² of Paper can be printed in $1$ hour?

Complete the number line diagrams and tables.

$\div ( \quad )$

(     ) (     ) (m²)

Amount
0

Time
0

(     ) (     ) (hours)

$\div ( \quad )$

Math sentence

| (     ) m² | (     ) m² |
|---|---|
| (     ) of an hour | (     ) hour |

Answer _____

**4** Calculate the following division problems. Simplify the answers when possible. Leave the answers as improper fractions.

**1** $\frac{3}{8} \div \frac{2}{7} = \frac{\square}{\square} \times \frac{\square}{\square} = \frac{\square}{\square}$

**2** $\frac{2}{5} \div \frac{1}{4} = \frac{\square}{\square} \times \frac{\square}{\square} = \frac{\square}{\square}$

**3** $\frac{5}{6} \div \frac{3}{7}$

**4** $\frac{1}{3} \div \frac{2}{5}$

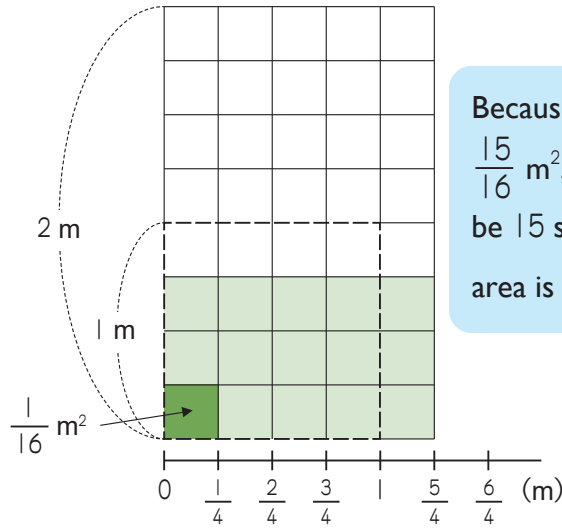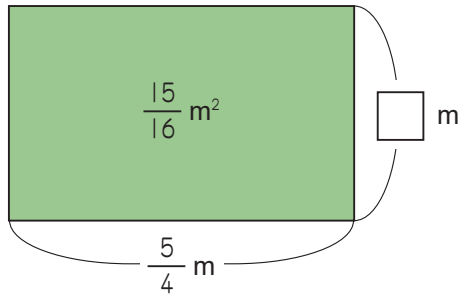**5** $\frac{4}{3} \div \frac{5}{2}$

**6** $\frac{4}{5} \div \frac{9}{8}$

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# 5 - 2   Dividing by Fractions (2)

**Example 1**   A rectangle with an area of $\frac{15}{16}$ m$^2$ has a length of $\frac{5}{4}$ m.
What is the width of the rectangle?

$\frac{15}{16}$ m$^2$     □ m

$\frac{5}{4}$ m

Because the area is $\frac{15}{16}$ m$^2$, there should be 15 squares whose area is $\frac{1}{16}$ m$^2$.

2 m

1 m

$\frac{1}{16}$ m$^2$

Math sentence

$$\frac{15}{16} \div \frac{5}{4} = \frac{15}{16} \times \frac{4}{5}$$

$$= \frac{\overset{3}{\cancel{15}} \times \overset{1}{\cancel{4}}}{\underset{4}{\cancel{16}} \times \underset{1}{\cancel{5}}} = \boxed{\frac{3}{4}}$$

Answer   $\frac{3}{4}$ m

Rewrite the division math sentence as multiplying by the divisor's reciprocal.  Simplify by finding the greatest common factor before multiplying.

**1**   A rectangle with an area of $\frac{18}{25}$ m$^2$ has a length of $\frac{6}{5}$ m.
What is the width of the rectangle?

$\frac{18}{25}$ m$^2$     □ m

$\frac{6}{5}$ m

1 m

$\frac{1}{25}$ m$^2$

Math sentence

Answer

**Example 2** I have $\dfrac{5}{6}$ L of milk. If I drink $\dfrac{5}{24}$ L of milk every day, how many days worth of milk do I have?
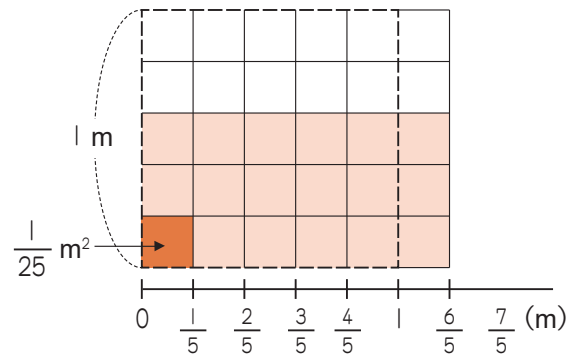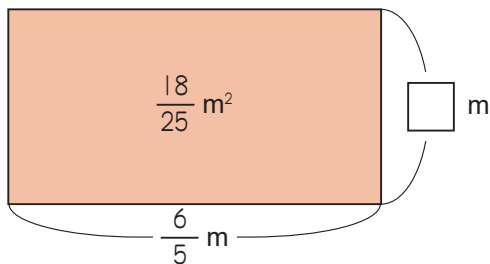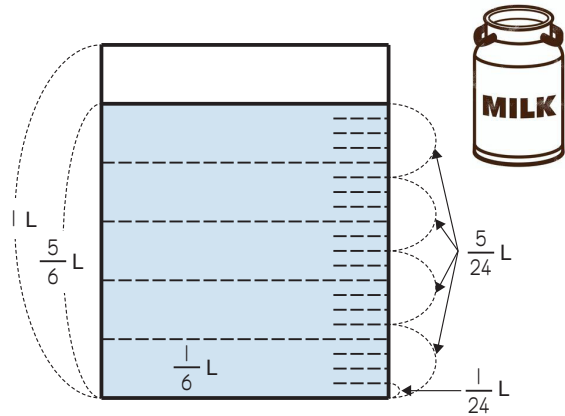
Math sentence

$$\dfrac{5}{6} \div \dfrac{5}{24} = \dfrac{5}{6} \times \dfrac{24}{5} = \dfrac{\overset{1}{\cancel{5}} \times \overset{4}{\cancel{24}}}{\underset{1}{\cancel{6}} \times \underset{1}{\cancel{5}}} = 4$$

Answer ____4 days____

If this problem uses the whole numbers, such as " I have $10$ L of milk and I drink $2$ L every day," we can make a math sentence easily.

1 L

$\dfrac{5}{6}$ L

$\dfrac{1}{6}$ L

$\dfrac{5}{24}$ L

$\dfrac{1}{24}$ L

MILK

**2** Our office has $\dfrac{25}{3}$ L of gasoline. If we use $\dfrac{5}{6}$ L of gasoline every day, how many days worth of gasoline our office have?

Math sentence

Answer _____

**3** Calculate the following division problems. Simplify the answers when possible. Leave the answers as improper fractions.

**1** $\dfrac{6}{7} \div \dfrac{3}{5} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**2** $\dfrac{9}{10} \div \dfrac{4}{5} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**3** $\dfrac{12}{5} \div \dfrac{8}{15}$

**4** $\dfrac{7}{6} \div \dfrac{21}{8}$

**5** $\dfrac{3}{8} \div \dfrac{9}{14}$

**6** $\dfrac{2}{15} \div \dfrac{6}{5}$

**7** $\dfrac{4}{15} \div \dfrac{2}{9}$

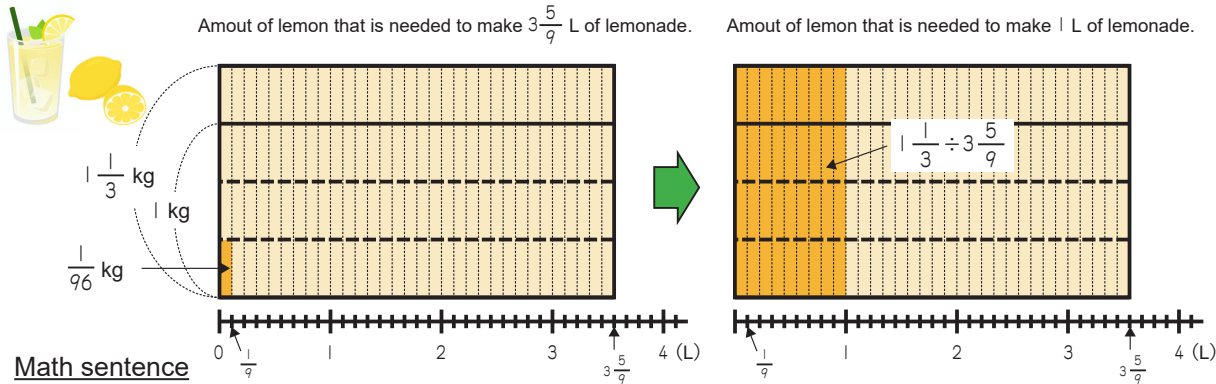**8** $\dfrac{14}{15} \div \dfrac{7}{12}$

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**Example** $1\frac{1}{3}$ kg of lemon are needed to make $3\frac{5}{9}$ L of lemonade. How many kg of lemons are needed to make we need to make 1 L of lemonade?
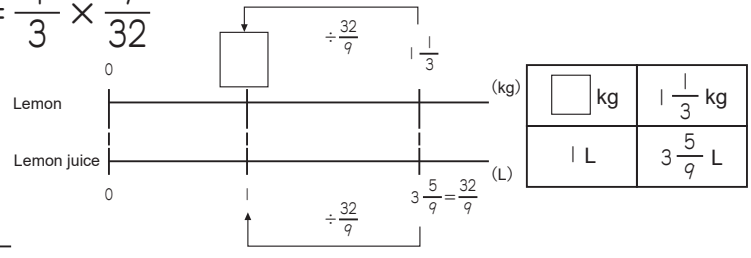
Amout of lemon that is needed to make $3\frac{5}{9}$ L of lemonade.

Amout of lemon that is needed to make 1 L of lemonade.

$1\frac{1}{3}$ kg

1 kg

$\frac{1}{96}$ kg

$1\frac{1}{3} \div 3\frac{5}{9}$

0  $\frac{1}{9}$  1  2  3  $3\frac{5}{9}$  4 (L)

$\frac{1}{9}$  1  2  3  $3\frac{5}{9}$  4 (L)

Math sentence

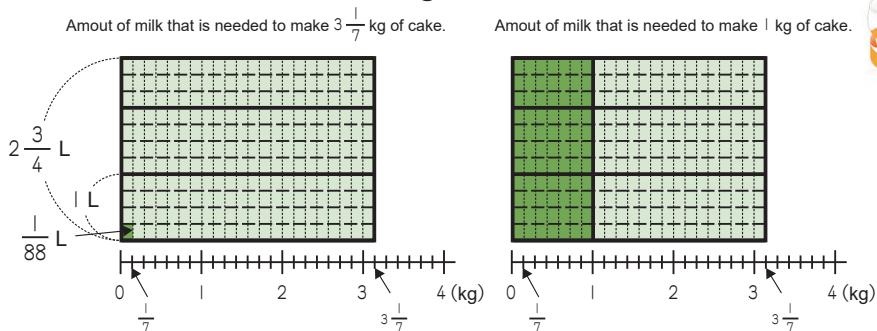$$1\frac{1}{3} \div 3\frac{5}{9} = \frac{4}{3} \div \frac{32}{9} = \frac{4}{3} \times \frac{9}{32}$$

$$= \frac{\overset{1}{\cancel{4}} \times \overset{3}{\cancel{9}}}{\underset{1}{\cancel{3}} \times \underset{8}{\cancel{32}}} = \frac{3}{8}$$

Answer $\frac{3}{8}$ kg

Lemon

Lemon juice

$\div \frac{32}{9}$   $1\frac{1}{3}$

0

(kg)

| | kg | $1\frac{1}{3}$ kg |
|---|---|---|
| | 1 L | $3\frac{5}{9}$ L |

0   1   $3\frac{5}{9} = \frac{32}{9}$   (L)

$\div \frac{32}{9}$

**Divide a mixed number by a mixed number:（a mixed number）÷（a mixed number）**
Change both mixed numbers to improper fractions then divide.

**1** $2\frac{3}{4}$ L of milk is needed to bake a $3\frac{1}{7}$ kg cake. How much milk is needed to bake a 1 kg cake?

Amout of milk that is needed to make $3\frac{1}{7}$ kg of cake.

Amout of milk that is needed to make 1 kg of cake.

$2\frac{3}{4}$ L

1 L

$\frac{1}{88}$ L

0  $\frac{1}{7}$  1  2  3  $3\frac{1}{7}$  4 (kg)

0  $\frac{1}{7}$  1  2  3  $3\frac{1}{7}$  4 (kg)

Complete the number line diagrams and tables.

| （    ）kg | （    ）kg |
|---|---|
| （    ）L | （    ）L |

Math sentence

÷（    ）

（    ）   （    ）

Milk   (L)

Cake   (kg)

0   （    ）   （    ）

÷（    ）
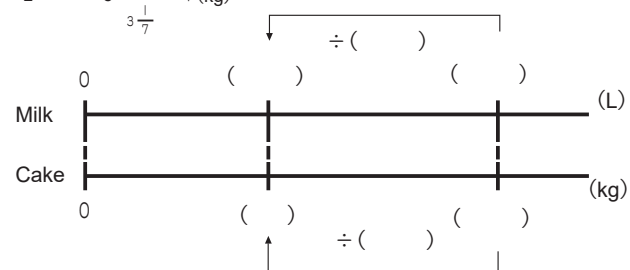
Answer _____

**2** There is a plywood that is $4\frac{1}{6}$ m² and $5\frac{5}{8}$ kg. If we cut out a 1 m² from this plywood, how much does it weigh?
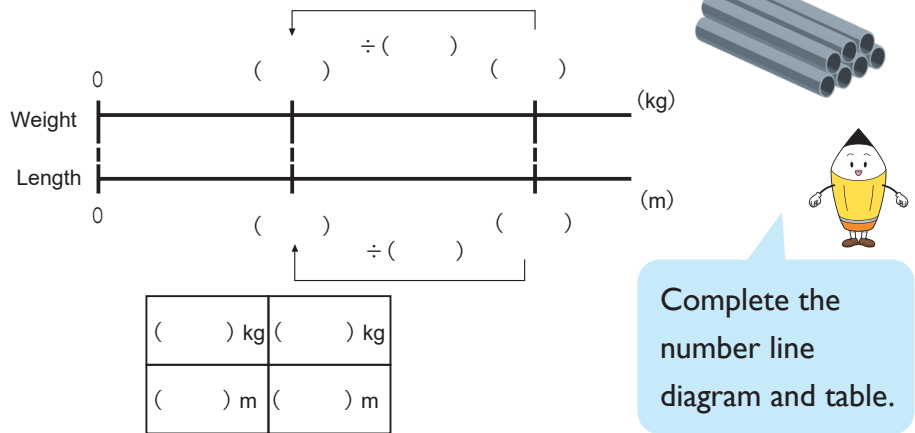
Math sentence



Weight

Area

$( \quad ) \div ( \quad )$  $( \quad )$

$( \quad )$  $\div ( \quad )$

(kg) $( \quad )$ kg $( \quad )$ kg

(m²) $( \quad )$ m² $( \quad )$ m²
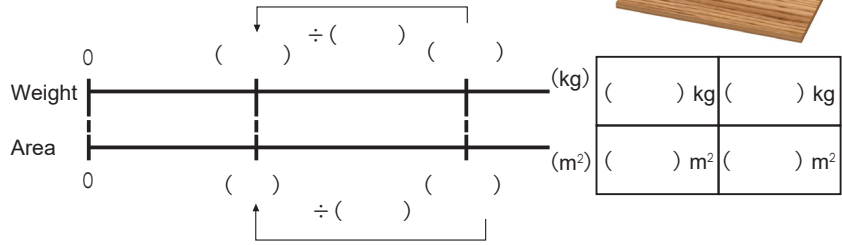
Answer _____

**3** A $8\frac{1}{3}$ m metal pipe weighs $11\frac{1}{9}$ kg. How much does 1 m of this pipe weigh?

Math sentence



Weight

Length

$\div ( \quad )$  $( \quad )$  $( \quad )$

$( \quad )$  $\div ( \quad )$  $( \quad )$

(kg)

(m)

$( \quad )$ kg $( \quad )$ kg

$( \quad )$ m $( \quad )$ m

Complete the number line diagram and table.

Answer _____

**4** Calculate the following division problems. Simplify the answers. If the answer is an improper fraction, change it to a mixed number.

**①** $1\frac{3}{5} \div 2\frac{1}{3} = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**②** $1\frac{4}{5} \div 2\frac{1}{2} = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**③** $3\frac{1}{3} \div 1\frac{7}{9}$

**④** $1\frac{5}{9} \div 1\frac{1}{6}$

**⑤** $4\frac{1}{2} \div 3\frac{3}{4}$

**⑥** $1\frac{1}{9} \div 7\frac{1}{2}$

**⑦** $3\frac{1}{5} \div 1\frac{5}{7}$

**⑧** $1\frac{1}{2} \div 1\frac{1}{8}$

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## 5 - 4

# Dividing with Whole Numbers and Fractions

**Example 1** Calculate $2 \div \dfrac{3}{7}$

Remember, $2$ can also be written as $\dfrac{2}{1}$.

$$2 \div \frac{3}{7} = \frac{2}{1} \div \frac{3}{7} = \frac{2}{1} \times \frac{7}{3} = \frac{2 \times 7}{1 \times 3} = \boxed{\frac{14}{3}}$$

Simplify the answers. But you can leave them as improper fractions.

**1** Calculate the following division problems.

**1** $6 \div \dfrac{5}{7} = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**2** $4 \div \dfrac{9}{2} = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**3** $15 \div \dfrac{10}{3}$

**4** $8 \div \dfrac{6}{5}$

**5** $9 \div \dfrac{12}{7}$

**6** $16 \div \dfrac{24}{5}$

**7** $20 \div 1\dfrac{3}{7}$

**8** $12 \div 1\dfrac{1}{3}$

**Example 2** Calculate $\dfrac{3}{7} \div 2$

The whole number $2$ can be written as $\dfrac{2}{1}$. Its reciprocal is $\dfrac{1}{2}$.

$$\frac{3}{7} \div 2 = \frac{3}{7} \div \frac{2}{1} = \frac{3}{7} \times \frac{1}{2} = \frac{3 \times 1}{7 \times 2} = \boxed{\frac{3}{14}}$$

**2** Calculate the following division problems.

**1** $\dfrac{7}{8} \div 4 = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**2** $\dfrac{1}{2} \div 3 = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

**3** $\dfrac{5}{7} \div 10$

**4** $\dfrac{8}{9} \div 2$

**5** $\dfrac{20}{3} \div 8$

**6** $5\dfrac{1}{3} \div 6$

# 5 - 5 Dividing Decimal Numbers by Fractions

**Example** Calculate $0.7 \div \dfrac{2}{3}$

$$0.7 \div \frac{2}{3} = \boxed{\frac{7}{10}} \div \frac{2}{3} = \frac{7 \times 3}{10 \times 2} = \boxed{\frac{21}{20}}$$

First change the decimal number to a fraction.
Remember, $0.7$ is also "seven tenths" or $\dfrac{7}{10}$.

**1** Calculate the following multiplication problems. Simplify the answers. Leave the answers as improper fractions.

① $0.3 \div \dfrac{2}{7} = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

② $0.1 \div \dfrac{2}{3} = \dfrac{\square}{\square} \div \dfrac{\square}{\square} = \dfrac{\square}{\square} \times \dfrac{\square}{\square} = \dfrac{\square}{\square}$

③ $0.9 \div \dfrac{1}{2}$

④ $0.5 \div \dfrac{3}{2}$

⑤ $2.7 \div \dfrac{3}{5}$

⑥ $1.5 \div 2\dfrac{1}{7}$

⑦ $0.2 \div 1\dfrac{1}{8}$

⑧ $0.9 \div 3\dfrac{3}{5}$

**2** Explain the following calculation errors and calculate them correctly.

① $4.6 \div 3\dfrac{5}{6} = \dfrac{46}{10} \div \dfrac{23}{6} = \dfrac{46}{10} \times \dfrac{\overset{23}{\cancel{23}}}{\underset{3}{\cancel{6}}} = \dfrac{529}{30}$

② $1.8 \div \dfrac{6}{5} = \dfrac{18}{100} \div \dfrac{6}{5} = \dfrac{\overset{3}{\cancel{18}}}{\underset{20}{\cancel{100}}} \times \dfrac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{6}}} = \dfrac{3}{20}$

How to Divide by Fractions

# Multiplying and Dividing by Fractions (1)

**Example** Calculate $\dfrac{5}{6} \times \dfrac{3}{10} \div \dfrac{4}{9}$

To divide a fraction, multiply by its reciprocal. Simplify fractions by finding the greatest common factor. Multiply all numerators to equal the answer's numerator. Multiply all denominators to equal the answer's denominator.

$$\dfrac{5}{6} \times \dfrac{3}{10} \div \dfrac{4}{9} = \dfrac{5}{6} \times \dfrac{3}{10} \times \dfrac{9}{4}$$

$$= \dfrac{5 \times 3 \times 9}{6 \times 10 \times 4} = \dfrac{9}{16}$$

**1** Calculate the following. Simplify the answers. Leave them as improper fractions.

① $\dfrac{1}{6} \times \dfrac{2}{3} \div \dfrac{2}{5}$

② $\dfrac{1}{2} \times \dfrac{9}{2} \div \dfrac{3}{10}$

③ $\dfrac{7}{3} \times \dfrac{5}{9} \div \dfrac{10}{3}$

④ $\dfrac{1}{4} \times \dfrac{6}{5} \div \dfrac{9}{5}$

⑤ $\dfrac{9}{4} \times \dfrac{5}{2} \div \dfrac{7}{8}$

⑥ $\dfrac{2}{5} \times \dfrac{3}{4} \div \dfrac{7}{10}$

⑦ $\dfrac{5}{6} \times \dfrac{2}{15} \div \dfrac{5}{3}$

⑧ $\dfrac{12}{7} \times \dfrac{2}{3} \div \dfrac{8}{9}$

**2** Explain the following calculation errors and calculate them correctly.

Remember the previous learning?

① $\dfrac{5}{6} + \dfrac{2}{3} = \dfrac{5+2}{6+3} = \dfrac{7}{9}$

② $\dfrac{3}{2} \times \dfrac{1}{3} \div \dfrac{3}{4} = \dfrac{3}{2} \times \dfrac{1}{3} \times \dfrac{3}{4} = \dfrac{3}{8}$

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# 5 - 7 Multiplying and Dividing by Fractions (2)

**Example** Calculate $\dfrac{5}{9} \div \dfrac{7}{8} \times \dfrac{3}{4}$

$$\dfrac{5}{9} \div \dfrac{7}{8} \times \dfrac{3}{4} = \dfrac{5}{9} \times \dfrac{8}{7} \times \dfrac{3}{4}$$

$$= \dfrac{5 \times \overset{2}{8} \times \overset{1}{3}}{\underset{3}{9} \times 7 \times \underset{1}{4}} = \boxed{\dfrac{10}{21}}$$

Remember, to divide by a fraction, multiply by its reciprocal. Simplify fractions by finding the greatest common factor. Multiply all denominators to equal to the answer's denominator.

**1** Calculate the following. Simplify the answers. Leave them as improper fractions.

**1** $\dfrac{1}{5} \div \dfrac{1}{3} \times \dfrac{6}{7}$

**2** $\dfrac{2}{3} \div \dfrac{8}{9} \times \dfrac{3}{4}$

**3** $\dfrac{3}{8} \div \dfrac{5}{6} \times \dfrac{2}{9}$

**4** $\dfrac{4}{5} \div \dfrac{3}{4} \times \dfrac{9}{8}$

**5** $\dfrac{1}{5} \div \dfrac{2}{3} \times \dfrac{5}{6}$

**6** $\dfrac{1}{2} \div \dfrac{1}{4} \times \dfrac{1}{3}$

**7** $\dfrac{6}{7} \div \dfrac{5}{6} \times \dfrac{7}{8}$

**8** $\dfrac{3}{4} \div \dfrac{2}{5} \times \dfrac{8}{9}$

**2** Explain the following calculation errors and calculate them correctly.

**1** $\dfrac{7}{6} - \dfrac{3}{7} = \dfrac{\overset{1}{\cancel{7}}}{\underset{2}{\cancel{6}}} - \dfrac{\cancel{3}}{\cancel{7}} = \dfrac{1}{2}$

**2** $\dfrac{\overset{1}{\cancel{5}}}{7} \div \dfrac{9}{\underset{2}{\cancel{10}}} = \dfrac{1}{7} \times \dfrac{2}{9} = \dfrac{2}{63}$

Remember the previous learning?

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# 5 - 8  Dividing by More than One Fraction

**Example** Calculate $\dfrac{1}{3} \div \dfrac{1}{4} \div \dfrac{1}{6}$

$$\dfrac{1}{3} \div \dfrac{1}{4} \div \dfrac{1}{6} = \dfrac{1}{3} \times \dfrac{4}{1} \times \dfrac{6}{1}$$

$$= \dfrac{1 \times 4 \times \overset{2}{\cancel{6}}}{\underset{1}{\cancel{3}} \times 1 \times 1} = \dfrac{8}{1} = 8$$

Sometimes there is more than one division in a math sentence. For each division by a fraction, multiply by its reciprocal.

Calculate the following. Simplify the answers. Leave them as improper fractions.

**1** $\dfrac{5}{9} \div \dfrac{5}{6} \div \dfrac{3}{7}$

**2** $\dfrac{3}{4} \div \dfrac{9}{5} \div \dfrac{5}{8}$

**3** $\dfrac{2}{3} \div \dfrac{8}{7} \div \dfrac{2}{9}$

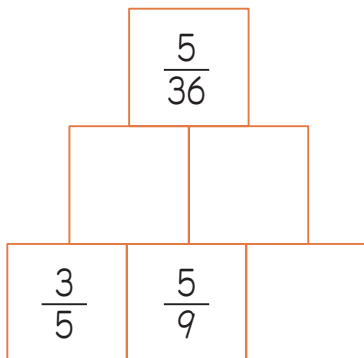**4** $\dfrac{5}{6} \div \dfrac{6}{7} \div \dfrac{7}{8}$

**5** $\dfrac{1}{2} \div \dfrac{5}{6} \div \dfrac{9}{10}$

**6** $\dfrac{1}{8} \div \dfrac{2}{9} \div \dfrac{3}{10}$

**7** $\dfrac{4}{5} \div \dfrac{8}{7} \div \dfrac{14}{15}$

**8** $\dfrac{2}{3} \div \dfrac{3}{4} \div \dfrac{4}{5}$

## Let's Try !

Multiply the horizontal fractions and write the answer in the ☐ above.

$\dfrac{5}{36}$

$\dfrac{3}{5}$   $\dfrac{5}{9}$

We have to calculate not only by multiplying fractions, but also by dividing fractions.

Give a hint to those who are wondering where to calculate. You can do it from the ☐ on the left of the second row.

## 5 - 9  How to Divide by Fractions
### Dividing by Decimal Numbers and by Fractions

**Example** Calculate $1.5 \div \dfrac{3}{2} \div 3$

$$1.5 \div \frac{3}{2} \div 3 = \frac{15}{10} \times \frac{2}{3} \times \frac{1}{3}$$

$$= \frac{\overset{3}{\cancel{15}} \times \overset{1}{\cancel{2}} \times 1}{\underset{2}{\cancel{10}} \times \underset{1}{\cancel{3}} \times 3} = \boxed{\frac{1}{3}}$$

> Change decimal numbers to fractions. Change mixed numbers to improper fractions. Divide fractions by multiplying by its reciprocal. Simply when possible.

Calculate the following.  Simply the answers.  Leave them as improper fractions.

**1** $0.4 \div \dfrac{4}{7} \div 14$

**2** $0.6 \div \dfrac{1}{2} \div 3$

**3** $1.8 \div \dfrac{1}{2} \div 9$

**4** $1.5 \div \dfrac{1}{8} \div 5$

**5** $2.4 \div \dfrac{3}{5} \div 3$

**6** $3.6 \div \dfrac{6}{7} \div 14$

**7** $2.7 \div \dfrac{9}{10} \div 7$

**8** $5 \div \dfrac{15}{2} \div 0.5$

---

**Let's Try !**

Put the three numbers, 2, 3, and 6 in the following ☐ to complete the math sentence.  We can use each number only one time.

$$\frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}} \div 1\frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}} = \frac{4}{7}$$

> Let's try various cases and find the correct answer.

## Division and Multiplication with Various Kinds of Numbers

**Example** Calculate $6 \times \dfrac{8}{5} \div 2.1$

Remember to change whole numbers and decimal numbers to fractions. Divide by multiplying by a fraction's reciprocal. Simplify by dividing a numerator and a denominator by its greatest common factor.
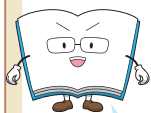
$$6 \times \frac{8}{5} \div 2.1 = \frac{6}{1} \times \frac{8}{5} \div \frac{21}{10} = \frac{6}{1} \times \frac{8}{5} \times \frac{10}{21}$$

$$= \frac{\overset{2}{6} \times 8 \times \overset{2}{10}}{1 \times \underset{1}{5} \times \underset{7}{21}} = \boxed{\frac{32}{7}}$$

Calculate the following. Simplify the answers. Leave them as improper fractions.

**1** $2 \times \dfrac{1}{5} \div 0.6$

**2** $3 \times \dfrac{1}{6} \div 0.9$

**3** $9 \times \dfrac{2}{3} \div 1.6$

**4** $5 \times \dfrac{3}{8} \div 1.5$

**5** $0.2 \times \dfrac{7}{8} \div 2.8$

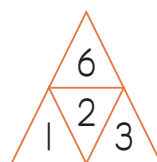**6** $0.4 \times \dfrac{4}{5} \div 1.6$

**7** $0.8 \times \dfrac{2}{5} \div 0.06$

**8** $0.6 \times \dfrac{1}{25} \div 0.01$

---

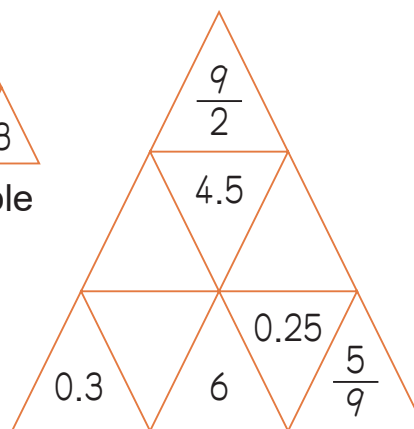**Let's Try !**

As the example, multiply the three numbers side by side and write the answer in the above △.
Complete a number pyramid.

We have to calculate not only by multiplying fractions, but also by dividing fractions.

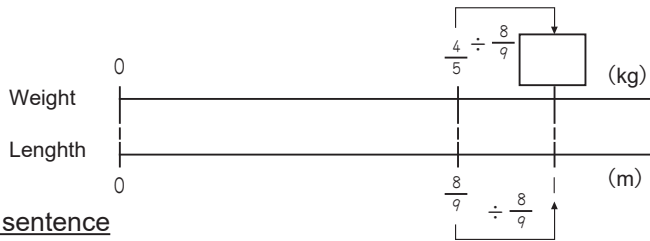Example

## 5 - 11 How to Divide by Fractions
### Division Problems

**Example** An $\frac{8}{9}$ m long iron bar weighs $\frac{4}{5}$ kg.

**1** How much does 1 m of this iron bar weigh?
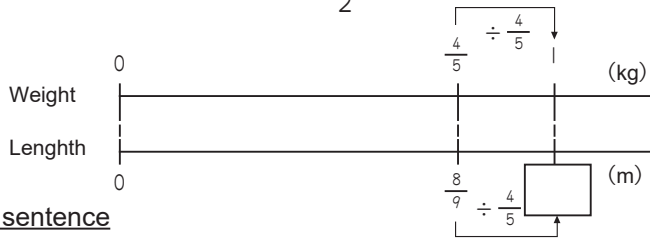
**2** How long is 1 kg of this bar?

**1**

Weight

Lenghth

$\frac{4}{5} \div \frac{8}{9}$ (kg)

$\frac{8}{9} \div \frac{8}{9}$ (m)

| $\frac{4}{5}$ kg | $\square$ kg |
|---|---|
| $\frac{8}{9}$ m | 1 m |

Math sentence

weight  lenghth

$$\frac{4}{5} \div \frac{8}{9} = \frac{4}{5} \times \frac{9}{8} = \frac{9}{10}$$

Answer $\frac{9}{10}$ kg

**2**

Weight

Lenghth

$\div \frac{4}{5}$ (kg)

$\frac{8}{9} \div \frac{4}{5}$ (m)

| $\frac{4}{5}$ kg | 1 kg |
|---|---|
| $\frac{8}{9}$ m | $\square$ m |

The calculation will change depending on which amount is used as the standard.

Math sentence

lenghth  weight

$$\frac{8}{9} \div \frac{4}{5} = \frac{8}{9} \times \frac{5}{4} = \frac{10}{9} \text{ or } 1\frac{10}{9}$$

Answer $\frac{10}{9}$ m or $1\frac{1}{9}$ m

---

A carpenter can paint $\frac{2}{3}$ m$^2$ of a wall with $\frac{4}{7}$ dL of paint.

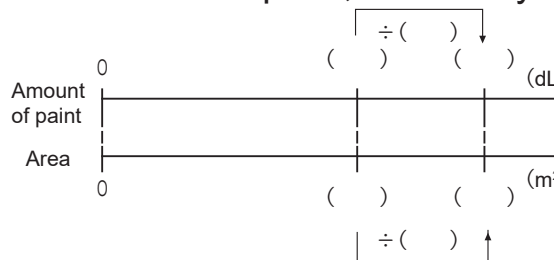**1** How many dL of paint does he need to paint 1 m$^2$ of the wall?

Complete the number line diagram and table.

Math sentence

$\div (\quad)$

$(\quad)$ $(\quad)$ (dL)

Amount of paint

Area

$(\quad)$ $(\quad)$ (m$^2$)

$\div (\quad)$
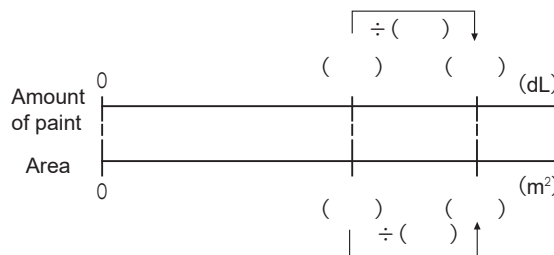
| $(\quad)$ dL | $(\quad)$ dL |
|---|---|
| $(\quad)$ m$^2$ | $(\quad)$ m$^2$ |

Answer _____

**2** If the carpenter has 1 dL of paint, how many m$^2$ of the wall can he paint?

Math sentence

$\div (\quad)$

$(\quad)$ $(\quad)$ (dL)

Amount of paint

Area

$(\quad)$ $(\quad)$ (m$^2$)

$\div (\quad)$

| $(\quad)$ dL | $(\quad)$ dL |
|---|---|
| $(\quad)$ m$^2$ | $(\quad)$ m$^2$ |

Answer _____

# 5 – 12　Size of the Product

**Instruction**　In multiplication, when the multiplier is a whole number or decimal number, the size of the product and the size of the multiplicand are related in the following pattern:

> ① **When multiplier > 1, product > multiplicand**
> ② **When multiplier < 1, product < multiplicand**
> ③ **When multiplier = 1, product = multiplicand**

For example,　① $6 \times \dfrac{3}{2} = 9 > 6$

② $6 \times \dfrac{2}{3} = 4 < 6$

③ $6 \times 1 = 6 = 6$

**Example**　Which product is less than 6? Answer the letter of the correct math sentences.

(a) $6 \times \dfrac{8}{7}$　　(b) $6 \times \dfrac{12}{13}$　　(c) $6 \times 1$　　(d) $6 \times 1\dfrac{1}{5}$

Because the product is less than 6 which is also multiplicand, we must choose the formula whose multiplier is less than 1.

Answer　　(b)

**1**　Which product is less than 12? Answer the letter of the correct math sentences.

(a) $12 \times \dfrac{8}{9}$　　(b) $12 \times 1$　　(c) $12 \times \dfrac{7}{5}$　　(d) $12 \times \dfrac{23}{25}$

(e) $12 \times 2\dfrac{1}{3}$　　(f) $12 \times \dfrac{11}{12}$

Answer　　　　　　　　　

**2**　Which product is more than 31? Answer the letter of the correct math sentences.

(a) $31 \times \dfrac{5}{4}$　　(b) $31 \times \dfrac{2}{3}$　　(c) $31 \times 1\dfrac{1}{10}$　　(d) $31 \times \dfrac{32}{31}$

(e) $31 \times 1$　　(f) $31 \times \dfrac{17}{18}$

Answer

## Size of the Quotient

**Instruction**　In division, when the divisor is a whole number or decimal number, the size of the quotient and the size of the dividend are related in the following pattern:

> ① **When divisor $>$ 1, quotient $<$ dividend**
> ② **When divisor $<$ 1, quotient $>$ dividend**
> ③ **When divisor $=$ 1, quotient $=$ dividend**

For example, ①　$6 \div \dfrac{3}{2} = 4$ $<$ 6

②　$6 \div \dfrac{2}{3} = 9$ $>$ 6

③　$6 \div 1 = 6$ $=$ 6

**Example**　Which quotient is more than 7?　Answer the letter of correct math sentences.

(a)　$7 \div 1\dfrac{2}{9}$　　(b)　$7 \div 1$　　(c)　$7 \div \dfrac{9}{13}$　　(d)　$7 \div \dfrac{4}{3}$

Because the quotient is more than 7 (which is also dividend), we must choose the formula whose divisor is less than 1.

Answer　　(c)

**1**　Which quotient is less than 15?　Answer the letter of correct math sentences.

(a)　$15 \div \dfrac{5}{9}$　　(b)　$15 \div \dfrac{13}{12}$　　(c)　$15 \div \dfrac{19}{50}$　　(d)　$15 \div \dfrac{7}{5}$

(e)　$15 \div 1\dfrac{1}{2}$　　(f)　$15 \div 1$

Answer　

**2**　Which quotient is more than 9?　Answer the letter of correct math sentence.

(a)　$9 \div \dfrac{3}{7}$　　(b)　$9 \div \dfrac{6}{5}$　　(c)　$9 \div 2\dfrac{3}{4}$　　(d)　$9 \div 1$

(e)　$9 \div \dfrac{11}{10}$　　(f)　$9 \div \dfrac{1}{34}$

Answer　

55

**1** Calculate the following division problems. Simplify the answer. Leave them as improper fractions.

**1** $\dfrac{3}{5} \div \dfrac{4}{7}$

**2** $\dfrac{16}{25} \div \dfrac{12}{5}$

**3** $2\dfrac{1}{6} \div 3\dfrac{1}{4}$

**4** $3\dfrac{1}{3} \div 1\dfrac{3}{7}$

**5** $18 \div 2\dfrac{2}{5}$

**6** $\dfrac{7}{9} \div 14$

**7** $0.6 \div \dfrac{2}{5}$

**8** $1.8 \div 7\dfrac{1}{5}$

**9** $\dfrac{3}{4} \times \dfrac{2}{5} \div \dfrac{15}{8}$

**10** $4 \times \dfrac{5}{6} \div 0.8$

**11** $\dfrac{8}{3} \div \dfrac{4}{9} \div 1.6$

**12** $2.1 \div \dfrac{7}{8} \div 6$

**2** Which product is more than 5? Answer the letter of correct math sentence.

(a) $5 \times 1\dfrac{1}{2}$    (b) $5 \times \dfrac{2}{3}$    (c) $5 \times 1$    (d) $5 \times \dfrac{17}{18}$

(e) $5 \times \dfrac{10}{7}$    (f) $5 \times \dfrac{6}{5}$

Answer _____

**3** Which quotient is less than 8? Answer the letter of correct math sentence.
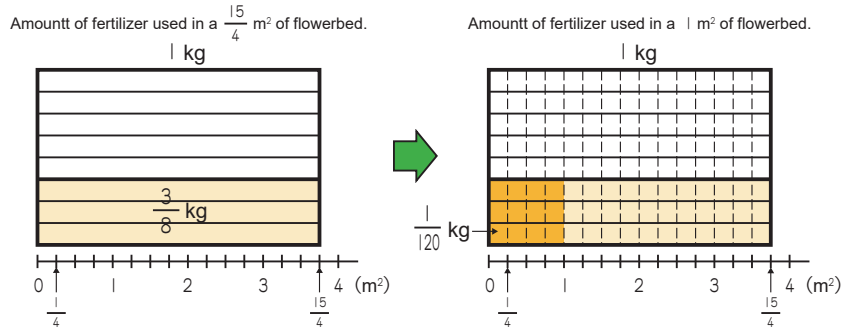
(a) $8 \div \dfrac{24}{25}$    (b) $8 \div \dfrac{4}{5}$    (c) $8 \div \dfrac{4}{3}$    (d) $8 \div 1\dfrac{1}{10}$

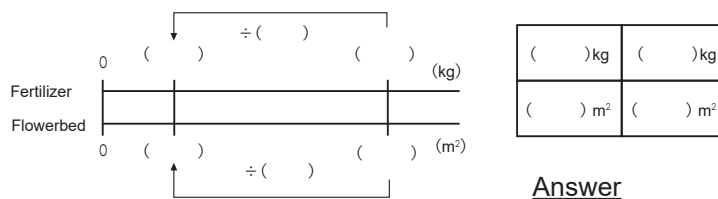(e) $8 \div 1$    (f) $8 \div \dfrac{7}{8}$

Answer _____

**4** $\frac{3}{8}$ kg of fertilizer is used in a $\frac{15}{4}$ m$^2$ flowerbed. Answer the following questions.

**①** How many kg of fertilizer do we need for an $1$ m$^2$ of flowerbed?

Amountt of fertilizer used in a $\frac{15}{4}$ m$^2$ of flowerbed.

$1$ kg

$\frac{3}{8}$ kg

0    1    2    3    4  (m$^2$)
$\frac{1}{4}$              $\frac{15}{4}$

Amountt of fertilizer used in a $1$ m$^2$ of flowerbed.

$1$ kg

$\frac{1}{120}$ kg

0    1    2    3    4  (m$^2$)
$\frac{1}{4}$              $\frac{15}{4}$

Complete the number line diagrams and tables.

Math sentence

÷ (    )
0    (    )              (    )  (kg)
Fertilizer
Flowerbed
0    (    )        (    )  (m$^2$)
÷ (    )

| (    ) kg | (    ) kg |
|---|---|
| (    ) m$^2$ | (    ) m$^2$ |

Answer _____

**②** How many m$^2$ of flowerbed can be fertilized with $1$ kg of fertilizer?

Math sentence

÷ (    )
0    (    )              (    )  (kg)
Fertilizer
Flowerbed
0    (    )        (    )  (m$^2$)
÷ (    )

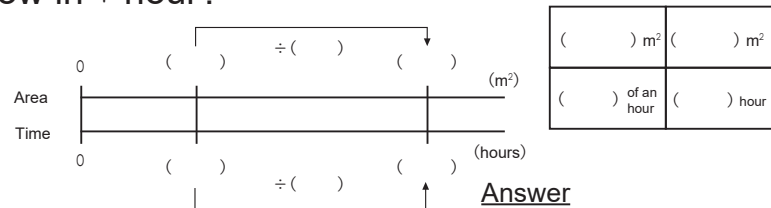| (    ) kg | (    ) kg |
|---|---|
| (    ) m$^2$ | (    ) m$^2$ |
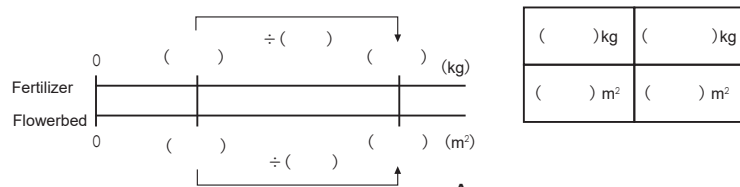
Answer _____

**5** A lawnmower can mow $35$ m$^2$ of grass in $20$ minutes. How many m$^2$ of grass can this lawnmower mow in $1$ hour?

Math sentence

÷ (    )
0    (    )              (    )  (m$^2$)
Area
Time
0    (    )        (    )  (hours)
÷ (    )

| (    ) m$^2$ | (    ) m$^2$ |
|---|---|
| (    ) of an hour | (    ) hour |

Answer _____

**6** Which of the following word problems equals the math sentence: $\frac{1}{3} \div \frac{2}{5}$ ? Write the letter to the correct word problem.

(a) We painted a $\frac{2}{5}$ m$^2$ of board with $\frac{1}{3}$ dL of paint. How many m$^2$ of board can we paint with $1$ dL of this paint?

(b) There is a rectangular piece of paper with an area of $\frac{1}{3}$ m$^2$. The length of the paper is $\frac{2}{5}$ m. How many m is the width of this paper?

(c) There is oil that weighs $\frac{1}{3}$ kg per L. How much kg is $\frac{2}{5}$ L of this oil?

Answer _____

57

# 5 – 15 Times as Much with Fractions (1)

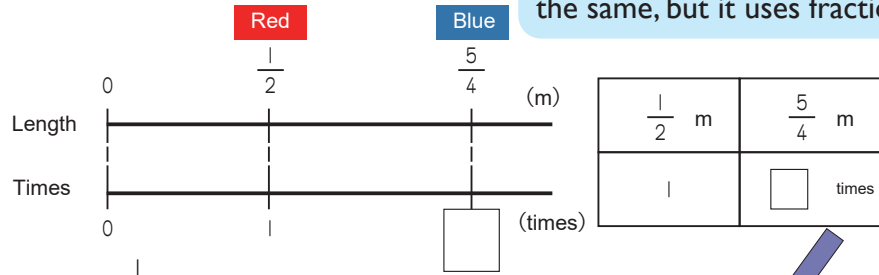**Example** A blue ribbon is $\frac{5}{4}$ m. A red ribbon is $\frac{1}{2}$ m. How many times longer is the blue ribbon?

If a red ribbon is 2 m and blue ribbon is 6 m, we can calculate it easily. This problem is also the same, but it uses fractions.
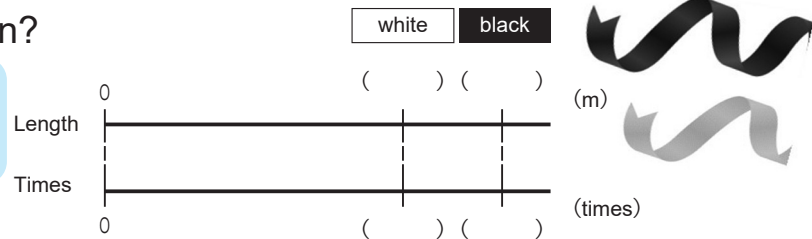
We can consider the length of the red ribbon as 1.

Once we draw a diagram, it is easier to understand.

| | Red | | Blue | |
|---|---|---|---|---|
| Length | | | | (m) |
| Times | | | | (times) |

| $\frac{1}{2}$ m | $\frac{5}{4}$ m |
|---|---|
| 1 | ☐ times |

**Math sentence**

$$\frac{5}{4} \div \frac{1}{2} = \frac{5}{\overset{2}{4}} \times \frac{\overset{1}{2}}{1} = \frac{5 \times \overset{1}{2}}{\underset{2}{4} \times 1} = \frac{5}{2} \text{ or } 2\frac{1}{2}$$

**Answer** $\frac{5}{2}$ times or $2\frac{1}{2}$ times

Even when fractions are involved, we use division to find out how many times as much something is as a base quantity.

**1** A black ribbon is $\frac{2}{3}$ m. A white ribbon is $\frac{5}{9}$ m. How many times longer is the black ribbon?

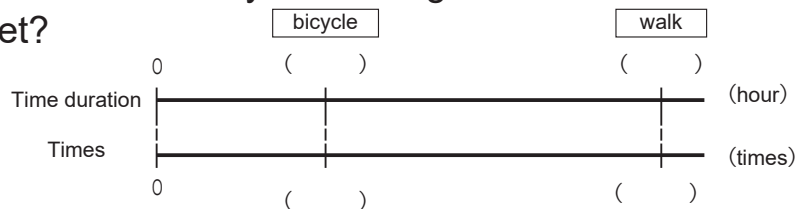Complete the number line diagrams and tables.

**Math sentence**

| | white | black | |
|---|---|---|---|
| Length | ( ) | ( ) | (m) |
| Times | ( ) | ( ) | (times) |

| ( ) m | ( ) m |
|---|---|
| ( ) | ( ) times |

**Answer** _____

**2** It takes $\frac{2}{7}$ of an hour to walk to the market. It takes $\frac{2}{25}$ of an hour to go to the market by bicycle. How many times longer does it take to walk than bicycle to the market?

**Math sentence**

| | bicycle | walk | |
|---|---|---|---|
| Time duration | ( ) | ( ) | (hour) |
| Times | ( ) | ( ) | (times) |

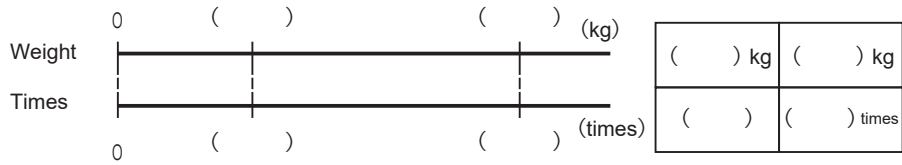| ( ) of an hour | ( ) of an hour |
|---|---|
| ( ) | ( ) times |

**Answer** _____

58

**2** Answer the following questions.

**1** How many times heavier is $\frac{5}{12}$ kg than $\frac{7}{6}$ kg?
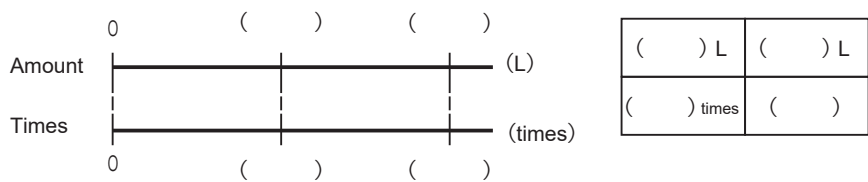
Complete the number line diagrams and tables.

Math sentence

| | ( ) kg | ( ) kg |
|---|---|---|
| | ( ) | ( ) times |

Weight — 0, ( ), ( ) (kg)
Times — 0, ( ), ( ) (times)

Answer _____

**2** How many times more is $\frac{5}{12}$ L than $\frac{8}{9}$ L?

Math sentence

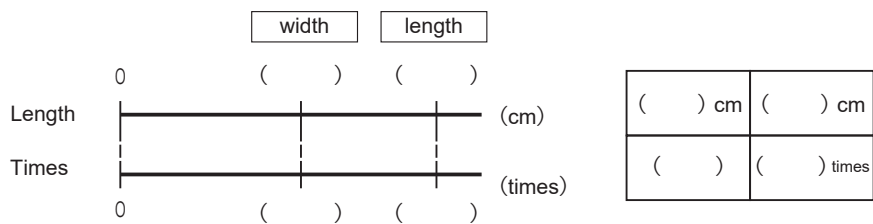| | ( ) L | ( ) L |
|---|---|---|
| | ( ) times | ( ) |

Amount — 0, ( ), ( ) (L)
Times — 0, ( ), ( ) (times)

Answer _____

**3** A rectangle piece of paper is $\frac{4}{3}$ cm long and $\frac{4}{5}$ cm wide. How many times longer is the length of the rectangle than the width?
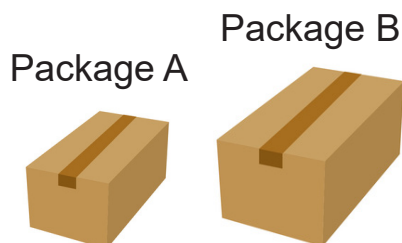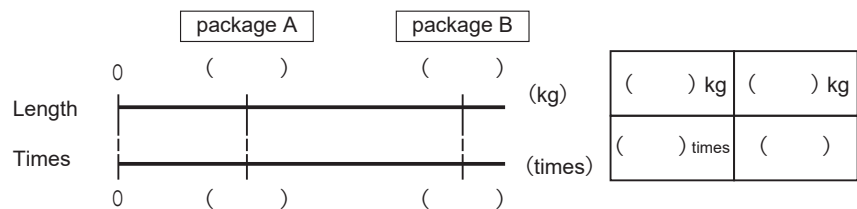
Math sentence

width  length

| | ( ) cm | ( ) cm |
|---|---|---|
| | ( ) | ( ) times |

Length — 0, ( ), ( ) (cm)
Times — 0, ( ), ( ) (times)

Answer _____

**4** Package A weighs $\frac{3}{5}$ kg. Package B weighs $\frac{3}{2}$ kg. How many times heavier is Package A than Package B?

Math sentence

package A  package B
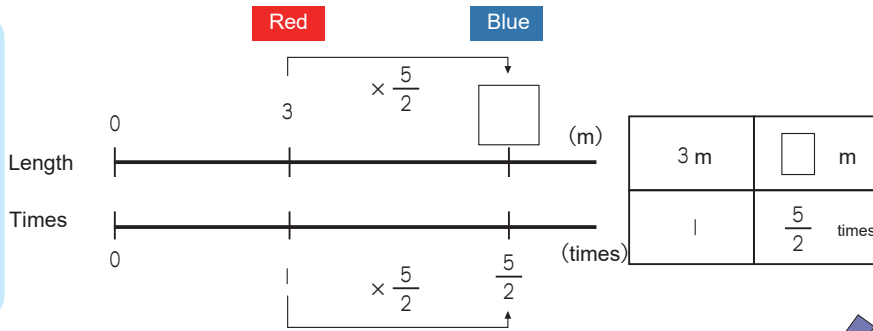
| | ( ) kg | ( ) kg |
|---|---|---|
| | ( ) times | ( ) |

Length — 0, ( ), ( ) (kg)
Times — 0, ( ), ( ) (times)

Package A   Package B

Answer _____

# Times as Much with Fractions (2)

**Example** A blue ribbon is $\frac{5}{2}$ times longer than the red ribbon.  If the red ribbon is $3$ m, how long is the blue ribbon?

Sometimes the word problem can be easier to understand if we use a whole number.  If the blue ribbon is $2$ times longer than the red ribbon, the blue ribbon is $6$ m ($3 \times 2$).

Red　　　Blue

$\times \frac{5}{2}$

| | 3 m | ☐ m |
|---|---|---|
| | 1 | $\frac{5}{2}$ times |

Length (m)
Times (times)

$\times \frac{5}{2}$

Math sentence

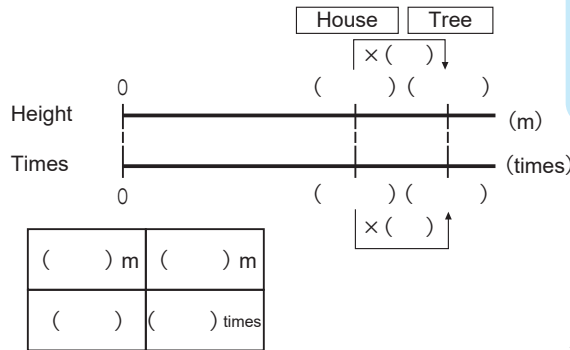$$3 \times \frac{5}{2} = \frac{3 \times 5}{1 \times 2} = \frac{15}{2} \text{ or } 7\frac{1}{2}$$

Answer　$\frac{15}{2}$ m or $7\frac{1}{2}$ m

Even when fractions are involved, we use multiplication to find out the amount to be compared.  A formula is: (a base amount) × (how many times as much)

**1**　The tree in front of my house is $\frac{4}{3}$ times taller than my house.  If my house is $9$ m tall, how tall is the tree?
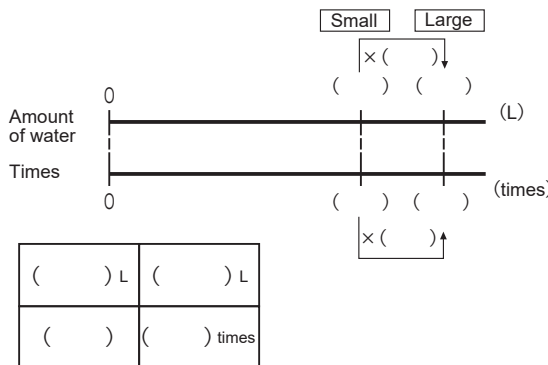
Complete the number line diagrams and tables.

Math sentence

House　　Tree

$\times ( \quad )$

Height (m)
Times (times)

$( \quad ) ( \quad )$
$( \quad ) ( \quad )$

$\times ( \quad )$

| ( ) m | ( ) m |
|---|---|
| ( ) | ( ) times |

Answer _____

**2**　A small water tank holds $50$ L of water.  A bigger water tank holds $\frac{6}{5}$ times as much water as the small tank.  How much water can the bigger water tank hold?
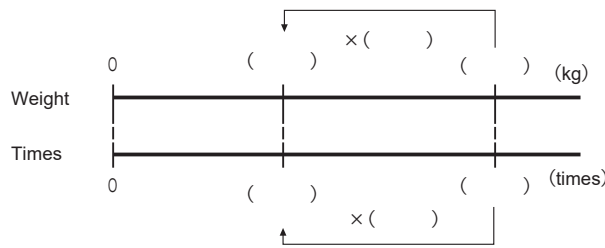
Math sentence

Small　　Large

$\times ( \quad )$

Amount of water (L)
Times (times)

$( \quad ) ( \quad )$
$( \quad ) ( \quad )$

$\times ( \quad )$

| ( ) L | ( ) L |
|---|---|
| ( ) | ( ) times |

Answer _____

**2** Answer the following questions.

> Complete the number line diagrams and tables.

**1** What is $\frac{3}{7}$ of 35 kg?

Math sentence

×( )

( ) ( ) (kg)

0

Weight

Times

0 ( ) ( ) (times)

×( )

| ( ) kg | ( ) kg |
|---|---|
| ( ) times | ( ) |

Answer _____

**2** What is $\frac{9}{4}$ of 20 L?

Math sentence

×( )

( ) ( ) (L)

0

Amount

Times

0 ( ) ( ) (times)

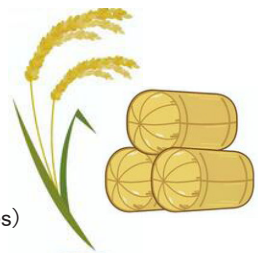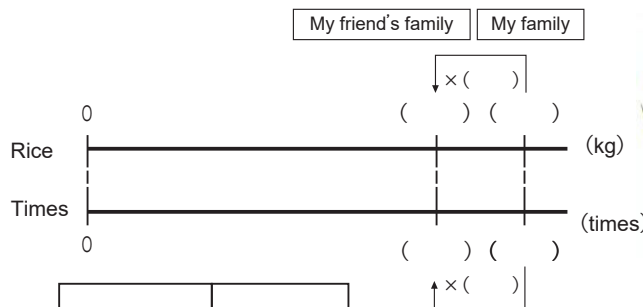×( )
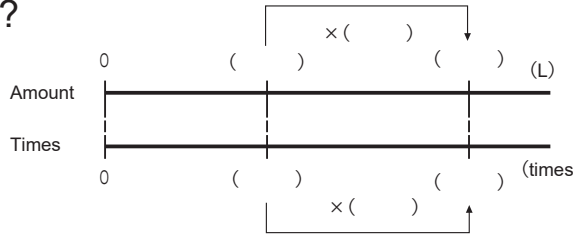
| ( ) L | ( ) L |
|---|---|
| ( ) | ( ) times |

Answer _____

**3** My family consumes 25 kg of rice every month. My friend's family consumes $\frac{4}{5}$ as much. How much rice does my friend's family consume every month?
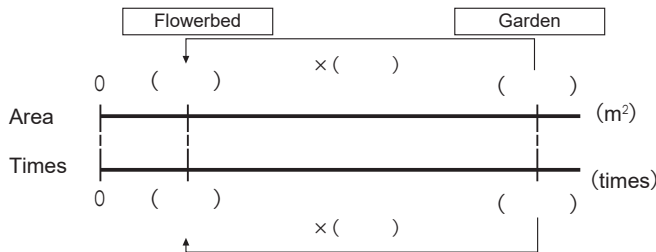
Math sentence

My friend's family | My family

×( )

0 ( ) ( )

Rice (kg)

Times (times)

0 ( ) ( )

×( )

| ( ) kg | ( ) kg |
|---|---|
| ( ) times | ( ) |

Answer _____

**4** The garden has an area of 240 m². The flowerbed's area is $\frac{3}{16}$ of the garden. What is the area of the flowerbed?

Flowerbed | Garden

×( )

0 ( ) ( )

Area (m²)

Times (times)

0 ( ) ( )
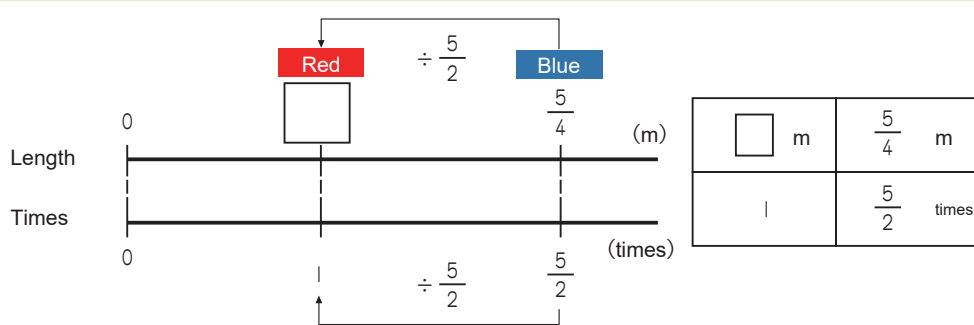
×( )

Math sentence

| ( ) m² | ( ) m² |
|---|---|
| ( ) times | ( ) |

Answer _____

61

# 5 – 17 Times as Much with Fractions (3)

**Example** A blue ribbon is $\frac{5}{2}$ times longer than the red ribbon. If the blue ribbon is $\frac{5}{4}$ m, how long is the red ribbon?

Red ÷ $\frac{5}{2}$ Blue

|  | m | $\frac{5}{4}$ | m |
|---|---|---|---|
| | l | $\frac{5}{2}$ | times |

0    $\frac{5}{4}$ (m)

Length

Times

0    l    $\frac{5}{2}$ (times)

÷ $\frac{5}{2}$

Sometimes the word problem can be easier to understand if we use a whole number. If the blue ribbon is 5 times longer, then divide $\frac{5}{4}$ (m) by 5.

**Math sentence**

$$\frac{5}{4} \div \frac{5}{2} = \frac{\overset{1}{\cancel{5}}}{\underset{2}{\cancel{4}}} \times \frac{\overset{1}{\cancel{2}}}{\cancel{5}} = \frac{1}{2}$$
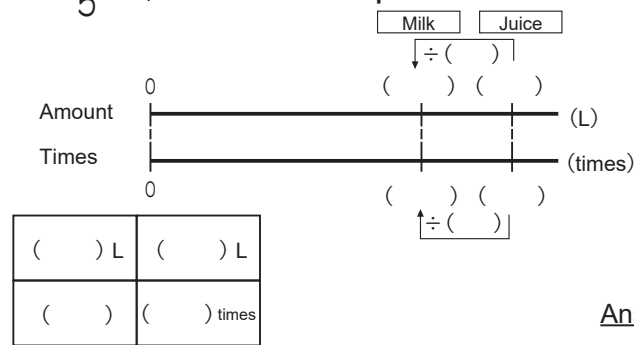
Answer   $\frac{1}{2}$ m

Even when fractions are involved, we use division to find out the amount to be a base. A formula is: (amount to be compared) ÷ (how many times as much)

**1** A juice bottle can hold $\frac{4}{3}$ times more liquid than a milk bottle. If the juice bottle can hold $\frac{6}{5}$ L, how much liquid can a milk bottle hold?
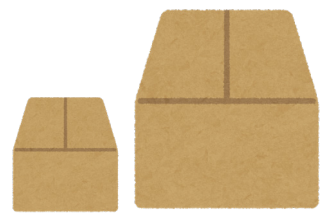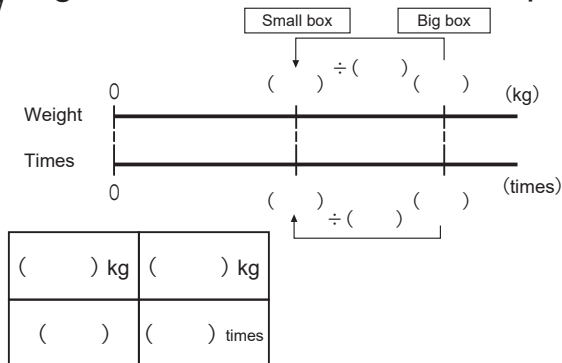
**Math sentence**

Milk   Juice

÷ ( )

0   ( ) ( )

Amount     (L)

Times     (times)

0   ( ) ( )

÷ ( )

| ( ) L | ( ) L |
|---|---|
| ( ) | ( ) times |

Complete the number line diagrams and tables.

Answer    _____

**2** A big package is $\frac{5}{3}$ times heavier than a small package. If the big package weighs $\frac{8}{9}$ kg, how much does the small package weigh?
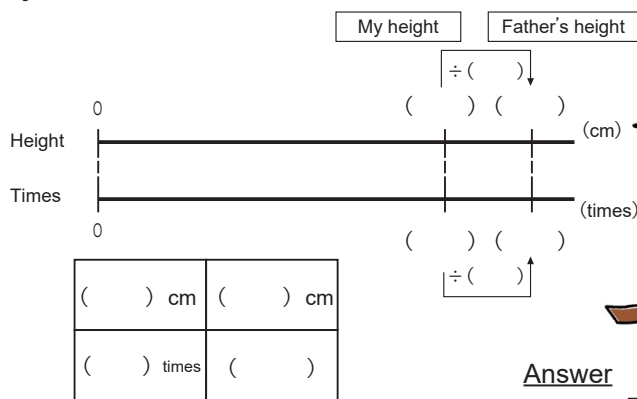
**Math sentence**

Small box   Big box

( ) ÷ ( ) ( )

0    (kg)

Weight

Times    (times)

0   ( ) ( )

÷ ( )

| ( ) kg | ( ) kg |
|---|---|
| ( ) | ( ) times |

Answer    _____

**3** I am $\frac{4}{5}$ as tall as my father.  If I am 140 cm tall, how tall is my father?

Math sentence

My height   Father's height

$\div$ (　　)

(　　) (　　) (cm)

0
Height

Times

0

(　　) (　　) (times)

$\div$ (　　)

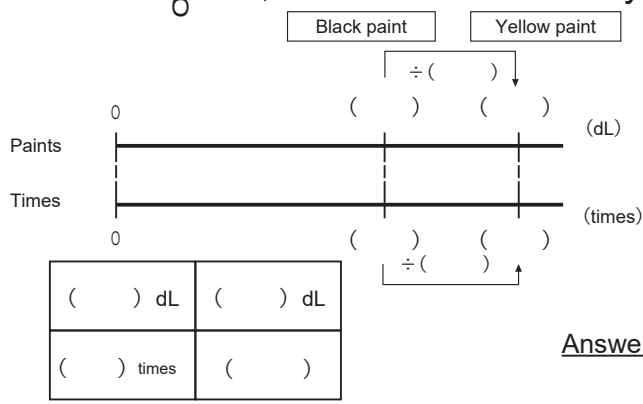| (　　) cm | (　　) cm |
|---|---|
| (　　) times | (　　) |

Complete the number line diagrams and tables.

Answer _____

**4** The can of black paint holds $\frac{2}{3}$ as much as the can of yellow paint.  If the can of black paint holds $\frac{25}{6}$ dL, how much does the yellow paint can hold?
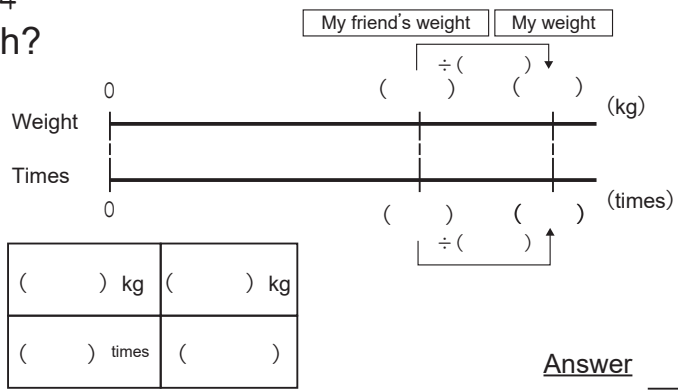
Math sentence

Black paint   Yellow paint

$\div$ (　　)

(　　) (　　) (dL)

0
Paints

Times

0

(　　) (　　) (times)

$\div$ (　　)

| (　　) dL | (　　) dL |
|---|---|
| (　　) times | (　　) |

Answer _____

**5** My classmate is $\frac{3}{4}$ as heavy as mine.  If my classmate weighs 42 kg, How much do I weigh?

Math sentence

My friend's weight   My weight

$\div$ (　　)

(　　) (　　) (kg)

0
Weight

Times

0

(　　) (　　) (times)

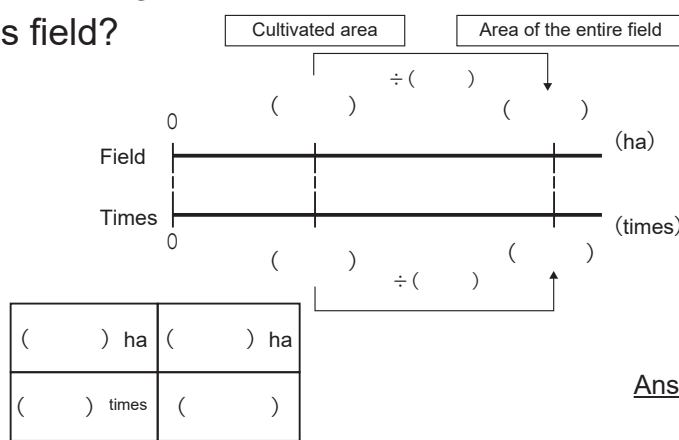$\div$ (　　)

| (　　) kg | (　　) kg |
|---|---|
| (　　) times | (　　) |

Answer _____

**6** A farmer cultivated $\frac{3}{8}$ of his field.  If the farmer cultivated $\frac{1}{6}$ ha, what is the size of his field?

Math sentence

Cultivated area   Area of the entire field

$\div$ (　　)

(　　) (　　)

0
Field

Times

0

(　　) (　　) (ha)

(　　) (times)

$\div$ (　　)

| (　　) ha | (　　) ha |
|---|---|
| (　　) times | (　　) |

Answer _____
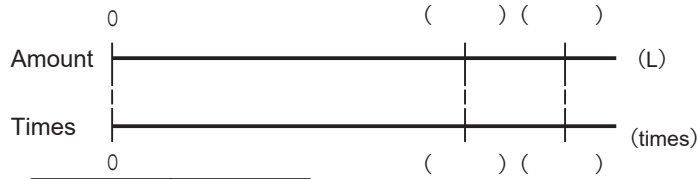
63

# 5 – 18 Review (2)

**1** Calculate the following.

① 2 times of $\frac{3}{7}$ m ▢ m

② $\frac{6}{5}$ times of $\frac{3}{4}$ m ▢ m

③ $\frac{2}{3}$ times of $\frac{9}{8}$ m ▢ m

④ $\frac{16}{15}$ times of $\frac{5}{8}$ m ▢ m

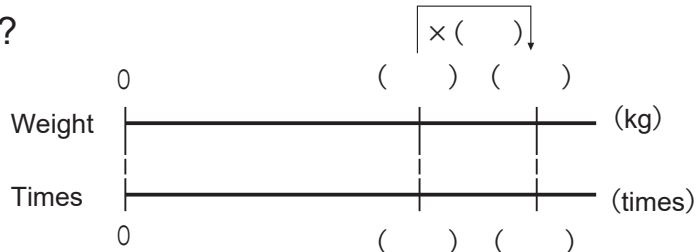**2** How many times more L is $\frac{13}{15}$ L than $\frac{4}{5}$ L?

Math sentence

```
        0                    (   ) (   )
Amount  ├──────────────────┼────┼──┤  (L)
Times   ├──────────────────┼────┼──┤  (times)
        0                    (   ) (   )
```

| (   ) L | (   ) L |
|---------|---------|
| (   )   | (   ) times |

Complete the number line diagrams and tables.

Answer _____

**3** What is $\frac{7}{5}$ of 20 kg?

Math sentence

```
                    × (    )
        0         (   ) (   )
Weight  ├─────────┼─────┼────┤ (kg)
Times   ├─────────┼─────┼────┤ (times)
        0         (   ) (   )
                    × (    )
```
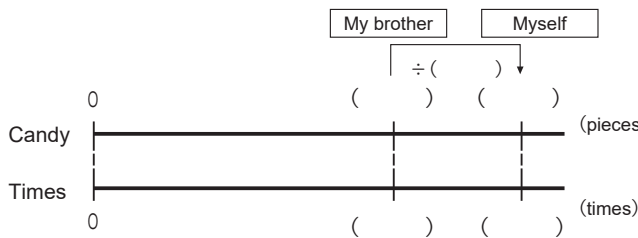
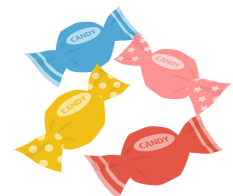| (   ) kg | (   ) kg |
|----------|----------|
| (   )    | (   ) times |

Answer _____

**4** My brother has $\frac{3}{4}$ as many pieces of candy as I have.  If my brother has 12 pieces of candy, how many do I have?

Math sentence

```
          My brother    Myself
                ÷ (    )
        0     (    ) (    )
Candy   ├─────┼──────┼────┤ (pieces)
Times   ├─────┼──────┼────┤ (times)
        0     (    ) (    )
                ÷ (    )
```

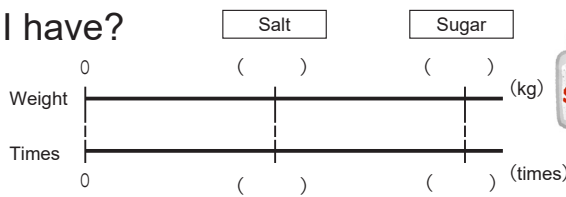| (   ) pieces | (   ) pieces |
|--------------|--------------|
| (   ) times  | (   )        |

Answer _____

**5** I have $\frac{8}{5}$ kg of sugar and $\frac{3}{4}$ kg of salt. How many times more kg of sugar than salt do I have?
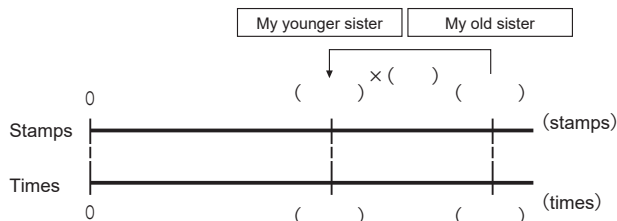
Math sentence

| Salt | Sugar |
|------|-------|
| ( ) | ( ) |

Weight ——————————————— (kg)

Times ——————————————— (times)

0 ( ) ( )

| ( ) kg | ( ) kg |
|--------|--------|
| ( ) | ( ) times |

Answer _____

**6** My younger sister has $\frac{3}{5}$ as many as stamps as my older sister. If my older sister has $75$ stamps, how many stamps does my younger sister have?
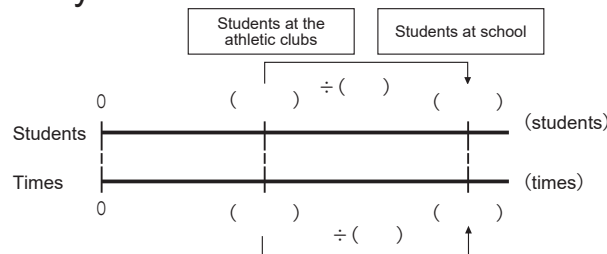
Math sentence

| My younger sister | My old sister |
|-------------------|---------------|
| ( ) × ( ) | ( ) |

Stamps ——————————————— (stamps)

Times ——————————————— (times)

0 ( ) ( )

× ( )

| ( ) stamps | ( ) stamps |
|------------|------------|
| ( ) times | ( ) |

Answer _____

**7** $\frac{4}{9}$ of the students at school participate in athletic clubs. If $100$ students in athletic clubs, how many students are there at school?
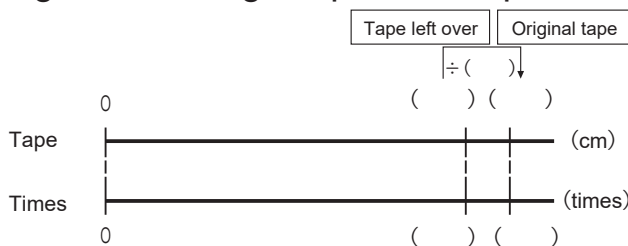
Math sentence

| Students at the athletic clubs | Students at school |
|-------------------------------|--------------------|
| ( ) ÷ ( ) | ( ) |

Students ——————————————— (students)

Times ——————————————— (times)

0 ( ) ( )

÷ ( )

| ( ) students | ( ) students |
|--------------|--------------|
| ( ) times | ( ) |

Answer _____

**8** I used $\frac{1}{9}$ of a piece of tape. The amount of tape left over is $160$ cm long. What was the length of the original piece of tape?

Math sentence

| Tape left over | Original tape |
|----------------|---------------|
| ÷ ( ) | |
| ( ) | ( ) |

Tape ——————————————— (cm)

Times ——————————————— (times)

0 ( ) ( )

÷ ( )

| ( ) cm | ( ) cm |
|--------|--------|
| ( ) times | ( ) |

Answer _____