

Unit

Fractions

8



In this unit, you will learn how to

- Represent quantities less than 1m and quantities less than 1l
- Read and write fractions minor than the unit with a denominator less than or equal to 10
- Locate quantities minor than the unit on the number line.
- Compare fractions

1.1 The meter (fractions)

Analyze

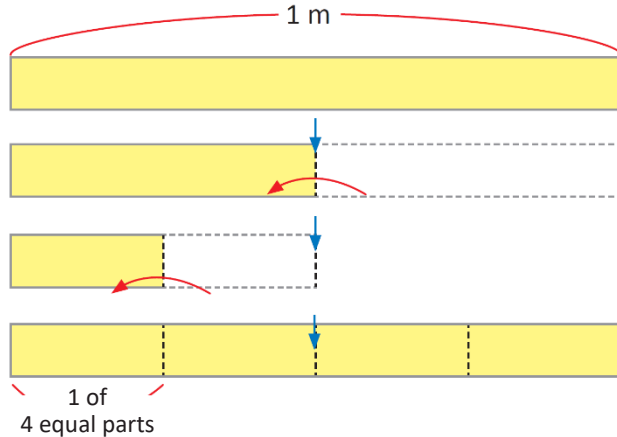
In the Arts class, Carmen folds in 4 equal parts, a piece of cardboard of 1 m. How can you express the measurement of each part?

Solution



Carmen

I fold 1 m. of cardboard into 4 equal parts.



Each one of the parts is formed by folding the meter is written " $\frac{1}{4}$ " m, and it reads as: "a quarter of a meter."

A: $\frac{1}{4}$ m

Understanding

When 1 m is divided into equal parts

Each part is written as $\frac{1}{\text{orange square}}$ m.

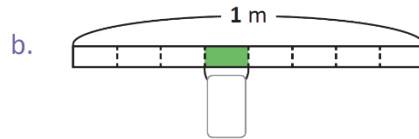
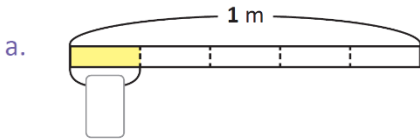
It reads as:

$\frac{1}{2}$ → One-half	$\frac{1}{7}$ → One-seventh
$\frac{1}{3}$ → One-third	$\frac{1}{8}$ → One-eighth
$\frac{1}{4}$ → One-fourth	$\frac{1}{9}$ → One-ninth
$\frac{1}{5}$ → One-fifth	$\frac{1}{10}$ → One-tenth
$\frac{1}{6}$ → One-sixth	

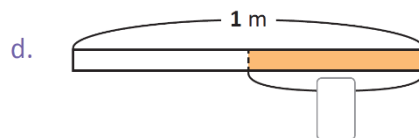
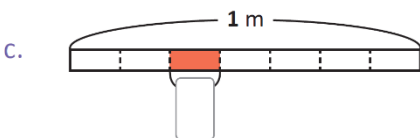


Solve

1. Please, write how many meters the shaded area represents and how it is read.



Notice into how many parts the meter has been divided.



2. Write the length of each part of 1m by dividing it into:

a. Nine equal parts.

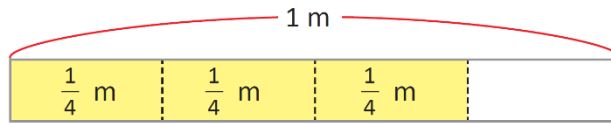
b. Six equal parts.

c. Ten equal parts.

1.2 Fractions less than 1 (Proper fractions)

Analyze

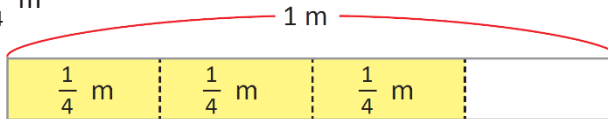
From the 1m piece of cardboard folded into four equal parts, Carmen takes three of those parts. How many times does $\frac{1}{4}$ m?



Solution



There are three times $\frac{1}{4}$ m



Understanding

The length of three times $\frac{1}{4}$ m it is written $\frac{3}{4}$ m and it is read as: "Three-quarters of a meter".

The numbers such as $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{3}$, are called **fractions**.

To write a fraction, $\frac{\triangle}{\square}$ it { \triangle is \square equal parts

The numbers 1,2,3, ..., Etc. are called natural numbers.

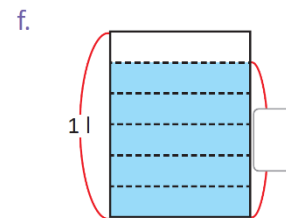
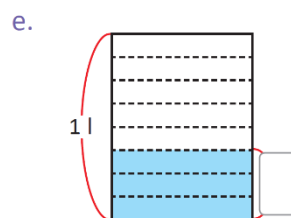
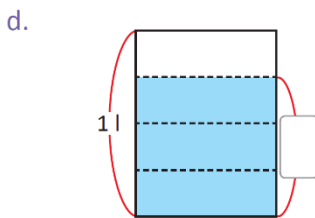
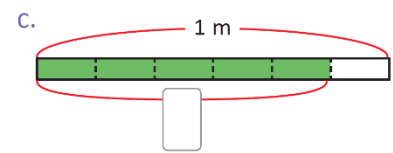
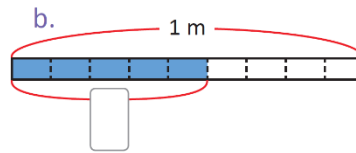
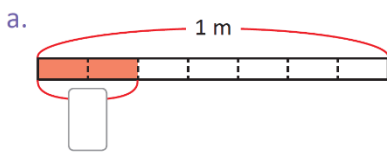


To read a fraction; first, read the number on top and then the bottom number as learned in the previous lesson.

For example; $\frac{2}{3}$ m reads two-thirds of a meter, $\frac{4}{7}$ m four-sevenths of a meter, Etc.

Solve

1. Write how many meters or liters the shaded part represents.



2. Read the following fractions:

a. $\frac{2}{3}$ m

b. $\frac{4}{5}$ m

c. $\frac{5}{6}$ m

d. $\frac{2}{7}$ m

e. $\frac{5}{7}$ m

f. $\frac{3}{8}$ m

g. $\frac{7}{8}$ m

h. $\frac{4}{9}$ m

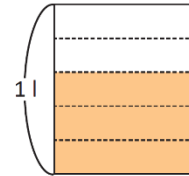
i. $\frac{9}{10}$ m

j. $\frac{3}{4}$ m

2.1 Fraction numerator and denominator

Analyze

How much of the liter represents three of five equal parts, in which the liter was divided? Please write it down as a fraction and explain what the top and bottom numbers represent.



Solution

The liter is divided into five equal parts and three are taken



$$\frac{3}{5} \text{ l}$$

$\frac{3}{5}$ | It is read as: "Three-fifths of a liter"



The top value means the number of parts taken.

The bottom value means the number of equal parts into which the liter was divided.

Understanding

The top and bottom numbers of the fractions have their names:

$$\frac{3}{5}$$

→ **Numerator**

Indicates how many parts are taken from the divided unit.

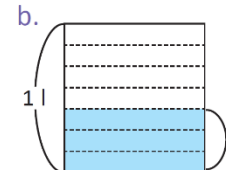
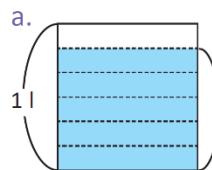
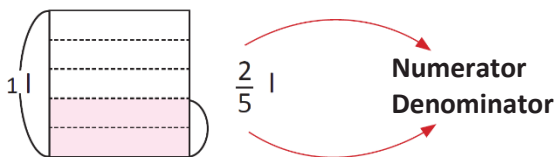
→ **Denominator**

Indicates how many parts the unit was divided.

Solution

1. Write the liters represented. Write what the numerator and denominator are.

Example:



2. Write the following fractions:

a. Denominator is 10 and numerator is 3.

b. Denominator is 4 and numerator is 1.

3. Read the following fractions:

a. $\frac{1}{2}$ l

b. $\frac{3}{4}$ l

c. $\frac{4}{5}$ l

d. $\frac{1}{6}$ l

e. $\frac{6}{7}$ l

f. $\frac{5}{8}$ l

g. $\frac{8}{9}$ l

h. $\frac{9}{10}$ l

★ Self-challenge

Write the following fractions:

a. Two-thirds

b. Two-fifths

c. Five-sixths

d. Four-sevenths

e. Three-eighths

f. Seven-ninths

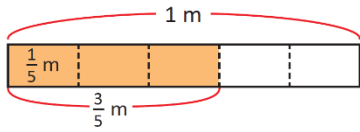
g. One-tenths

h. Three-quarters

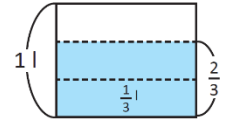
2.2 Representing Fractions

Analyze

a. How many times does $\frac{1}{5}$ m fit into $\frac{3}{5}$ m?



b. How many times does $\frac{1}{3}$ l fit into $\frac{2}{3}$ l?

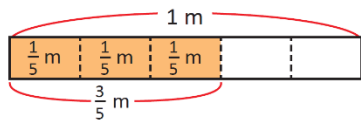


Solution

a.



Ana



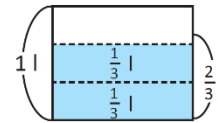
Three times $\frac{1}{5}$ m is $\frac{3}{5}$ m

A: Three times

b.



Anthony



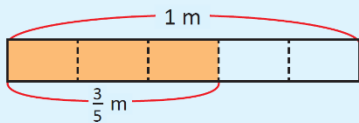
Two times $\frac{1}{3}$ l is $\frac{2}{3}$ l

A: Two times.

Understanding

If you there are \triangle times \square it forms \triangle

Examples: If there are $\triangle 3$ times $\square \frac{1}{5}$ m it forms $\triangle \frac{3}{5}$ m



In $\frac{3}{5}$ m it fits three times $\frac{1}{5}$ m

If there are $\triangle 2$ times $\square \frac{1}{3}$ l it forms $\triangle \frac{2}{3}$ l

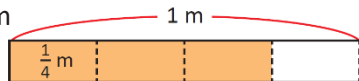


In $\frac{2}{3}$ l it fits two times $\frac{1}{3}$ l

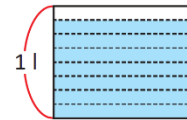
Solve

1. Write how many times it fits:

a. $\frac{1}{4}$ m into $\frac{3}{4}$ m



b. $\frac{1}{8}$ l into $\frac{7}{8}$ l



c. $\frac{1}{9}$ m into $\frac{8}{9}$ m

d. $\frac{1}{6}$ l into $\frac{5}{6}$ l

2. Write the fraction that forms:

a. Three times $\frac{1}{5}$ m

b. Four times $\frac{1}{7}$ m

c. Two times $\frac{1}{7}$ l

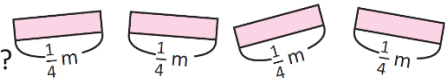
d. Seven times $\frac{1}{10}$ l

2.3 Representing unit fractions

Analyze

Mary has 4 pieces of tape, and each one measures $\frac{1}{4}$ m

How many meters does it have when putting the pieces together?



Solution

The denominator of $\frac{1}{4}$ m indicates that the meter was divided into 4 parts.



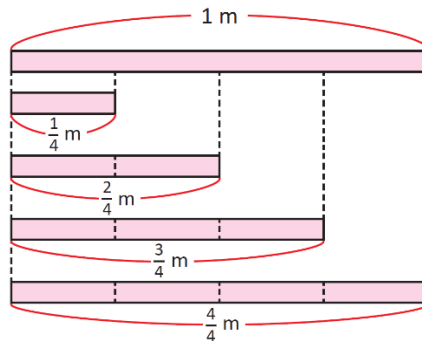
Joseph

One time $\frac{1}{4}$ m is $\frac{1}{4}$ m

Two times $\frac{1}{4}$ m is $\frac{2}{4}$ m

Three times $\frac{1}{4}$ m is $\frac{3}{4}$ m

Four times $\frac{1}{4}$ m is $\frac{4}{4}$ m



A: $\frac{4}{4}$ m is equivalent to 1 m.

Understanding

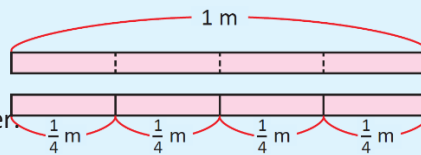
If the numerator and denominator are equal, the fraction equals the entire unit (1)

Example:

1 m was divided into 4 equal parts.

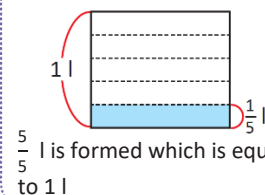
All the parts were taken and put together

Then $\frac{4}{4}$ m is equivalent to 1 m.



What if ?

What if there are 5 times $\frac{1}{5}$ l ?



$\frac{5}{5}$ l is formed which is equivalent to 1 l

Solve

1. Write how many meter or liters are formed if there are:

a. Five times $\frac{1}{5}$ m

b. Seven times $\frac{1}{7}$ m

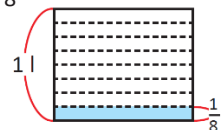
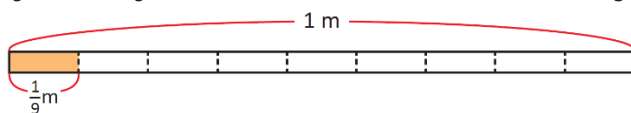
c. Six times en $\frac{1}{6}$ l

d. Three times $\frac{1}{3}$ l

2. Write how many time fits into:

a. $\frac{1}{9}$ m into $\frac{9}{9}$ m

b. $\frac{1}{8}$ l into $\frac{8}{8}$ l



c. $\frac{1}{7}$ m into $\frac{7}{7}$ m

d. $\frac{1}{3}$ l into $\frac{3}{3}$ l

3. Answer:

a. How many times fits $\frac{1}{10}$ m into 1 m?

b. How many times fits $\frac{1}{4}$ l into 1 l?

c. How many times fits $\frac{1}{7}$ m into 1 m?

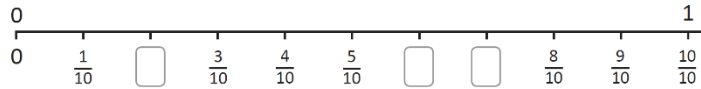
d. How many times fits $\frac{1}{6}$ l into 1 l?

2.4 Fractions on the number line

Analyze

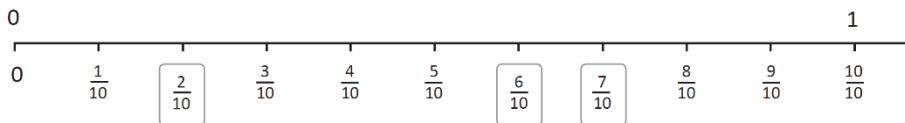
Look at the number line and answer:

- Into how many equal parts are they divided?
- What is the separation between each mark?
- Write the missing fractions.



Solution

- They are divided into ten equal parts.
- $\frac{1}{10}$
- To locate a fraction, count the marks after 0 until reaching the location on the number line; Example.: if there are two marks, it is $\frac{2}{10}$



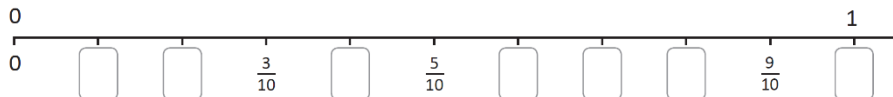
Julia

Understanding

Fractions can be represented on the number line.

Solve

- Write the missing fractions on the number line.



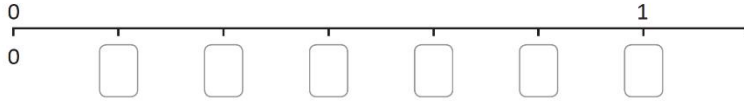
- Respond by looking at the number line:

- How many times $\frac{1}{10}$ fit into $\frac{3}{10}$?
- How many times $\frac{1}{10}$ fit into $\frac{8}{10}$?
- How many times $\frac{1}{10}$ fit into 1?
- What fraction is formed seven times $\frac{1}{10}$?
- What number is formed ten times $\frac{1}{10}$?

3.1 Fractions location on the number line

Analyze

- Find out how many parts one (1) was divided on the following line.
- Write the corresponding fraction in each box.

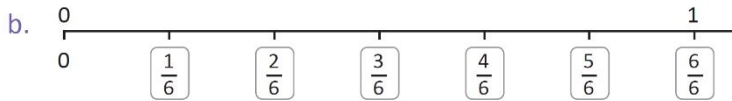


Note: The unit is not always divided into ten (10) equal parts.



Solution

- One (1) has been divided into six (6) equal parts.



Be careful; in the case of fractions, the unit is not always divided into ten (10) equal parts.



Understanding

To determine the fraction according to its location on the number line, do the following:

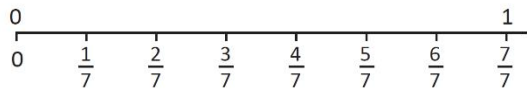
- Determine how many equal parts it has been divided from 0 to 1 because that quantity is the denominator.
- Count the number of marks after 0 to the location of the fraction, and that quantity is the numerator.

What if ?

What fractions are between 0 and 1?

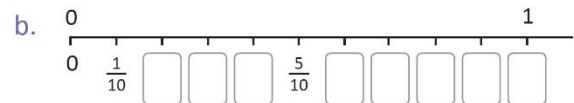
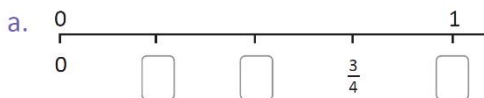


The unit (1) has been divided into 7 equal parts, therefore each part is $\frac{1}{7}$



Solve

- Complete the number line by locating the missing fractions:



- Place the indicated fractions on the number line:



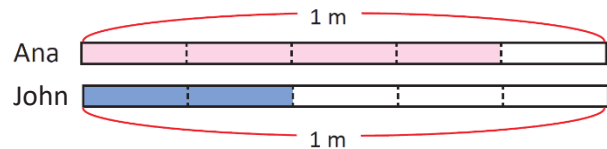
3.2 Comparing fractions with the same denominator

Analyze

Ana has $\frac{4}{5}$ m of the ribbon, and John has $\frac{2}{5}$ m

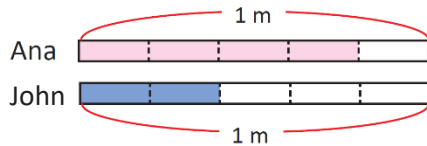
Who has the longest ribbon?

Compare $\frac{4}{5}$ m and $\frac{2}{5}$ m



Solution

Graphic comparison:



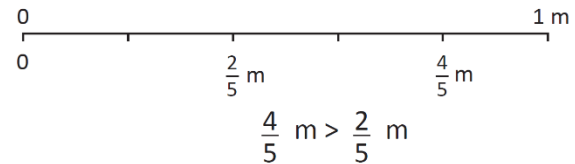
Ana has the longest ribbon.

$$\frac{4}{5} \text{ m} > \frac{2}{5} \text{ m}$$

I can also compare it by using the number line. On the number line, the quantity to the right is greater.



Place it on the number line:



Understanding

To compare fractions using the number line, the fraction to the right is greater.

Hint: While comparing fractions with the same denominator, the fraction with the highest value in the numerator is greater.

$$\frac{7}{10} > \frac{4}{10} \quad (7 > 4) \qquad \frac{4}{9} < \frac{8}{9} \quad (4 < 8)$$

Solve

Complete by placing the sign ">", "<" or "=" between the fractions, as appropriate:

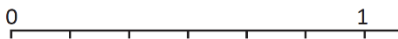
a. $\frac{1}{5}$ $\frac{3}{5}$



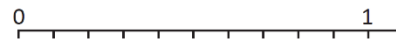
b. $\frac{6}{7}$ $\frac{2}{7}$



c. $\frac{3}{6}$ $\frac{5}{6}$



d. $\frac{5}{10}$ $\frac{3}{10}$



To respond, you can locate the fractions on the number line.



★Self-challenge

Complete, place a fraction with the same denominator as the given fraction that fulfills either "<" or ">" as follows:

a. $\frac{1}{3} <$



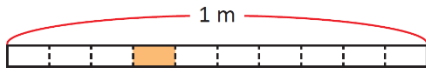
b. $\frac{3}{4} >$



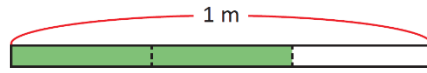
3.3 Practice what you learned

1. Write how many meters the shaded part represents.

a.

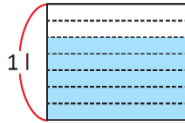


b.

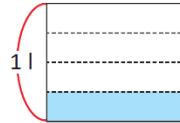


2. Write how many liters the shaded part represents.

a.



b.



3. In the following fractions, into how many parts was the unit divided? How many parts were taken from the unit?

a. $\frac{3}{5}$ m

b. $\frac{4}{5}$ m

c. $\frac{2}{3}$ l

d. $\frac{7}{10}$ l

4. Fill in the number in the box.

a. Four times $\frac{1}{9}$ m is m

b. Five times $\frac{1}{8}$ l is l

c. Three times m is $\frac{3}{4}$ m

d. Two times l is $\frac{2}{3}$ l

e. Ten times $\frac{1}{10}$ m is m

f. Six times $\frac{1}{6}$ l is l

g. times $\frac{1}{7}$ m is $\frac{7}{7}$ m

h. times $\frac{1}{5}$ m is 1 m

5. Write the fractions requested:

a.



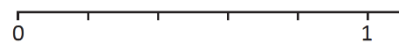
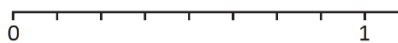
b.



6. Place the "<" or ">" between the fractions as appropriate.

a. $\frac{3}{8}$ $\frac{7}{8}$

b. $\frac{2}{5}$ $\frac{4}{5}$



You can use the number line to answer!

