

Unit 9 : Fractions

Friendly Notes

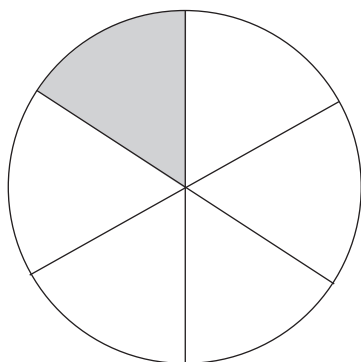
Fraction of a Whole

$$1 \text{ whole} = 2 \text{ halves} = \frac{2}{2}$$

$$1 \text{ whole} = 3 \text{ thirds} = \frac{3}{3}$$

$$1 \text{ whole} = 4 \text{ fourths} = \frac{4}{4}$$

$$1 \text{ whole} = 5 \text{ fifths} = \frac{5}{5}$$



1 out of 6 equal parts is shaded.

$\frac{1}{6}$ of the circle is shaded.

$\frac{1}{6}$ = one-sixth

$\frac{1}{6}$ ← numerator
← denominator

1 whole = 6 sixths

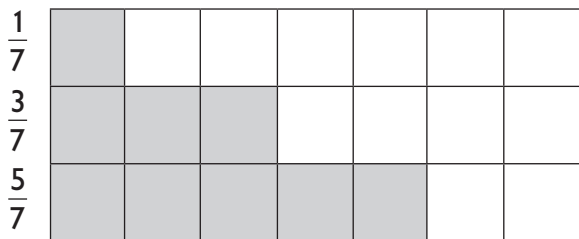
$$= \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$$

$\frac{1}{6}$ and $\frac{5}{6}$ make one whole.



For fractions with a common denominator, the fraction with the greatest numerator is the greatest.

Arrange the fractions in order.
Begin with the smallest.



We compare the size of the shaded parts.



$\frac{5}{7}$ is the greatest.

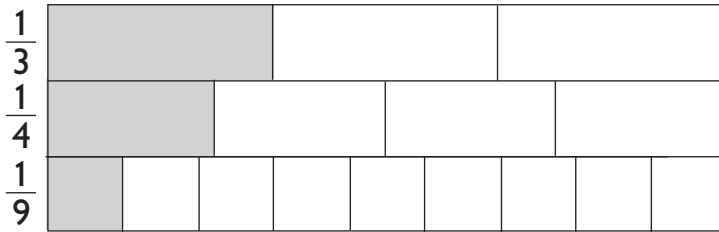
$\frac{1}{7}$ is the smallest.

Arranging the fractions in order beginning with the smallest, we have $\frac{1}{7}, \frac{3}{7}, \frac{5}{7}$.

For fractions with a common numerator, the fraction with the greatest denominator is the smallest.

Arrange the fractions in order.
Begin with the smallest.

We compare the size of the shaded parts.



$\frac{1}{3}$ is the greatest.

$\frac{1}{9}$ is the smallest.

Arranging the fractions in order beginning with the smallest, we have $\frac{1}{9}, \frac{1}{4}, \frac{1}{3}$.

We can represent fractions on number lines

What fraction does each letter represent?

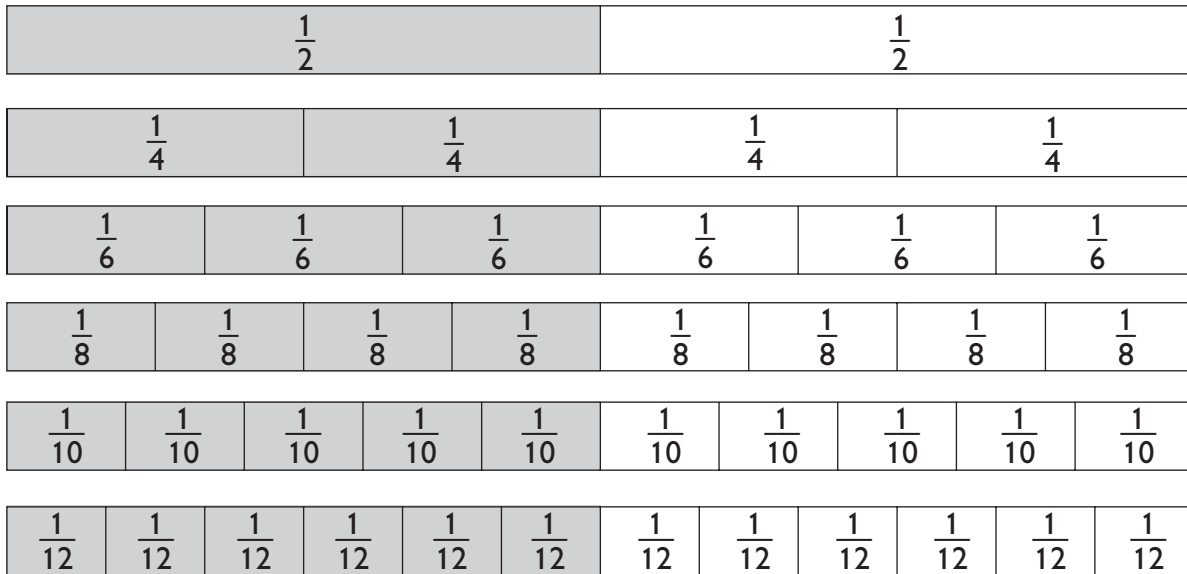


The number line has 5 equal parts.
Each part represents $\frac{1}{5}$.

$$X = \frac{1}{5}, Y = \frac{3}{5}, Z = \frac{4}{5}$$



Equivalent Fractions



From the bars above, we can see that the following fractions are equal.

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$$

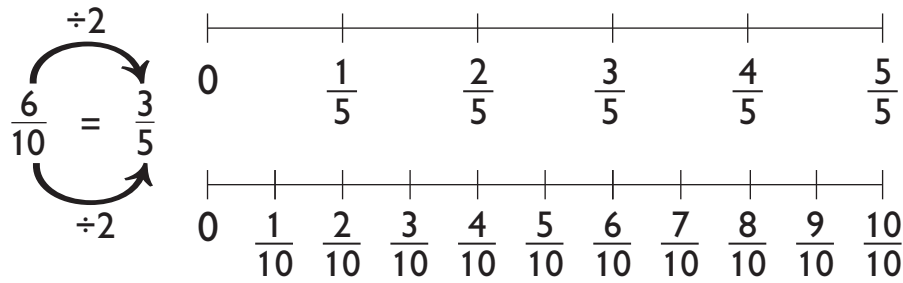
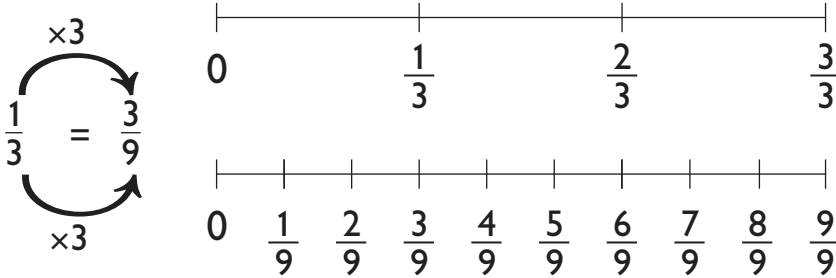
Equivalent fractions have different numerators and denominators. But they are equal in value.

$\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{8}$, $\frac{5}{10}$, and $\frac{6}{12}$ are **equivalent fractions**.



To find an equivalent fraction, we can either multiply or divide the numerator and denominator by the same number.

Find an equivalent fraction of $\frac{1}{3}$ and $\frac{6}{10}$.



We can express a fraction in its simplest form.

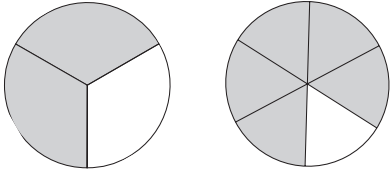
Express $\frac{8}{12}$ in its simplest form.

$$\frac{8}{12} = \frac{4}{6} = \frac{2}{3}$$

$\frac{2}{3}$ is the simplest form of $\frac{8}{12}$.

We can compare related fractions by expressing them in same denominator.

Which is greater, $\frac{2}{3}$ or $\frac{5}{6}$?

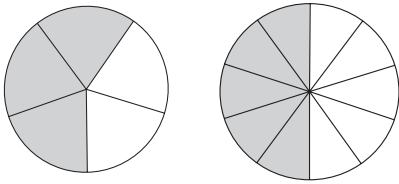


$\frac{5}{6}$ is greater than $\frac{2}{3}$.

$$\frac{2}{3} = \frac{4}{6}$$



Which is smaller, $\frac{3}{5}$ or $\frac{5}{10}$?



$\frac{5}{10}$ is smaller than $\frac{3}{5}$.

$$\frac{3}{5} = \frac{6}{10}$$

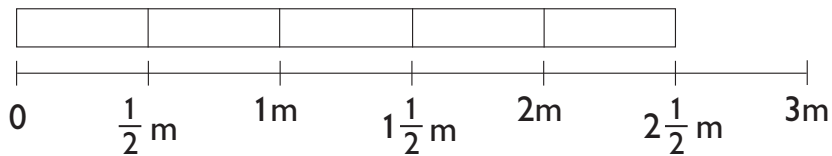


Fractions and Measurement

We can represent different measurement using fractions.

1. A rod is $\frac{1}{2}$ m long.

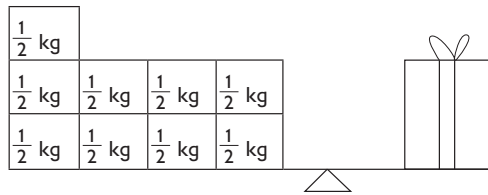
How long are 5 such rods placed end to end?



They are $2\frac{1}{2}$ m long.

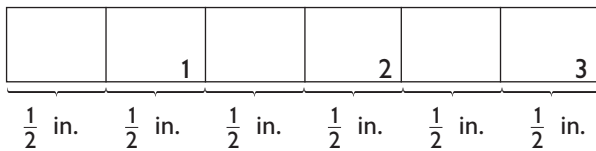
2. Each block has a mass of $\frac{1}{2}$ kg.

What is the mass of the package?



The mass of the package is $4\frac{1}{2}$ kg.

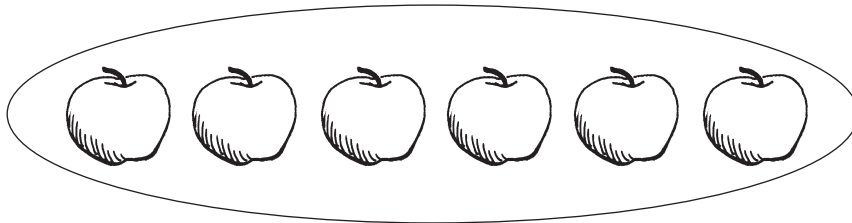
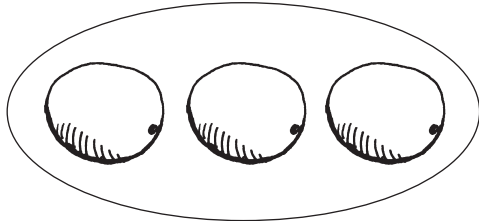
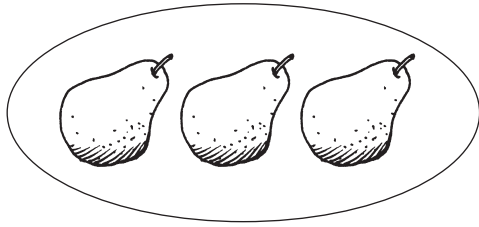
3. How many halves are there in 3 in.?



$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 3$$

There are 6 halves in 3 in.

Fraction of a Set



3 out of 12 fruits are pears.

$\frac{3}{12}$ of the fruits are pears.

$$\frac{3}{12} = \frac{1}{4}$$

3 out of 12 fruits are mangoes.

$\frac{3}{12}$ of the fruits are mangoes.



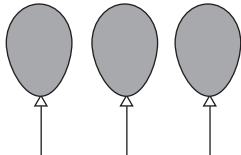
6 out of 12 fruits are apples.

$\frac{6}{12}$ of the fruits are apples.

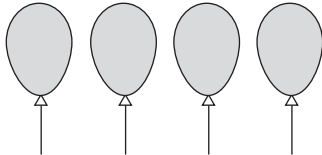
$$\frac{6}{12} = \frac{1}{2}$$



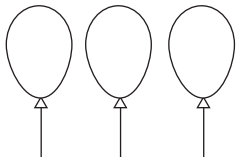
1. There are 10 balloons.
3 of these balloons are red.
4 of these balloons are green.
The remaining balloons are white.
What fraction of the balloons are white?



Red balloons



Green balloons



White balloons

$$10 - 3 - 4 = 3$$

$\frac{3}{10}$ of the balloons are white.

2. Leila has 3 quarters, 5 dimes, 2 nickels, and 2 pennies.



- (a) What fraction of her coins are quarters?
- (b) What fraction of her coins are nickels?
- (c) What fraction of her coins are dimes?

There are 12 coins altogether.

(a) $\frac{3}{12} = \frac{1}{4}$

$\frac{1}{4}$ of her coins are quarters.

(b) $\frac{2}{12} = \frac{1}{6}$

$\frac{1}{6}$ of her coins are nickels.

(c) 5 out of 12 coins are dimes.

$\frac{5}{12}$ of her coins are dimes.