# FRACTIONS

In life, we often come across the need to divide a whole object into smaller parts. For instance,




A is half of the object, mathematically A = ½ of the object.

## Fraction in Words

½ half
⅓ one-third
⅔ two-third
¼ one-quarter
¾ three-quarter
⅕ one-fifth
⅖ two-fifth

| | |
|---|---|
| $\frac{a}{n}$ | a-nth—the naming rule. |

## Equivalent Fractions

$\frac{1}{2}$ 

$\frac{2}{4}$ 

$\frac{3}{6}$ 

$$\frac{1}{4} = \frac{2}{4} = \frac{3}{6}$$

Equivalent fractions are fraction which actually have the same simplest form. For instance, the examples above all have the simplest form half (½).

## Improper Fractions and Mixed Numbers

Fractions in which the numerator is bigger than the denominator are called improper fractions. Examples of these are $\frac{3}{2}$, $\frac{7}{5}$, etc.

Sometimes when we solve problems, we might find a situation whereby we divide a number like 25 by another number like 7. So, 25 ÷ 7 = $\frac{25}{7}$ = $3\frac{4}{7}$. The answer $3\frac{4}{7}$ is an example of a mixed number. In other words, mixed numbers are numbers consisting of a whole number and a [proper] fraction. Examples of mixed numbers are: $2\frac{1}{3}$, 5¾, etc.

For ease of computation, we often have to convert mixed numbers to improper fractions. To convert a mixed number to an improper fraction.

1. Separate the whole number part from the fraction part.
2. Then write the two parts as fractions, with common denominator and then add.

For instance: $3\frac{4}{5} = \frac{15}{5} + \frac{4}{5} = \frac{19}{5}$

**Alternative Method**

Another method, is to multiply the denominator with the whole number and then add the result to the numerator and put your answer over the denominator. For example: $3\frac{4}{5} = \frac{(3\times5)+4}{5} = \frac{15+4}{5} = \frac{19}{5}$

To convert an improper fraction to a mixed number:

1. Find how many times the denominator will divide into the numerator. This gives the whole part.
2. The remainder gives the fraction part.

For example: $\frac{18}{7} = 2\frac{4}{7}$

**Fractions in Lowest Terms**

Remember that we can obtain equivalent fractions to a given fraction by dividing (or multiplying) the numerator and the denominator by the same whole number. For example, $\frac{45}{135} = \frac{45\div5}{135\div5} = \frac{9}{27} = \frac{9\div3}{27\div3} = \frac{3}{9} = \frac{1}{3}$

We can see from the above that we can still divide the numerator and the denominator of 9/27 by 3 to obtain $\frac{3}{9}$; and even further by 3 to obtain $\frac{1}{3}$. Now it is not possible to divide further than this. In this case we say $\frac{45}{135} = \frac{1}{3}$ in its lowest term or simplest form.

To express a fraction in its simplest term, divide the numerator and the denominator with the same whole number that will divide into both the numerator and the denominator.

**Ordering of Fractions**

Fractions are of different sizes. Ordering of fractions means arranging fractions in an ascending or a descending order relative to their sizes. Ascending order is from the lowest to the highest while descending order is from the highest to the lowest.

The arrangement is done in order to compare fractions to see the one that is the biggest or the smallest in the list.

**Example:**

Arrange the following fractions in ascending order

$\frac{2}{5}, \frac{1}{3}, \frac{3}{7}$

**Solution**

$5 \times 3 \times 7 = 105$

$\frac{2}{5} \times 105 = 42$

$\frac{1}{3} \times 105 = 35$

$\frac{3}{7} \times 105 = 45$

$\frac{1}{3};\ \frac{2}{5};\ \frac{3}{7}$

## Application of Equivalent

Equivalent fractions can be applied in sharing commodities in real life, such as the sharing of food, clothes, etc.

**For example:** A head teacher gets 20 out of every 36 packets of chalk supplied. Find the equivalent number of packets of chalk the head teacher will get out of every 9 packets of chalk.

## Solution

20 —> 36; x —> 9 →

$x = \frac{20 \times 9}{36} = \frac{180}{36} = 5$