

**SUBJECT : MATHEMATICS**  
**CHAPTER NUMBER: 03**  
**CHAPTER NAME : FRACTIONS**

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**CHANGING YOUR TOMORROW**

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## Learning outcomes

Students will be able to

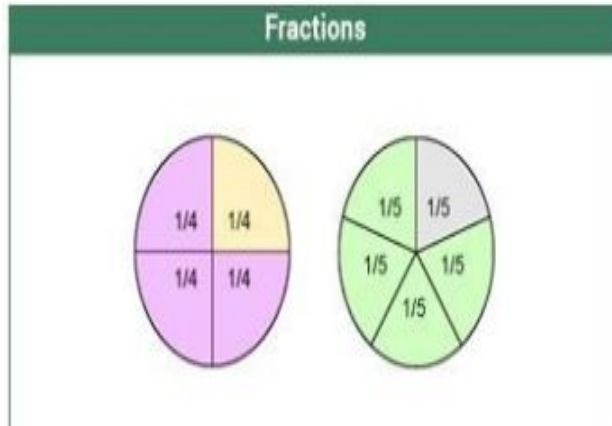
- Identify types of fractions
- Reduce a given fraction to its lowest terms
- Recognize Equivalent Fractions, Simple and Complex fractions
- Denote various situations related to our daily life.



## Introduction: Fractions

The word **fraction** derives from the Latin word “**Fractus**” meaning **broken**. It represents a **part of a whole**, consisting of a number of equal parts out of a whole.

E.g : slices of a pizza.



<https://www.youtube.com/watch?v=zQuUNE50JnM>  
(10.07s)

## Representation of Fractions

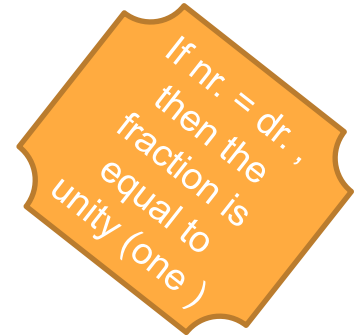
A **fraction** is represented by 2 numbers on top of each other, separated by a line.  
The **number on top is the numerator** and the **number below is the denominator**.

Example :  $\frac{3}{4}$  which basically means 3 parts out of 4 equal divisions.



# CLASSIFICATION OF FRACTIONS

TYPES	CONDITION	EXAMPLES
DECIMAL	Denominator is 10/ higher power of 10	
VULGAR	Denominator is other than 10 , 100, 1000, etc.	
PROPER	Denominator is greater than its numerator	
IMPROPER	Denominator is less than its numerator	
MIXED	Consists of an integer and a proper fraction	



1. Classify each fraction given below as decimal or vulgar fraction, proper or improper fraction and mixed fraction:

(i)  $\frac{3}{5}$

(ii)  $\frac{11}{10}$

(iii)  $\frac{13}{20}$

**Solution:**

(i)  $\frac{3}{5}$  is a vulgar and proper fraction.

(ii)  $\frac{11}{10}$  is a decimal and improper fraction.

(iii)  $\frac{13}{20}$  is a decimal and proper fraction.

(iv)  $\frac{18}{7}$  is a vulgar and improper fraction.

(v)  $3\frac{2}{9}$  is a mixed fraction.

If dr. of a  
fraction is 10  
or higher  
power of 10  
, it is a  
decimal  
fraction

Given mixed fraction =  
$$\frac{\text{integral part} \times \text{denominator} + \text{numerator}}{\text{denominator}}$$

1.The value of a fraction remains the same if both its numerator and denominator are multiplied or divided by the same non zero number.

2.A fraction must always be expressed in its lowest terms.

**2. Express the following improper fractions as mixed fractions:**

(i)  $18/5$

(ii)  $7/4$

(iii)  $25/6$

(iv)  $38/5$

(v)  $22/5$

**Solution:**

(i)  $18/5$  can be expressed as mixed fractions as  $3 \frac{3}{5}$ .

(ii)  $7/4$  can be expressed as mixed fractions as  $1 \frac{3}{4}$ .

(iii)  $25/6$  can be expressed as mixed fractions as  $4 \frac{1}{6}$ .

(iv)  $38/5$  can be expressed as mixed fractions as  $7 \frac{3}{5}$ .

(v)  $22/5$  can be expressed as mixed fractions as  $4 \frac{2}{5}$ .

**3. Express the following mixed fractions as improper fractions:**

**(i)  $2 \frac{4}{9}$**

**(ii)  $7 \frac{5}{13}$**

**(iii)  $3 \frac{1}{4}$**

**(iv)  $2 \frac{5}{48}$**

**(v)  $12 \frac{7}{11}$**

**Solution:**

**(i)  $2 \frac{4}{9}$**

$$= (2 \times 9 + 4) / 9$$

$$= (18 + 4) / 9$$

$$= 22/9$$

**(ii)  $7 \frac{5}{13}$**

$$= (7 \times 13 + 5) / 13$$

$$= (91 + 5) / 13$$

$$= 96/13$$

**(iii)  $3 \frac{1}{4}$**

$$= (3 \times 4 + 1) / 4$$

$$= (12 + 1) / 4$$

$$= 13/4$$



## Reducing a given fraction to its lowest term

**Steps: First of all find H.C.F. of both the nr. & dr. of the given fraction. Then divide both terms by their H.C.F.**

Alternative Method

Resolve both the numerator and denominator into prime factors , then cancel out the common factors among both .

**4. Reduce the given fractions to lowest terms:**

**(i)  $\frac{8}{18}$**

**(ii)  $\frac{27}{36}$**

**(iii)  $\frac{18}{42}$**

**Solution:**

(i)  $\frac{8}{18}$

HCF of 8 and 18 is 2

So by dividing numerator and denominator by 2

$$= (8 \div 2) / (18 \div 2)$$

$$= \frac{4}{9}$$

(ii)  $27/36$

HCF of 27 and 36 is 9

So by dividing numerator and denominator by 9

$$= (27 \div 9) / (36 \div 9)$$

$$= 3/4$$

iii)  $18/42$

HCF of 18 and 42 is 6

So by dividing both numerator and denominator by 6

$$= (18 \div 6) / (42 \div 6)$$

$$= 3/7$$

### 5. State true or false:

(i)  $30/40$  and  $12/16$  are equivalent fractions.

(ii)  $10/25$  and  $25/10$  are equivalent fractions.

(iii)  $35/49$ ,  $20/28$ ,  $45/63$  and  $100/140$  are equivalent fractions.

## 5. Solution:

(i) True.

Here  $30/40 = 3/4$  and  $12/16 = 3/4$

(ii) False.

Here  $10/25 = 2/5$  and  $25/10 = 5/2$

(iii) True.

$35/49 = 5/7$ ,  $20/28 = 5/7$ ,  $45/63 = 5/7$  and  $100/140 = 5/7$  where all are equal.

6. (v)  $-6\frac{2}{5}$  is a complex fraction.  
(vi)  $3\frac{1}{3} \div 7\frac{2}{7}$  is a complex fraction.  
(vii)  $-5\frac{2}{9} \div 5$  is a complex fraction.  
(viii)  $-8/0$  is neither a complex nor a simple fraction.

HOME ASSIGNMENT  
Exercise 3A Q.No.4

$\frac{8}{0}$  is neither a simple nor a complex fraction as  $\div$  by 0 is not defined

**THANKING YOU**  
**ODM EDUCATIONAL GROUP**