CLASS 7

CHAPTER TWO

FRACTIONAS AND DECIMALS

Module 1

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LEARNING OBJECTIVES

The following topics are covered in detail in
Module 1-Recalling Concepts related to Fractions

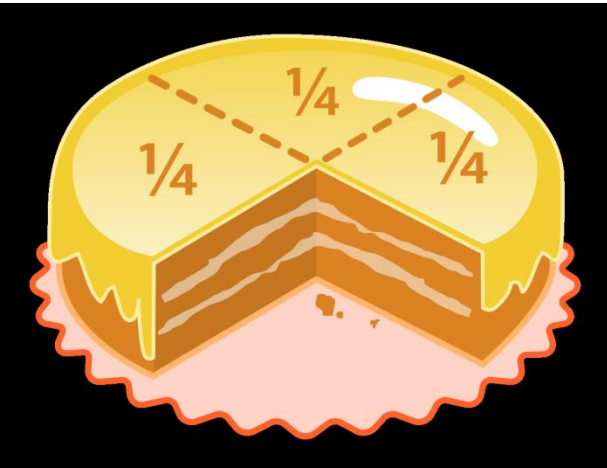| 1	2	3	4	5
• What are Fractions	• Types of Fractions	• Equivalent Fractions	• Addition of Fractions	• Subtraction of Fractions

1. What is a Fraction

- A fraction is a number representing PART of a WHOLE

Looking at this picture we can say $\dfrac{1}{4}$ th of the cake is missing or $\dfrac{3}{4}$ th of the cake is remaining.
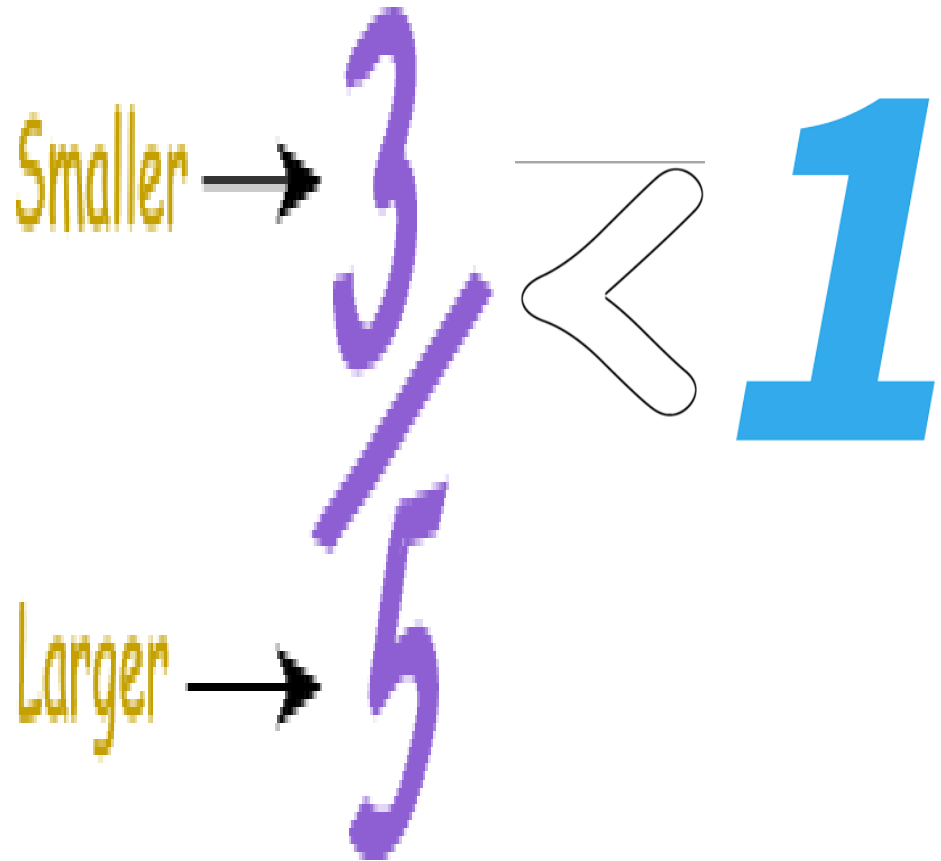
Numerator

(number on the top)

$$\frac{3}{4}$$

Denominator

(number on the bottom)

2. Types of Fraction
PROPER FRACTION

- Fractions less than 1 are proper fractions.

- In a **proper fraction** the denominator shows the number of parts into which the whole is divided and the numerator shows the number of parts we have taken out.

- Therefore, in a proper fraction the *numerator is always less than the denominator*.

Smaller → 3

Larger → 5

$\dfrac{3}{5} < 1$

IMPROPER FRACTION

- The fractions, where the *numerator is bigger than the denominator* are called **improper fractions.**

Larger (or equal) → $\dfrac{9}{5}$ > *1*
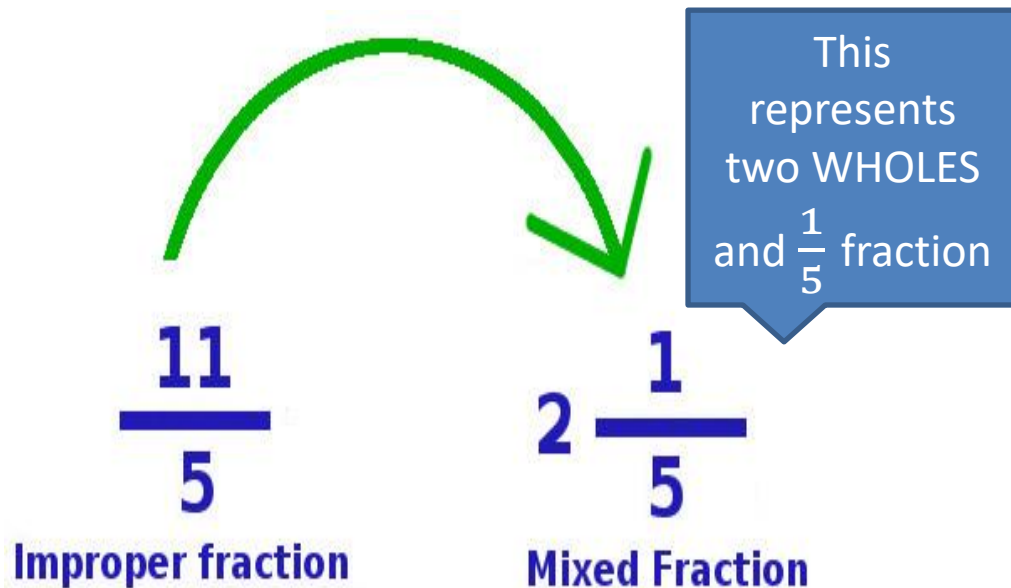
Smaller (or equal) →

MIXED FRACTIONS

- Improper fraction can be written as mixed fraction

$$\frac{11}{5}$$

Improper fraction

$$2\frac{1}{5}$$

Mixed Fraction

This represents two WHOLES and $\frac{1}{5}$ fraction

This is 1 (one)

Each of these is $\frac{1}{4}$ (one-fourth)

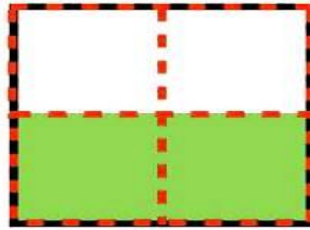It is $1+\frac{1}{4}$ and written in short as $1\frac{1}{4}$. Remember, $1\frac{1}{4}$ is the same as $\frac{5}{4}$.

3.EQUIVALENT FRACTIONS

- Equivalent fractions are numbers which represent the same part of the whole.
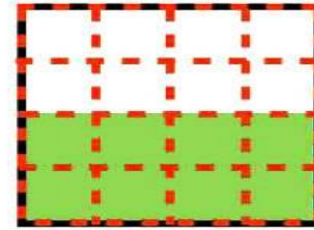

$$\frac{1}{2}$$

$$1 \div 2$$
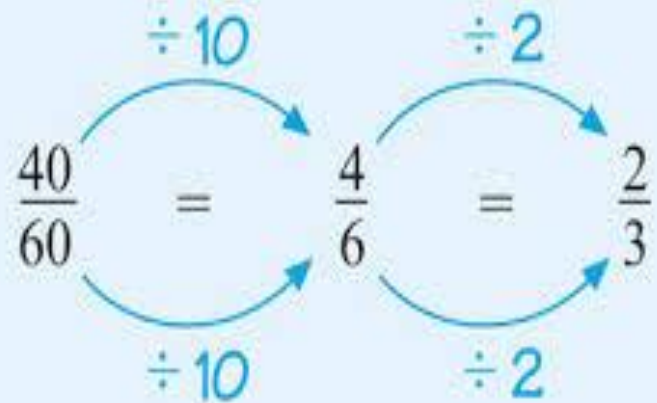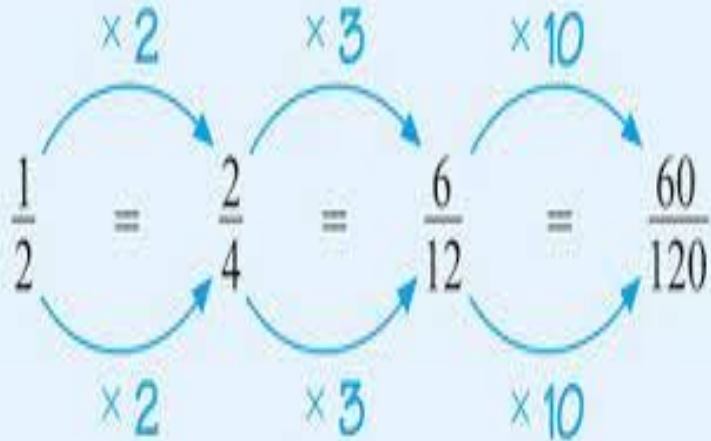$$= 0.5$$

$$\frac{2}{4}$$

$$2 \div 4$$
$$= 0.5$$

$$\frac{8}{16}$$

$$8 \div 16$$
$$= 0.5$$

- To find an equivalent fraction of a given fraction, you may **multiply** both the numerator and the denominator of the given fraction by the same number

- To find an equivalent fraction, we may **divide** both the numerator and the denominator by the same number.

$$\frac{1}{2} = \frac{2}{4} = \frac{6}{12} = \frac{60}{120}$$

$\times 2 \quad \times 3 \quad \times 10$ (top)

$\times 2 \quad \times 3 \quad \times 10$ (bottom)

$$\frac{40}{60} = \frac{4}{6} = \frac{2}{3}$$

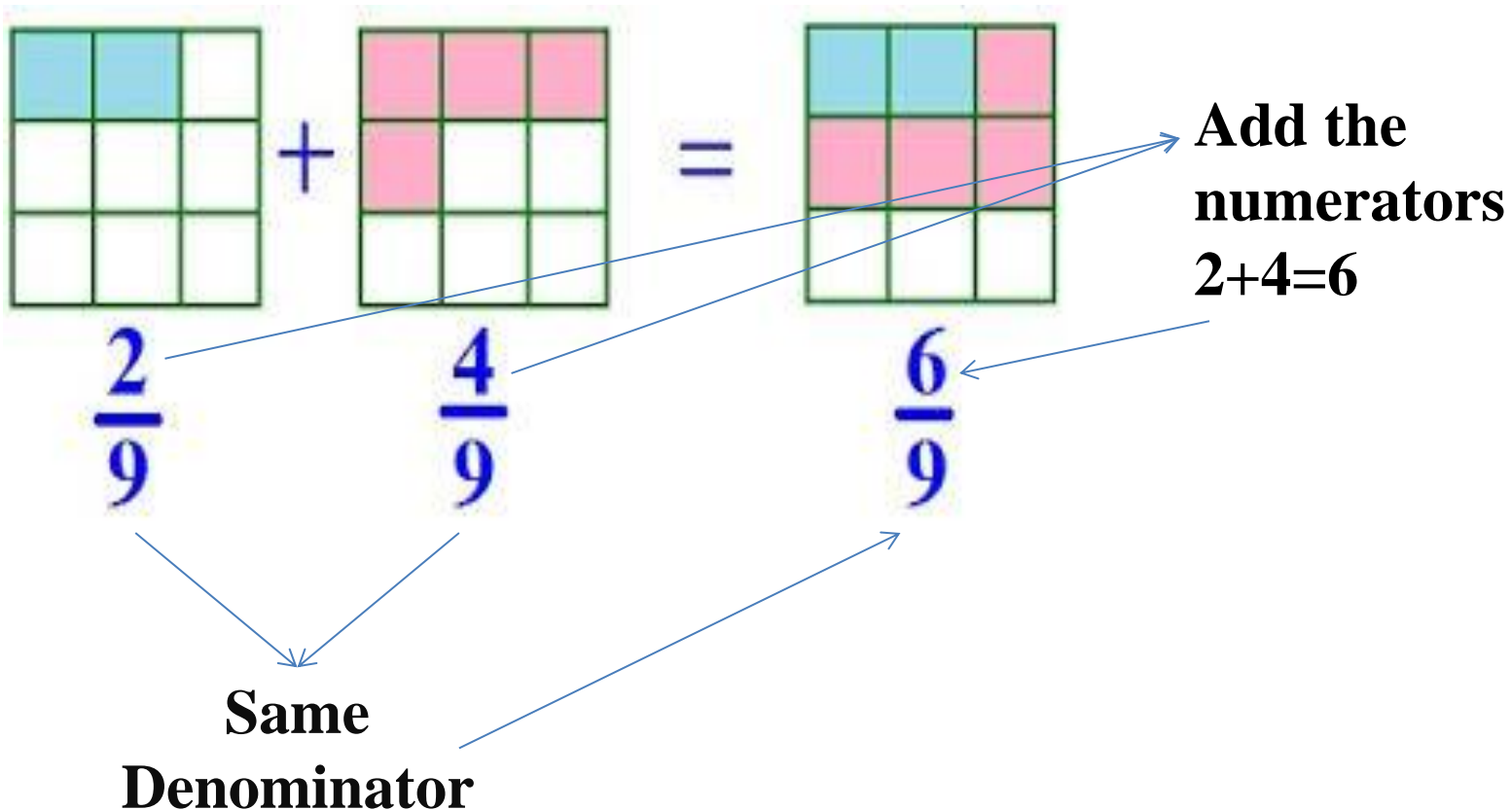$\div 10 \quad \div 2$ (top)

$\div 10 \quad \div 2$ (bottom)

4.Addition of Fractions

This topic is covered in following parts

- Addition of like fractions

- Addition of unlike fractions

- Addition of a fraction and a whole number

- Addition of mixed fractions

ADDING LIKE FRACTIONS

*HINT: Fractions with **same denominators** are called **like fractions***

$$\frac{2}{9} + \frac{4}{9} = \frac{6}{9}$$

Add the numerators 2+4=6

Same Denominator

ADDING UNLIKE FRACTIONS

HINT: Fractions which *do not have the same denominators* *are called <u>unlike fractions.</u>*

To add two unlike fractions,

1. Convert the fractions into **<u>EQUVALENT FRACTIONS</u>** with same denominator

2. Now that we have arrived at like fractions, add them as explained in the previous slide.

$$\frac{3}{8} + \frac{12}{7} = \frac{3}{8} \times \frac{7}{7} +$$

$$\frac{12}{7} \times \frac{8}{8} = \frac{21}{56} + \frac{96}{56} = \frac{21+96}{56} = \frac{117}{56}$$

ADDING WHOLE NUMBER TO A FRACTIONS

1. A whole number can be written as a fraction with denominator one

   eg. 2 can be written as $\frac{2}{1}$

2. After this the problem reduces to adding two unlike fractions as discussed in the previous slide

$$4 + \frac{8}{5} = \frac{4}{1} + \frac{8}{5} = \frac{20}{5} + \frac{8}{5} = \frac{28}{5}$$

NOTE: Adding a whole number to a fraction is same as adding a fraction to a whole number

Adding Mixed Fractions

To add Mixed Fractions

1. Convert the mixed fractions to improper fractions

2. Proceed addition by following the method to add two unlike fractions

$$9\frac{1}{2} + 5\frac{3}{4}$$

$$= \frac{19}{2} + \frac{23}{4}$$ Change to improper fractions

$$= \frac{19}{2}\frac{\times 2}{\times 2} + \frac{23}{4}$$ Change to common denominators

$$= \frac{38}{4} + \frac{23}{4}$$

$$= \frac{61}{4}$$ Add the numerators

$$= 15\frac{1}{4}$$ Change back to mixed number

5.SUBTRACTION OF FRACTIONS

This topic is covered in following parts

- Subtraction of like fractions

- Subtraction of unlike fractions

- Subtraction of a fraction from a whole number and vice versa

- Subtraction of mixed fractions

- All topics in subtraction are similar to topics in addition. Let us learn through some examples.

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

$$\frac{7}{8} - \frac{3}{4}$$

$$\frac{3 \times 2}{4 \times 2} = \frac{6}{8}$$
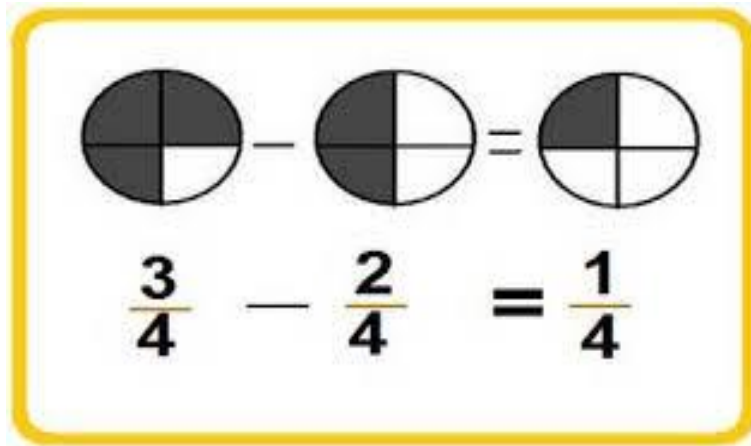
$$\frac{7}{8} - \frac{6}{8} = \frac{1}{8}$$

Subtracting like fraction from another like fraction

Subtracting unlike fraction from another unlike fraction

Subtracting a fraction from a whole number

$$13 - 1\frac{1}{3}$$

$$= \frac{13}{1} - \frac{4}{3}$$

Convert mixed numbers into improper fractions

$$= \frac{39 - 4}{3}$$

LCM of 1 and 3 is 3

$$= \frac{35}{3}$$

$$= 11\frac{2}{3}$$

Subtracting a Whole number from a fraction

Find the Difference:

$$\frac{3}{2} - 9$$

Step 1) $= \frac{3}{2} - \frac{9}{1}$

Fancy form of 1

Step 2) $= \frac{3}{2} - \frac{9}{1} \cdot \frac{2}{2}$

LCD = 2

$= \frac{3}{2} - \frac{18}{2} = -\frac{15}{2}$

SUBTRACTION OF A MIXED NUMBER FROM A MIXED NUMBER

$$12\frac{8}{9} - 8\frac{2}{3}$$

$$\frac{8}{9} - 8\frac{2}{3} = 12\frac{8}{9} - 8\frac{6}{9}$$ Find a common denominator.

$$= 4\frac{2}{9}$$ Subtract the integers, and then subtract the fractions.

Subtracting Mixed Numbers

We can change the mixed numbers to improper fractions, perform the addition or subtraction, and then change them back to mixed numbers when you reduce your final answer.

$$15\frac{1}{4} - 4\frac{5}{8} = \frac{61}{4} - \frac{37}{8} = \frac{122}{8} - \frac{37}{8} = \frac{85}{8} = 10\frac{5}{8}$$

TRY THIS ON A CHART

REFERENCE:

[Link 1 (CLICK HERE)](#)
[Link 2 (CLICK HERE)](#)

PRACTICE:
1.[Fraction Addition (Click Here)](#)
2.[Fraction Subtraction(Click Here)](#)

End of Module 1