

Worksheet -11

Subject: - Mathematics

Class: - VII

Teacher: - Ms. Neeru

Name: _____ Class & Sec: _____ Roll No. _____ Date: 08.05.2020

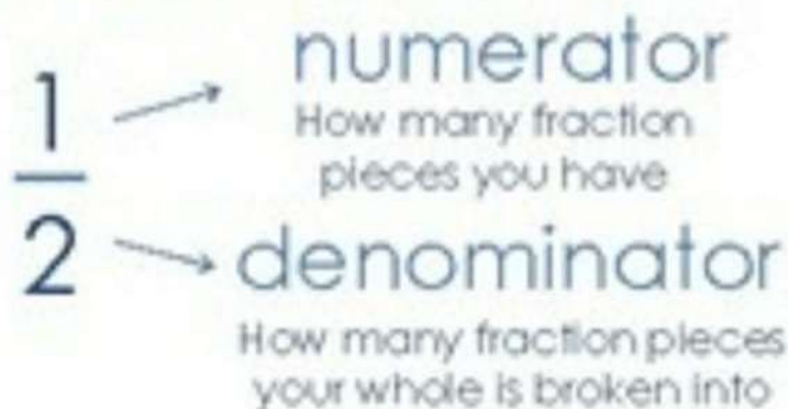
Ch 2: Fractions and Decimals

What is a Fraction?

A number that expresses equal parts of a whole object or set of objects.

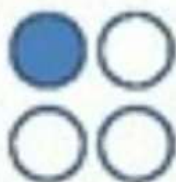
$$\frac{4}{8} \quad \frac{2}{3} \quad \frac{3}{4} \quad \frac{1}{2} \quad \frac{\text{part}}{\text{whole}}$$

Parts of a fraction:



Different Ways to Represent a Fraction

Part of a Group



Number Line



Fraction Bar



Fraction Circle



Types of Fractions

Proper Fractions

Numerator is smaller than the denominator

$$\frac{1}{2}, \frac{3}{4}, \frac{5}{6}, \frac{11}{20}, \frac{21}{25}$$

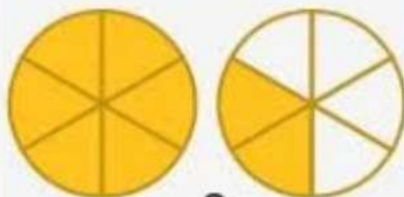


$$\frac{5}{6}$$

Improper Fractions

Numerator is equal or greater than the denominator

$$\frac{3}{2}, \frac{7}{4}, \frac{6}{5}, \frac{15}{11}, \frac{10}{10}$$

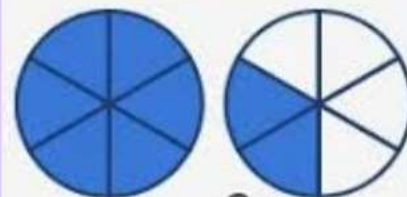


$$\frac{8}{6}$$

Mixed Fractions

Consists of a whole number and a proper fraction

$$1\frac{1}{2}, 2\frac{3}{4}, 5\frac{5}{6}$$



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

Simplest Form of a Fraction



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

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

$$\frac{3}{6} = \frac{1\cancel{3}}{2 \cdot \cancel{3}_1} = \frac{1}{2}$$

$$\frac{12}{18} \div \frac{6}{6} = \frac{12 \div 6}{18 \div 6} = \frac{2}{3}$$

Equivalent Fractions

Equivalent Fractions have the same value, even though they may look different. They are fractions that name the same amount or part.

For example: $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}$ are all equivalent fractions!

Example 1

Write five equivalent fractions of $\frac{3}{5}$

Equivalent fractions will be

$$\frac{3}{5} \times \frac{2}{2} = \frac{6}{10}$$

$$\frac{3}{5} \times \frac{3}{3} = \frac{9}{15}$$

$$\frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$$

$$\frac{3}{5} \times \frac{5}{5} = \frac{15}{25}$$

$$\frac{3}{5} \times \frac{6}{6} = \frac{18}{30}$$

\therefore 5 equivalent fractions are $\frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \frac{15}{25}, \frac{18}{30}$

Compare $\frac{4}{5}$ and $\frac{5}{6}$

Example 2

$$\frac{4}{5} \text{ and } \frac{5}{6}$$

Since, they do not have same denominators

We try to make denominator same

Common denominator

= L.C.M of 5 & 6

$$= 2 \times 3 \times 5$$

$$= 30$$

So,

$$\frac{4}{5} = \frac{4 \times 6}{5 \times 6} = \frac{24}{30}$$

$$\frac{5}{6} = \frac{5 \times 5}{6 \times 5} = \frac{25}{30}$$

$$\text{Since, } \frac{25}{30} > \frac{24}{30}$$

$$\therefore \frac{5}{6} > \frac{4}{5}$$

2	5, 6
3	5, 3
5	5, 1
	1, 1

Add $\frac{2}{5}$ to $\frac{1}{3}$

Example 3

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

$$= \frac{2 \times 3 + 1 \times 5}{5 \times 3}$$

$$= \frac{6 + 5}{15}$$

$$= \frac{11}{15}$$

Simplify $\frac{3}{5} - \frac{7}{20}$

Example 4

$$\frac{3}{5} - \frac{7}{20}$$

$$= \frac{3 \times 20 - 7 \times 5}{5 \times 20}$$

$$= \frac{60 - 35}{100}$$

$$= \frac{25}{100}$$

$$= \frac{25 \div 5}{100 \div 5} = \frac{5 \div 5}{20 \div 5} = \frac{1}{4}$$

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

Add $2\frac{4}{5}$ and $3\frac{5}{6}$

Example 5

$$2\frac{4}{5} + 3\frac{5}{6}$$

$$2\frac{4}{5} = 2 + \frac{4}{5} = \frac{2 \times 5 + 4}{5} = \frac{10 + 4}{5} = \frac{14}{5}$$

$$3\frac{5}{6} = 3 + \frac{5}{6} = \frac{3 \times 6 + 5}{6} = \frac{18 + 5}{6} = \frac{23}{6}$$

Thus,

$$\begin{aligned} 2\frac{4}{5} + 3\frac{5}{6} &= \frac{14}{5} + \frac{23}{6} \\ &= \frac{14 \times 6 + 23 \times 5}{5 \times 6} \end{aligned}$$

$$\begin{array}{r} 2 \\ 14 \\ \times 6 \\ \hline 84 \end{array} \qquad \begin{array}{r} 1 \\ 23 \\ \times 5 \\ \hline 115 \end{array}$$

$$= \frac{84 + 115}{30}$$

$$\begin{array}{r} 115 \\ + 84 \\ \hline 199 \end{array}$$

$$= \frac{199}{30}$$

$$= 6\frac{19}{30}$$

$$\begin{array}{r} 6 \rightarrow \text{Number} \\ 30 \overline{) 199} \\ \underline{180} \\ 19 \rightarrow \text{Numerator} \end{array}$$

Simplify: $8\frac{1}{4} - 2\frac{5}{6}$

Example 6

$$8\frac{1}{4} = 8 + \frac{1}{4} = \frac{8 \times 4 + 1}{4} = \frac{32 + 1}{4} = \frac{33}{4}$$

$$2\frac{5}{6} = 2 + \frac{5}{6} = \frac{2 \times 6 + 5}{6} = \frac{12 + 5}{6} = \frac{17}{6}$$

Thus,

$$8\frac{1}{4} - 2\frac{5}{6} = \frac{33}{4} - \frac{17}{6}$$

$$= \frac{33 \times 6 - 17 \times 4}{4 \times 6}$$

$$= \frac{198 - 68}{24}$$

$$= \frac{130}{24} \stackrel{\div 2}{=} \frac{65}{12}$$

$$= \frac{65}{12}$$

$$= 5\frac{5}{12}$$

$$\begin{array}{r} 1 \\ 33 \\ \times 6 \\ \hline 198 \end{array} \qquad \begin{array}{r} 2 \\ 17 \\ \times 4 \\ \hline 68 \end{array}$$

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$$\begin{array}{r} 5 \rightarrow \text{Number} \\ 12 \overline{) 65} \\ \underline{60} \\ 5 \rightarrow \text{Numerator} \end{array}$$

Denominator

Chapter 2 Fractions and Decimals

Exercise 2.1

Ex 2.1 Class 7 Maths Question 1.

Solve:

$$(i) 2 - \frac{3}{5} \quad \cdot \quad (ii) 4 + \frac{7}{8}$$

$$(iii) \frac{3}{5} + \frac{2}{7} \quad (iv) \frac{9}{11} - \frac{4}{15}$$

$$(v) \frac{7}{10} + \frac{2}{5} + \frac{3}{2} \quad (vi) 2\frac{2}{3} + 3\frac{1}{2}$$

$$(vii) 8\frac{1}{2} - 3\frac{5}{8}$$

Solution:

$$(i) 2 - \frac{3}{5} = \frac{2}{1} - \frac{3}{5} = \frac{2 \times 5 - 3 \times 1}{1 \times 5}$$

$$= \frac{10 - 3}{5} = \frac{7}{5} = 1\frac{2}{5}$$

$$\text{Hence, } 2 - \frac{3}{5} = 1\frac{2}{5}$$

$ \begin{array}{r} 5 \overline{) 7} 1 \\ \underline{5} \\ 2 \end{array} $

EXERCISE 2.1

1. Solve:

(i) $2 - \frac{3}{5}$

(ii) $4 + \frac{7}{8}$

(iii) $\frac{3}{5} + \frac{2}{7}$

(iv) $\frac{9}{11} - \frac{4}{15}$

(v) $\frac{7}{10} + \frac{2}{5} + \frac{3}{2}$

(vi) $2\frac{2}{3} + 3\frac{1}{2}$

(vii) $8\frac{1}{2} - 3\frac{5}{8}$

2. Arrange the following in descending order:

(i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$

(ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

3. In a “magic square”, the sum of the numbers in each row, in each column and along the diagonal is the same. Is this a magic square?

$\frac{4}{11}$	$\frac{9}{11}$	$\frac{2}{11}$
$\frac{3}{11}$	$\frac{5}{11}$	$\frac{7}{11}$
$\frac{8}{11}$	$\frac{1}{11}$	$\frac{6}{11}$

(Along the first row $\frac{4}{11} + \frac{9}{11} + \frac{2}{11} = \frac{15}{11}$).

$$(ii) 4 + \frac{7}{8} = \frac{4}{1} + \frac{7}{8} = \frac{4 \times 8 + 1 \times 7}{1 \times 8}$$

$$= \frac{32 + 7}{8} = \frac{39}{8} = 4\frac{7}{8}$$

$$\begin{array}{r} 8 \overline{) 39} (4 \\ \underline{32} \\ 7 \end{array}$$

$$\text{Hence, } 4 + \frac{7}{8} = 4\frac{7}{8}$$

$$(iii) \frac{3}{5} + \frac{2}{7} = \frac{3 \times 7 + 2 \times 5}{5 \times 7} = \frac{21 + 10}{35} = \frac{31}{35}$$

$$\text{Hence, } \frac{3}{5} + \frac{2}{7} = \frac{31}{35}$$

$$(iv) \frac{9}{11} - \frac{4}{15} = \frac{9 \times 15 - 4 \times 11}{11 \times 15} = \frac{135 - 44}{165} = \frac{91}{165}$$

$$\text{Hence, } \frac{9}{11} - \frac{4}{15} = \frac{91}{165}$$

$$(v) \frac{7}{10} + \frac{2}{5} + \frac{3}{2} = \frac{7 + 4 + 15}{10}$$

[LCM of 10, 5 and 2 = 10]

$$= \frac{26}{10} = \frac{26 \div 2}{10 \div 2} = \frac{13}{5} = 2\frac{3}{5}$$

$$\text{Hence, } \frac{7}{10} + \frac{2}{5} + \frac{3}{2} = 2\frac{3}{5}$$

$$\begin{array}{r} 5 \overline{) 13} (2 \\ \underline{10} \\ 3 \end{array}$$

$$(vi) 2\frac{2}{3} + 3\frac{1}{2} = \frac{8}{3} + \frac{7}{2} = \frac{8 \times 2 + 3 \times 7}{3 \times 2}$$

$$= \frac{16 + 21}{6} = \frac{37}{6} = 6\frac{1}{6}$$

$$\text{Hence, } 2\frac{2}{3} + 3\frac{1}{2} = 6\frac{1}{6}$$

$$\begin{array}{r} 6 \overline{) 37} (6 \\ \underline{36} \\ 1 \end{array}$$

$$(vii) \quad 8\frac{1}{2} - 3\frac{5}{8} = \frac{17}{2} - \frac{29}{8} \quad [\text{LCM of 2 and 8} = 8]$$

$$= \frac{17 \times 4 - 29 \times 1}{8}$$

$$= \frac{68 - 29}{8} = \frac{39}{8} = 4\frac{7}{8}$$

8)	39	(4
		-32		
		7		

$$\text{Hence, } 8\frac{1}{2} - 3\frac{5}{8} = 4\frac{7}{8}$$

Ex 2.1 Class 7 Maths Question 2.

Arrange the following in descending order:

$$(i) \frac{2}{9}, \frac{2}{3}, \frac{8}{21} \quad (ii) \frac{1}{5}, \frac{3}{7}, \frac{7}{10}$$

Solution:

$$(i) \quad \frac{2}{9}, \frac{2}{3}, \frac{8}{21}$$

$$\text{LCM of 9, 3 and 21} = 3 \times 3 \times 7 = 63$$

Making the denominator same, we have

$$\frac{2}{9} \times \frac{7}{7} = \frac{14}{63}, \quad \frac{2}{3} \times \frac{21}{21} = \frac{42}{63}$$

$$\text{and } \frac{8}{21} \times \frac{3}{3} = \frac{24}{63}$$

$$\text{Since } 42 > 24 > 14$$

$$\text{Thus } \frac{42}{63} > \frac{24}{63} > \frac{14}{63}$$

$$\text{Hence, } \frac{2}{3} > \frac{8}{21} > \frac{2}{9}$$

3	9, 3, 21
3	3, 1, 7
7	1, 1, 7
	1, 1, 1

$$(ii) \quad \frac{1}{5}, \frac{3}{7}, \frac{7}{10}$$

$$\begin{aligned} \text{LCM of } 5, 7 \text{ and } 10 \\ &= 2 \times 5 \times 7 \\ &= 70 \end{aligned}$$

2	5, 7, 10
5	5, 7, 5
7	1, 7, 1
	1, 1, 1

Making the denominator same, we have

$$\frac{1}{5} \times \frac{14}{14} = \frac{14}{70} \quad [\because 70 \div 5 = 14]$$

$$\frac{3}{7} \times \frac{10}{10} = \frac{30}{70} \quad [\because 70 \div 7 = 10]$$

$$\frac{7}{10} \times \frac{7}{7} = \frac{49}{70} \quad [\because 70 \div 10 = 7]$$

Since $49 > 30 > 14$

$$\text{Thus } \frac{49}{70} > \frac{30}{70} > \frac{14}{70}$$

$$\text{Hence, } \frac{7}{10} > \frac{3}{7} > \frac{1}{5}$$

Ex 2.1 Class 7 Maths Question 3.

In a “magic square” the sum of number in each row, in each column and along the diagonals is the same. Is this a magic square?

$\frac{4}{11}$	$\frac{9}{11}$	$\frac{2}{11}$
$\frac{3}{11}$	$\frac{5}{11}$	$\frac{7}{11}$
$\frac{8}{11}$	$\frac{1}{11}$	$\frac{6}{11}$

Solution:

$$\text{Along first row, } \frac{4}{11} + \frac{9}{11} + \frac{2}{11} = \frac{15}{11}$$

$$\text{Along second row, } \frac{3}{11} + \frac{5}{11} + \frac{7}{11} = \frac{15}{11}$$

$$\text{Along third row, } \frac{8}{11} + \frac{1}{11} + \frac{6}{11} = \frac{15}{11}$$

$$\text{Along first column, } \frac{4}{11} + \frac{3}{11} + \frac{8}{11} = \frac{15}{11}$$

$$\text{Along second column, } \frac{9}{11} + \frac{5}{11} + \frac{1}{11} = \frac{15}{11}$$

$$\text{Along third column, } \frac{2}{11} + \frac{7}{11} + \frac{6}{11} = \frac{15}{11}$$

$$\text{Along first row, } \frac{4}{11} + \frac{9}{11} + \frac{2}{11} = \frac{15}{11}$$

$$\text{Along second row, } \frac{3}{11} + \frac{5}{11} + \frac{7}{11} = \frac{15}{11}$$

$$\text{Along third row, } \frac{8}{11} + \frac{1}{11} + \frac{6}{11} = \frac{15}{11}$$

$$\text{Along first column, } \frac{4}{11} + \frac{3}{11} + \frac{8}{11} = \frac{15}{11}$$

$$\text{Along second column, } \frac{9}{11} + \frac{5}{11} + \frac{1}{11} = \frac{15}{11}$$

$$\text{Along third column, } \frac{2}{11} + \frac{7}{11} + \frac{6}{11} = \frac{15}{11}$$

$$\text{Along first diagonal, } \frac{4}{11} + \frac{5}{11} + \frac{6}{11} = \frac{15}{11}$$

$$\text{Along second diagonal, } \frac{2}{11} + \frac{5}{11} + \frac{8}{11} = \frac{15}{11}$$

Since, the sum of all the fraction row wise, column wise and the diagonal wise is same i.e. $\frac{15}{11}$.