Tender Heart High School, Sec-33B chd.

Class: VII **Teacher:** Deepika

Subject: Mathematics

Topic: Chapter 4: / Rational number

Rational numbers (Q): Can be expressed as $\frac{p}{q}$ form, where $q \neq 0$

- All the Natural numbers, whole numbers and Integers are Rational numbers.

for e.g: $\frac{1}{4}$, $\frac{2}{1}$, 0, $\frac{14}{17}$

General rules:

1. If $\frac{p}{q}$ is a rational number, then $\frac{p \times m}{q \times m}$ is an equivalent fraction of $\frac{p}{q}$.

$\Rightarrow \frac{p}{q} = \frac{p \times m}{q \times m}$

for e.g $\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{2 \times 3}{5 \times 3} = \frac{2 \times 4}{5 \times 4}$ ..

2. If $\frac{p}{q}$ is a rational number, then $\frac{p \div m}{q \div m}$ is an equivalent fraction of $\frac{p}{q}$. $\Rightarrow \frac{p}{q} = \frac{p \div m}{q \div m}$

for e.g $\frac{14}{35} = \frac{14 \div 7}{35 \div 7}$

Standard form of a Rational numbers:

A rational number $\frac{p}{q}$ is said to be in standard form if q is positive and p and q are composite number

for e.g: $\frac{+21}{-15} = \frac{-21}{15} \div \frac{3}{3} = \frac{-7}{5}$

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Comparison of two rational numbers/L.C.M

To compare two rational numbers we can use Two method

1st method : Cross multiply the two given rational number

for eg: $\frac{2}{3}$ and $\frac{4}{7} \Rightarrow \frac{2}{3} \times \frac{4}{7}$

$2 \times 7 = 14 \qquad 3 \times 4 = 12$

$\Rightarrow 14 > 12$

$\Rightarrow \frac{2}{3} > \frac{4}{7}$

2nd method : Take L.C.M and then compare Two rational numbers.

for eg: $\frac{2}{3}$ and $\frac{4}{7}$ $\qquad$ L.C.M $= 3 \times 7 = 21$

$\frac{2 \times 7}{3 \times 7} = \frac{14}{21} \qquad \frac{4 \times 3}{7 \times 3} = \frac{12}{21}$

$\Rightarrow \frac{14}{21} > \frac{12}{21} \Rightarrow \frac{2}{3} > \frac{4}{7}$

Exercise - 2A

Ans 6 four rational numbers (equivalent rational numbers)

(i) $\frac{3}{10}$

$\frac{3 \times 2}{10 \times 2} = \frac{6}{20}, \frac{3 \times 3}{10 \times 3} = \frac{9}{30}, \frac{3 \times 4}{10 \times 4} = \frac{12}{40}, \frac{3 \times 5}{10 \times 5} = \frac{15}{50}$

$\Rightarrow \frac{3}{10} = \frac{6}{20} = \frac{9}{30} = \frac{12}{40} = \frac{15}{50}$

(iii) $\frac{6}{-13} = \frac{-6}{13}$

$\frac{-6 \times 2}{13 \times 2} = \frac{-12}{26}, \frac{-6 \times 3}{13 \times 3} = \frac{-18}{39}, \frac{-6 \times 4}{13 \times 4} = \frac{-24}{52}, \frac{-6 \times 5}{13 \times 5} = \frac{-30}{65}$

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Soln 10) Rational number = $\frac{-6}{11}$, with Numerator = -36

(i) $\frac{-6^{\times 6}}{11 \times 6} = \frac{-36}{\boxed{66}}$ (ii) $\frac{-6^{\times -7}}{11 \times -7} = \frac{42}{\boxed{-77}}$

Exercise: 4B

Soln 3) Ascending order:

(iii) $\frac{5}{-12}, \frac{-2}{3}, \frac{-7}{9}, \frac{11}{-18}$

$\Rightarrow \frac{-5}{12}, \frac{-2}{3}, \frac{-7}{9}, \frac{-11}{18}$

3	12, 3, 9, 18
3	4, 1, 3, 6
2	4, 1, 1, 2
2	2, 1, 1, 1
	1, 1, 1, 1

L.C.M = 36

$\frac{-5 \times 3}{12 \times 3} = \frac{-15}{36}$, $\frac{-2 \times 12}{3 \times 12} = \frac{-24}{36}$

$\frac{-7 \times 4}{9 \times 4} = \frac{-28}{36}$, $\frac{-11 \times 2}{18 \times 2} = \frac{-22}{36}$

$\frac{-28}{36} < \frac{-24}{36} < \frac{-22}{36} < \frac{-15}{36}$

$\frac{-7}{9} < \frac{-2}{3} < \frac{-11}{18} < \frac{-5}{12}$

Soln 4) Descending order:

(ii) $\frac{-11}{20}, \frac{-3}{10}, \frac{-17}{30}, \frac{-7}{15}$

5	20, 10, 30, 15
3	4, 2, 6, 3
2	4, 2, 2, 1
2	2, 1, 1, 1
	1, 1, 1, 1

L.C.M = 60

$\frac{-11 \times 3}{20 \times 3} = \frac{-33}{60}$ $\frac{-17 \times 2}{30 \times 2} = \frac{-34}{60}$

$\frac{-3 \times 6}{10 \times 6} = \frac{-18}{60}$ $\frac{-7 \times 4}{15 \times 4} = \frac{-28}{60}$

$\frac{-34}{60} < \frac{-33}{60} < \frac{-28}{60} < \frac{-18}{60} \Rightarrow \frac{-17}{30} < \frac{-11}{20} < \frac{-7}{15} < \frac{-3}{10}$