

Class 7

Subject : Mathematics

Chapter : Rational Numbers

Rational numbers are numbers that can be expressed as p/q and q can never be a 0

For e.g. $\frac{2}{3}$ or $-\frac{2}{3}$ but not $5/0$

Equivalent Rational Numbers

$$\frac{2}{3} \times \frac{6}{6} = \frac{12}{18} \text{ or } \frac{2}{3} \times \frac{8}{8} = \frac{16}{24}$$

Standard Form

$$\frac{15}{12} \div \frac{3}{3} = \frac{5}{4}$$

Comparison of Rational Numbers

$\frac{2}{5}$ and $\frac{4}{7}$. LCM is 35

$$\frac{2}{5} \times \frac{7}{7} \text{ and } \frac{4}{7} \times \frac{5}{5} = \frac{14}{35} > \frac{20}{35}$$

In integers -7 and -4. $-4 > -7$

Comparison when denominators are same.e.g. $-\frac{3}{5}$, $-\frac{2}{5}$, $-\frac{1}{5}$.here the rational numbers have positive denominators so

$$-3 < -2 < -1$$

But in case the fractions have different denominators like $-\frac{3}{7}$, $-\frac{3}{2}$, $-\frac{3}{4}$

We need a common denominator so LCM is 28. $-\frac{12}{28}$, $-\frac{42}{28}$, $-\frac{21}{28}$

$$-42 < -21 < -12$$

Inserting rational numbers between two rational numbers

E.g.between 9 and 14 we can insert 10,11,12,13.

Between $-\frac{7}{13}$ and $\frac{3}{13}$ we can insert

$-\frac{6}{13}, -\frac{5}{13}, -\frac{4}{13}, -\frac{3}{13}, -\frac{2}{13}, -\frac{1}{13}, 0, \frac{1}{13}$ & $\frac{2}{13}$.

ASSIGNMENT 1.Exercise 2.1

Numbers 1,2,5,6,7,8,9 & 10

Addition of rational numbers.

$$\frac{5}{4} + -\frac{11}{4} = -\frac{6}{4}$$

$$\frac{5}{3} + \frac{2}{5} = \frac{25}{15} + \frac{6}{15} = \frac{31}{15}$$

Additive inverse

$$\text{e.g. } \frac{5}{3} + (-\frac{5}{3}) = 0$$

Subtraction of rational numbers

e.g.subtract $-\frac{5}{7}$ from $\frac{3}{4}$

$$\frac{3}{4} - (-\frac{5}{7}) = \frac{3}{4} + \frac{5}{7} = \frac{21}{28} + \frac{20}{28} = \frac{41}{28}$$

Multiplication of rational numbers

Product of two rational numbers =

Product of numerator/product of denominator

e.g. $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$

Division of rational numbers

e.g. $-4 \div \frac{2}{3} = -4 \times \frac{3}{2} = -2 \times 3 = -6$

ASSIGNMENT 2.Exercise 2.2

Numbers 1-25 all the sums.

