

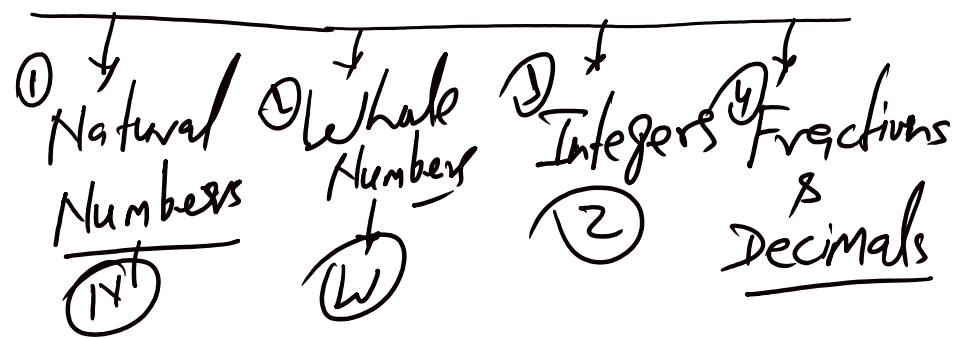
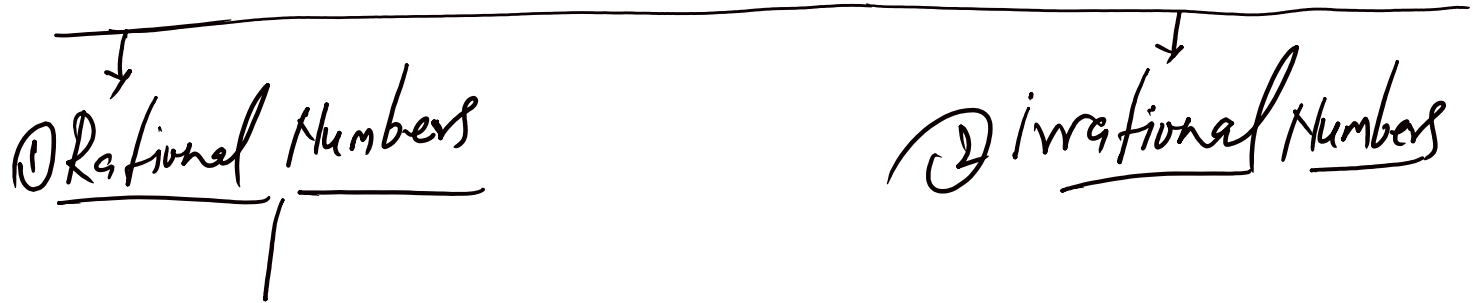
Syllabus (9th Maths)

- ① Number System
- ② Polynomials
- ③ COORDINATE GEOMETRY.
- ④ LINEAR Equation in two variables
- ⑤ Introduction TO Euclid's geometry.
- ⑥ Lines & Angles
- ⑦ TRIANGLES
- ⑧ Quadrilaterals
- ⑨ Areas of Parallelograms & Triangles
- ⑩ Circles
- ⑪ CONSTRUCTION
- ⑫ Heron's Formulas

- (12) Heron's Formulas
- (13) Surface area & volume
- (14) Statistics
- (15) Probability

Chapter - 1

Number System / Real Numbers



(1) Rational Numbers → A number 'x' is called a rational number. If it can be written in the form $\frac{p}{q}$. Where p & q are integers & $q \neq 0$.
 Ex → $\frac{1}{2}$, $-\frac{3}{2}$, -2.5

89 are integers: $P \neq Q$. $\frac{P}{Q} \rightarrow \frac{1}{2}, \frac{-1}{2}, \frac{-15}{2}$
 \rightarrow Represented by \textcircled{Q}
 w/o Rational No $\rightarrow \frac{0}{1} = 0$
 $\frac{1}{1} \rightarrow \frac{1}{1} \rightarrow \frac{p=0}{q=1}$

$\textcircled{2}$ Natural No — The collection of all counting numbers starting from one. $(1, 2, 3, 4, \dots, \infty)$
 \rightarrow smallest $\rightarrow 1$ & no largest, Represent \textcircled{N}

$\textcircled{3}$ Whole Numbers \rightarrow The collection of all N.N including 0 is called W.N $(0, 1, 2, 3, 4, 5, 6, \dots, \infty)$
 Smallest $\rightarrow 0$, no largest, repre $\rightarrow \textcircled{W}$

$\textcircled{4}$ Integers \rightarrow The collection of all positive N.N. negative natural numbers including 0 is called I.Integers
 $(-3, -2, -1, 0, 1, 2, 3, \dots)$
 \rightarrow There is no Smallest integer.
 \rightarrow There is no biggest integer.

$\left. \begin{array}{l} \text{\#10 'जग' decimal places} \\ \text{नई ही Integer} \end{array} \right\}$

→ there is no biggest integer!

→ Represent → (2)

Number line → A line which consist of Real number.

↳ सब से सब Real No आ सकते हैं

→ it means a number line consist of Real Number, irrational No, Fractions, decimals, N.N, W.N & Integers.

equivalent rational No

→ When the numerator & denominator of a rational No is multiplied by same number then, we obtain equivalent R.N

$$\text{eg} \rightarrow \frac{1}{2} \times \frac{2}{2} = \left(\frac{2}{4}\right) \quad \cdot \quad \frac{1}{2} \times \frac{3}{3} = \left(\frac{3}{6}\right) \dots$$

Simplest form of a Rational No

→ A Rational No. $\frac{p}{q}$ will be in simplest form if p & q are co-prime integer & $q \neq 0$
or,
no common factor

→ We can say p & q cannot be cancelled further

→ eg - $\frac{1}{3}$ → simplest form, because 1 & 3 are co-prime or,
.. 1 1 .. 3 3 .. 4 → 2

→ $\frac{1}{3}$ → Simplest form, because 1 is the only common factor between 1 & 3. } $\frac{4}{8} \rightarrow \frac{1}{2}$
no common factor is there between 1 & 3. } $\frac{4}{8} \rightarrow \frac{1}{2}$

Some questions

- ① Every I.N is Q.N.N → 0 not in Q.N.N (No)
- ② Every integer is a rational → $\mathbb{Z} \rightarrow -3, -2, -1, 0, 1, 2, 3$
- ③ " rational number is an Integer → $\frac{1}{2}$ R.N
 No $\frac{1}{2} \neq \mathbb{Z}$
- ④ Find ^{Five} R.N between 1 & 2

① $\frac{5}{4}, \frac{11}{8}, \frac{3}{2}, \frac{13}{8}, \frac{7}{4}$ ②

Method - I $\frac{1+2}{2} = \frac{3}{2} = 1.5$, $\frac{1+3}{2} = \frac{2+3}{2} = \frac{5}{2} = 2.5$

$\frac{3+2}{2} = \frac{3+4}{2} = \frac{7}{2}$, $\frac{3+7}{2} = \frac{6+7}{2} = \frac{13}{2}$

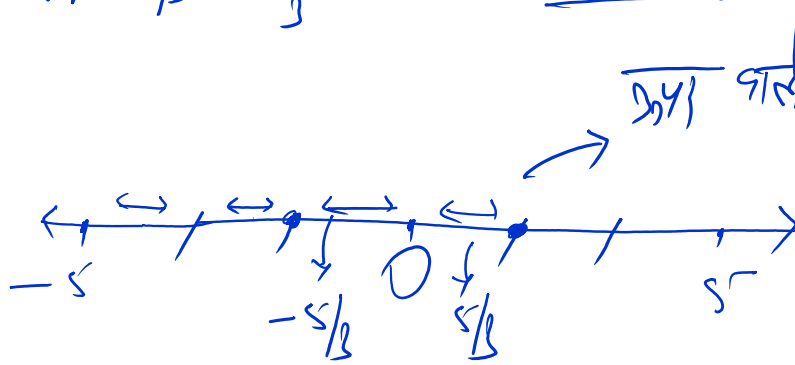
Method - II ① ②

Five → ⑤ + ① = ⑥

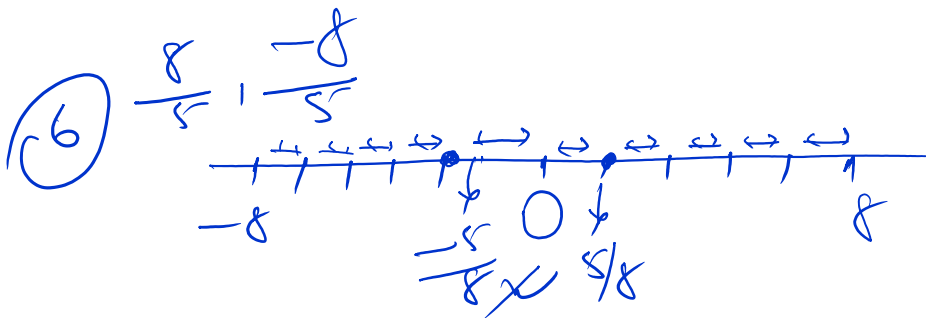
$\frac{1 \times 6}{1 \times 6}$ $\frac{2 \times 6}{1 \times 6}$
 $\frac{6}{6}, \frac{7}{6}, \frac{8}{6}, \frac{9}{6}, \frac{10}{6}, \frac{11}{6}, \frac{12}{6}$

→ a set of numbers like

⑤ Represent $\frac{5}{3}$ or $\frac{5}{3}$ on a number line



इस गणना के द्वारा हमें जोड़ बाँट कर
 फिर 5
 काक भागों में
 बाँटें।



⑦ Find a R.M between -2 & 6

$$-2 \quad \text{R.M} \quad 6$$

Method $\frac{-2+6}{2} = \frac{4}{2} = \text{R.M}$

$$-2, \text{R.M}, 6$$

⑧ Find a R.M between $\frac{-2}{3}$ & $\frac{1}{4}$

$$\frac{\frac{-2}{3} + \frac{1}{4}}{2} = \frac{\frac{-8+3}{12}}{2} = \frac{-5}{12} = \text{R.M}$$

⑨ Find three R.M between -2 & 5

③ R.M = 24
 5×4 method

101

$$\frac{-2 \times 4}{1 \times 4}$$

$$\frac{-8}{4} \quad \frac{-7}{4} \quad \frac{-6}{4} \quad \frac{-5}{4}$$

$$\frac{.5 \times 4}{1 \times 4}$$

$$\frac{20}{4}$$

other method

$$\frac{-2 \times 5}{1 \times 5} = -2$$

$$\frac{-1 \times 0 \times 1}{2 \times 2 \times 4}$$

110 insert 100 R.N between $\frac{-3}{13} \times \frac{9}{13} \rightarrow 9 - (-3) = 9 + 3 = 12$
 $12 \div 13 = 12$

$$\frac{-3 \times 10}{13 \times 10} = \frac{-30}{130}$$

$$\frac{9 \times 10}{13 \times 10}$$

$$\frac{90}{130}$$

Exercise 1.1

1) yes $0 = \frac{0-1}{1-2} \quad 0 \neq 0$

2) find sim R.N $\rightarrow \frac{384}{6127}$

$$\frac{3 \times 7}{1 \times 7} \quad \frac{4 \times 7}{1 \times 7} \rightarrow$$

$$\frac{21}{7} \quad \frac{22}{7} \quad \frac{23}{7} \quad \frac{24}{7} \quad \frac{25}{7} \quad \frac{26}{7} \quad \frac{27}{7} \quad \frac{28}{7}$$

3) same EL
 \rightarrow no \rightarrow no \rightarrow R.H. $-\frac{1}{2}$

10 सिद्ध है

(7) (9) yes

(6) No

(8) No → RH = $\frac{1}{2}$
L.N → 0, 1, ...

Ex → 1.2