STD – 9   MATHS

CHAPTER - 1

NUMBER SYSTEM

EXERCISE - 1.1

Q.1. Is zero a rational number ? Can you write it in the form $\frac{p}{q}$ where p and q are integers and q ≠ 0?

Sol. Yes, zero is a rational number. It can be written as $\frac{0}{1}$, $\frac{0}{2}$ etc., in the form $\frac{p}{q}$,

Ans. where p and q are integers and q ≠ 0.

Q.2. Find six rational numbers between 3 and 4.

Sol. To find six rational numbers between 3 and 4

   denominator should be made equal to 6 + 1 = 7.

$$3 = \frac{3 \times 7}{7}$$

$$= \frac{21}{7}$$

$$4 = \frac{4 \times 7}{7}$$

$$= \frac{28}{7}$$

Six rational numbers between 3 and 4 can be found by varying the numerator between 21 and 28.

Ans. Or, the numbers are $\dfrac{22}{7}, \dfrac{23}{7}, \dfrac{24}{7}, \dfrac{25}{7}, \dfrac{26}{7}, \dfrac{27}{7},$

Q.3. Find five rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$.

Sol. To find five rational numbers between and $\frac{3}{5}$ and $\frac{4}{5}$, we may add the given numbers and divide by 2, and repeat the process.

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

$$= \frac{7}{5 \times 2}$$

$$= \frac{7}{10}$$

$$= x_1$$

$$\therefore \frac{7}{10} + \frac{4}{5}$$

$$= \frac{7+8}{10}$$

$$= \frac{15}{10}$$

Next rational number $= \frac{15}{10 \times 2}$ $= \frac{3}{4}$

$$= \frac{15}{20} \qquad = x_2$$

$$\therefore \quad \frac{3}{4} + \frac{4}{5}$$

$$= \frac{15 + 16}{20}$$

$$= \frac{31}{20}$$

Next rational number $= \dfrac{31}{20 \times 2}$

$$= \frac{31}{40}$$

$$= x_3$$

$$\therefore \frac{31}{40} + \frac{4}{5}$$

$$= \frac{31 + 32}{40}$$

$$= \frac{63}{40}$$

Next rational number $= \frac{63}{40 \times 2}$

$$= \frac{63}{80}$$

$$= x_4$$

$$\therefore \frac{63}{80} + \frac{4}{5}$$

$$= \frac{63 + 64}{80}$$

$$= \frac{127}{80}$$

Next rational number $= \dfrac{127}{80 \times 2}$

$$= \frac{127}{160}$$

$$= x_5$$

Ans .

$$x_1 = \frac{7}{10},$$

$$x_2 = \frac{3}{4},$$

$$x_3 = \frac{31}{40},$$

$$x_4 = \frac{63}{80},$$

$$x_5 = \frac{127}{160}.$$

Q.4. State whether the following statements are true or false. Give reasons for your answers.

(i) Every natural number is a whole number.

➢ **True**

Sol. since the collection of whole numbers contains all the natural numbers and in addition zero.

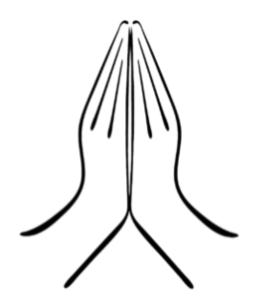**(ii) Every integer is a whole number.**

➢ **False**

Sol. Negative integers are not whole numbers.

(iii) Every rational number is a whole number.

➤ **False**

Sol. Numbers such as $\frac{2}{3}, \frac{3}{4}, \frac{-3}{5}$ **etc., are rational numbers**

but not whole numbers.

Thanks

For watching