

class IX

Sub Maths

Chapter - 1 Number Systems

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Q1 Rational numbers \rightarrow The no. which can be expressed in the form of $\frac{p}{q}$ where $q \neq 0$ and p and q are integers, called rational numbers
 eg. $\frac{3}{4}, -\frac{5}{6}, \frac{1}{2}$ etc.

Q2 Is zero a rational number? Can you write it in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$?

Sol: Yes, zero can be a rational number. Also it be written in the form of $\frac{p}{q}$ eg. $\frac{0}{1}, \frac{0}{2}, \frac{0}{3}, \frac{0}{4}$ etc

a. (3) Find six rational numbers between 3 and 4

Sol 3 and 4 can be written as $\frac{3}{1}$ & $\frac{4}{1}$
 $\Rightarrow \frac{3 \times 7}{1 \times 7}$ and $\frac{4 \times 7}{1 \times 7}$
 $\frac{21}{7}$ and $\frac{28}{7}$ Therefore 6 rational numbers b/w $\frac{21}{7}$ and $\frac{28}{7}$
 or 3 and 4 $\rightarrow = \frac{22}{7}, \frac{23}{7}, \frac{24}{7}, \frac{25}{7}, \frac{26}{7}, \frac{27}{7}$

Q4 Which whole number is not a natural number?
 0 (zero) is not a natural number

(5) State whether the following statements are true or false.
 (i) Every natural no. is a whole no. (True)
 (ii) Every integer is a whole no. (False)

Q6 Write in decimal form $\frac{36}{100} = 0.36$

Q7 Write in decimal form $4\frac{1}{8}$ Sol $4\frac{1}{8} = \frac{33}{8}$ $8 \overline{) 33} \begin{matrix} 4 \\ \underline{-32} \\ 1 \end{matrix}$ $\frac{10}{8} = 1.25$ $\frac{10}{8} = 1.25$

Q8 $\frac{2}{11} = 0.1818$ $\frac{11}{20} = 0.55$
 $11 \overline{) 20} \begin{matrix} 1 \\ \underline{-11} \\ 90 \\ \underline{-88} \\ 20 \\ \underline{-11} \\ 90 \\ \underline{-88} \\ 2 \end{matrix}$ $8 \overline{) 33} \begin{matrix} 4 \\ \underline{-32} \\ 10 \\ \underline{-8} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ 0 \end{matrix}$

Q.9. Is -25 a rational no.? Give reason.

Sol. Yes -25 can be written in $\frac{p}{q}$ form as $-\frac{25}{1}$ where $p = -25$, $q = 1$

(10) Evaluate (i) $(2^2)^3$ (ii) $(\frac{1}{3^5})^4$

Sol. (i) $(2^2)^3 = 2^{2 \times 3} = 2^6 = 64$

(ii) $(\frac{1}{3^5})^4 = \frac{1}{3^{5 \times 4}} = \frac{1}{3^{20}}$

Home work

Q.11 Define the following (i) Natural no (ii) whole no. (iii) Integers.

(2) Express in decimal form (i) $\frac{325}{1000}$ (ii) $4\frac{1}{5}$

(3) Write in $\frac{p}{q}$ form 35.125

(4) Write five rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$.

(5) State whether the following statements are true or false

(i) Every rational no. is a whole no.

(ii) Every real no. is an irrational no.

Q.6 Find three rational numbers between $-\frac{1}{2}$ and $\frac{1}{5}$

Q.7 Write in $\frac{p}{q}$ form of $0.\bar{3}$

(8) Simplify: $15^2 \cdot 15^3$

9 Simplify: $11\frac{2}{3} \cdot 11\frac{1}{3}$

10 Evaluate $(\frac{64}{125})^{-\frac{2}{3}}$

11 Evaluate $(2)^{-5}$