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9th Class Mathematics

Unit 1: Real Numbers

Exercise 1.1

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Exercise 1.1

Q.1 Identify each of the following as a rational or irrational numbers :

Rational numbers

(i) 2357535 (ii) 0.6 (ix) (x)

Irrational numbers

(iii) 2236067 199 (iv)

(v) e

(vi) exports

(vii)

(viii) menims

Q.2 Represent the following numbers on number line :

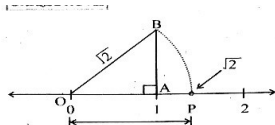
(i)

Solution :

can be located on the real line by geometric construction . Mark a perpendicular line of unit at A , where unit , and we have a right – angle triangle . By using Pythagoras theorem

Taking 0 as centre, draw an arc of radius 2 units. It will cut the number line at P. We get point "P" representing $\sqrt{4}$ on the number line.

So,



(iii)

Solution:

can be located on the real line by geometric method. Mark a line of unit at A . With centre at A draw an arc of radius 2 units above the line. From point B draw a perpendicular line segment so that it cuts the arc at C. Join A to C. We have a right-angled triangle on which 1 unit and $\sqrt{3}$ units. By using pythagoras theorem

$$(\overline{AC})^2 = (\overline{AB})^2 + (\overline{BC})^2$$

$$(2)^2 = (1)^2 + (\overline{BC})^2$$

$$4 = 1 + (\overline{BC})^2$$

$$4 - 1 = (\overline{BC})^2$$

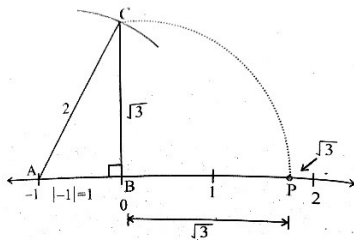
$$3 = (\overline{BC})^2$$

$$\sqrt{(\overline{BC})^2} = \sqrt{3}$$

$$\overline{BC} = \sqrt{3}$$

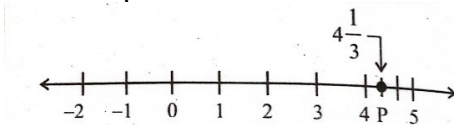
Now consider B is at 0. Taking B as centre: draw an arc of radius $\sqrt{3}$ in , which cut the number line at P. We get point "P" representing $\sqrt{3}$ on the number line.

So,



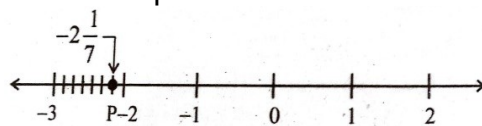
(iii)

Solution:

Point $\frac{4\frac{1}{3}}$ represents on the number line.

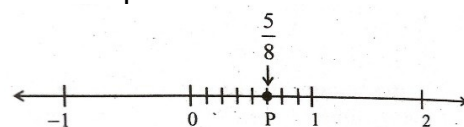
(iv)

Solution:

Point $-2\frac{1}{7}$ represents on the number line.

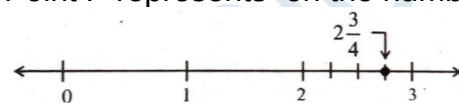
(v)

Solution :

Point $\frac{5}{8}$ represents on the number line.

(vi)

Solution:

Point $2\frac{3}{4}$ represents on the number line.Q. 3 Express the following as a rational number where a and b are integers and $b \neq 0$.

(i)

Solution:

Let

Multiplying both sides by " 10 ", we get

Subtracting eq. (i) from (ii)

(ii)

Solution:

Let

Multiplying both sides by " 100 "

Subtracting eq. (i) from (ii)

(iii)

Solution:

Let

Multiplying both sides by " 100 "

Subtracting eq.(i) from (ii)

Q. 4 Name the property used in the following.

Solution:

Sr. No.		Property Name
(i)		Associative property w.r.t addition
(ii)		Commutative property w.r.t addition
(iii)		Additive Inverse
(iv)		Left distributive property of multiplication over addition.
(v)		Additive Identity
(vi)		Multiplicative identity
(vii)		Associative property w.r.t multiplication
(viii)		Commutative property w.r.t multiplication.

5 . Name the property used in the following :

Solution :

(i)

Additive property of inequality

(ii) If then

Reciprocal property

(iii) If then

Additive property of inequality

(iv) If and then

Cancellation property of inequality w.r.t multiplication.

(v) If $a < b$ and then

Cancellation property of inequality w.r.t multiplication .

(vi) Either $a < b$ or $a > b$

Trichotomy property

6 . Insert two rational numbers between

(i) $\frac{1}{2}$ and $\frac{3}{4}$

Solution :

Two rational numbers between $\frac{1}{2}$ and $\frac{3}{4}$

Average of $\frac{1}{2}$ and $\frac{3}{4}$

Now we find average of $\frac{1}{2}$ and $\frac{3}{4}$

Average of $\frac{1}{2}$ and $\frac{3}{4}$

Thus $\frac{5}{8}$ and $\frac{7}{8}$ are two rational numbers between $\frac{1}{2}$ and $\frac{3}{4}$

(ii) 3 and 4

Solution:

Two rational numbers between 3 and 4

Average of 3 and 4

Average of 3 and 4

Thus $\frac{7}{2}$ and $\frac{9}{2}$ are two rational numbers between 3 and 4 .

(iii) $\frac{1}{3}$ and $\frac{1}{2}$

Solution:

Two rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$

Average of $\frac{1}{3}$ and $\frac{1}{2}$

Average of $\frac{1}{3}$ and $\frac{1}{2}$

Thus $\frac{5}{12}$ and $\frac{7}{12}$ are two rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$