

Maths Class 8 Important Question Chapter 1 Rational Numbers

Very Short Answer Questions

1 Marks

1. The additive inverse of $34\frac{3}{4}$ is _____

Ans: Additive inverse of any number is a number that can be added to a number to get 00.

Hence, the additive inverse of $34\frac{3}{4}$ is $-34\frac{3}{4}$.

2. Multiplicative inverse of is $18\frac{1}{8}$

Ans: Multiplicative inverse of any number is a number that can be multiplied to a number to get 11.

The multiplicative inverse of $pq\frac{p}{q}$ is $qp\frac{q}{p}$.

Hence, the multiplicative inverse of $18\frac{1}{8}$ is 88 .

3. A Rational number between 33 and 44 is _____

Ans: The rational number of any number can be calculated as;

$$(p+q)\frac{(p+q)}{2}$$

Hence, the required rational number is;

$$(3+4)\frac{(3+4)}{2} = \frac{7}{2}$$

Hence, $\frac{7}{2}$ is a rational number between 33 and 44.

4. Reciprocal of $-2 - 2$ is _____

Ans: Reciprocal of any number will be the inverse of that number.

That is, the reciprocal of a is $\frac{1}{a}$.

Hence, the reciprocal of -2 is $-\frac{1}{2}$.

5. Zero has _____ reciprocal

Ans: The product of any number with 0 will be 0 and hence, zero has no reciprocal.

6. Reciprocal of a negative number is _____

Ans: The product of any negative number with any number will be negative and hence, the reciprocal of a negative number will be negative.

7. Whole numbers start from _____

Ans: The numbers that start from 0, are called whole numbers.

8. There are _____ rational numbers between 33 and 44.

Ans: Infinite rational numbers are between 33 and 44.

Short Answer Questions

2 Marks

9. Sum of two numbers is $34\frac{3}{4}$, one of the number is $18\frac{1}{8}$. Find the other one.

Ans: Let the other number be x .

The sum of x and $18\frac{1}{8}$ is $34\frac{3}{4}$. Therefore, we have

$$\Rightarrow x + 18 = 34 \Rightarrow x = 34 - 18 \Rightarrow x = (3 \times 2) - 18$$

$$\Rightarrow x + \frac{1}{8} = \frac{3}{4}$$

$$\Rightarrow x = \frac{3}{4} - \frac{1}{8}$$

$$\Rightarrow x = \frac{(3 \times 2) - 1}{8}$$

$$\Rightarrow x = \frac{6 - 1}{8}$$

Since, [LCM=8] [LCM = 8] Therefore, $\Rightarrow x=6-18 \Rightarrow x=58$

$$\Rightarrow x = \frac{5}{8}$$

Therefore, the sum of $58\frac{5}{8}$ and $18\frac{1}{8}$ is $34\frac{3}{4}$.

10. Simplify $(-813)+(-326) \left(\frac{-8}{13} \right) + \left(\frac{-3}{26} \right)$

Ans: The given dfraction is;

$$-813-326\frac{-8}{13} - \frac{3}{26}$$

By simplifying above dfraction, we get

$$\Rightarrow (-8 \times 2) - 326 \Rightarrow \frac{(-8 \times 2) - 3}{26}$$

Since, [LCM=26] [LCM = 26]

Therefore,

$$\begin{aligned} &\Rightarrow \frac{-16 - 3}{26} \\ \Rightarrow -16 - 326 &\Rightarrow -1926 \\ &\Rightarrow -\frac{19}{26} \end{aligned}$$

Therefore, $(-813)+(-326) = -1926 \left(\frac{-8}{13} \right) + \left(\frac{-3}{26} \right) = -\frac{19}{26}$.

11. What number to be multiplied with $14\frac{1}{4}$ so as to get the product as $-516 - \frac{5}{16}$

Ans: Let the number be xx .

The product can be written as;

$$\Rightarrow 14 \times x \Rightarrow \frac{1}{4} \times x \text{ and,}$$

Product of xx and $14\frac{1}{4}$ is $-516 - \frac{5}{16}$.

Therefore, we have

$$\Rightarrow -516 = 14 \times x \Rightarrow x = 4 \times (-516)$$

$$\Rightarrow -\frac{5}{16} = \frac{1}{4} \times x$$
$$\Rightarrow x = 4 \times \left(-\frac{5}{16} \right)$$

Therefore, we get

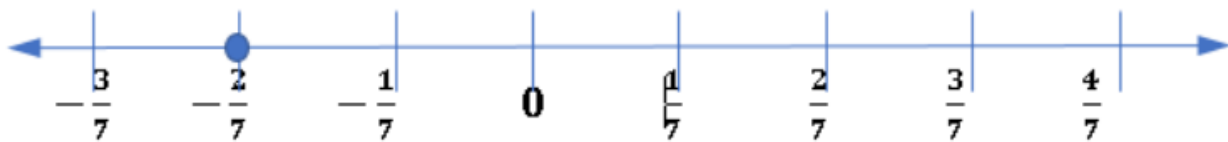
$$\Rightarrow x = -54 \Rightarrow x = -\frac{5}{4}$$

Hence, $-\frac{5}{4}$ is the number to be multiplied with $14\frac{1}{4}$ so as to get the product as -516
 $-\frac{5}{16}$.

12. Represent $-27 - \frac{2}{7}$ on the number line.

Ans: $-27 - \frac{2}{7}$ is a rational number.

$-27 - \frac{2}{7}$ on a Number Line, can be represented as follows;



13. Divide $12\frac{1}{2}$ by $[-13+25] \left[\frac{-1}{3} + \frac{2}{5} \right]$

Ans: The given fraction is;

$$[-13+25] \left[\frac{-1}{3} + \frac{2}{5} \right]$$

By simplifying above fraction, we get

$$\Rightarrow -13+25 \Rightarrow (-1.5)+(2.3)15$$

$$\Rightarrow -\frac{1}{3} + \frac{2}{5}$$

$$\Rightarrow \frac{(-1.5) + (2.3)}{15}$$

Since, [LCM=15] [LCM = 15] , therefore

$$\Rightarrow -5+6 \Rightarrow 1$$

$$\Rightarrow \frac{-5 + 6}{15}$$

$$\Rightarrow \frac{1}{15}$$

On dividing $12\frac{1}{2}$ by $115\frac{1}{15}$, we get

$$\Rightarrow 12 \div 115 \Rightarrow 12 \times 15 \Rightarrow 152$$

$$\Rightarrow \frac{1}{2} \div \frac{1}{15}$$

$$\Rightarrow \frac{1}{2} \times \frac{15}{1}$$

$$\Rightarrow \frac{15}{2}$$

14. Find three rational number between $-4 - 4$ and 44 Represent them on line.

Ans: The three rational numbers between $-4 - 4$ and 44 are $-2, -1, 1 - 2, -1, 1$.

On a number line, the mentioned rational numbers are represented as follows:



15. Define by example of addition

(a) Associative Property

Ans: Associative Property can be stated as while addition or multiplication of any two grouped numbers, the interchange of those numbers won't get affected on resultant addition or multiplication.

That is,

$$\Rightarrow a+b = b+a \Rightarrow a+b = b+a$$

The following example shows how the associative property gets used to solve it;

We can solve $9+7+9+7$ by using Associative Property; we get

$$\Rightarrow (7+9)=(9+7) \Rightarrow 7+9=16 \quad \Rightarrow (7+9) = (9+7) \quad \text{and} \\ \Rightarrow 7+9 = 16$$

$$\Rightarrow 9+7=16 \Rightarrow 9+7 = 16$$

Therefore, according to the property, we can add or multiply regardless of how the numbers are grouped.

Short Answer Questions

3 Marks

16. Simplify $[6 \times 7 + 3 \times 8 - 1 \times 28] \times \frac{4}{3}$ and find its reciprocal.

Ans: Reciprocal of any number will be the inverse of that number.

Hence, by solving above fraction, we get

$$\Rightarrow [6 \times 7 + 3 \times 8 - 1 \times 28] \times \frac{4}{3} \Rightarrow \left[\frac{6 \times 7 + 3 \times 8 - 1 \times 28}{56} \right] \times \frac{4}{3}$$

(Since the LCM of 7, 8, 8 and 28 is 56)

$$\Rightarrow [42 + 24 - 28] \times \frac{4}{3} \Rightarrow 38 \times \frac{4}{3} \Rightarrow 152$$

$$\Rightarrow \left[\frac{42 + 24 - 28}{56} \right] \times \frac{4}{3}$$

$$\Rightarrow \frac{38}{56} \times \frac{4}{3}$$

$$\Rightarrow \frac{38}{42}$$

Therefore,

Reciprocal of $41\frac{41}{42}$ is

$$\Rightarrow 41\frac{41}{42} = 1 \times 42\frac{41}{42} \Rightarrow \frac{1}{41\frac{41}{42}} = 1 \times \frac{42}{41}$$

$\Rightarrow 42\frac{41}{42}$

$$\Rightarrow \frac{42}{41}$$

Hence, reciprocal of $[6\frac{6}{7} + 3\frac{3}{8} - 1\frac{1}{2}] \frac{4}{3}$ is

$42\frac{41}{42}$

$$\frac{42}{41}$$

17. Find three Rational Number between 33 and 44. Represent them on the Number line.

Ans: 33 can be written as

$$\Rightarrow 3 \times 10\frac{10}{10} \Rightarrow 30\frac{10}{10}$$

$$\Rightarrow 3 \times \frac{10}{10}$$

$$\Rightarrow \frac{30}{10}$$

44 can be written as

$$\Rightarrow 4 \times 10\frac{10}{10} \Rightarrow 40\frac{10}{10}$$

$$\Rightarrow 4 \times \frac{10}{10}$$

$$\Rightarrow \frac{40}{10}$$

Hence, the three Rational Numbers are $31\frac{10}{10}, 32\frac{10}{10}, 33\frac{10}{10}$.

$31\frac{10}{10}, 32\frac{10}{10}, 33\frac{10}{10}$ these numbers can be represented on a Number line, are as follows;



18. Use appropriate property and find $-16 \times 47 + 12 - 37 \times 16 - \frac{1}{6} \times \frac{4}{7} + \frac{1}{2} - \frac{3}{7} \times \frac{1}{6}$

Ans: The given dfraction is;

$$-16 \times 47 + 12 - 37 \times 16 - \frac{1}{6} \times \frac{4}{7} + \frac{1}{2} - \frac{3}{7} \times \frac{1}{6}$$

By using associative property ($a+b = b+a$) ($a+b = b+a$), we can be simplifying the above dfraction as follows;

$$\Rightarrow -16 \times 47 - 37 \times 16 + 12 \Rightarrow -16 \times 47 - 16 \times 37 + 12 \Rightarrow -16[47+37] + 12 \Rightarrow -16 \times 77 + 12$$

$$\Rightarrow -\frac{1}{6} \times \frac{4}{7} - \frac{3}{7} \times \frac{1}{6} + \frac{1}{2}$$

$$\Rightarrow -\frac{1}{6} \times \frac{4}{7} - \frac{1}{6} \times \frac{3}{7} + \frac{1}{2}$$

$$\Rightarrow -\frac{1}{6} \left[\frac{4}{7} + \frac{3}{7} \right] + \frac{1}{2}$$

$$\Rightarrow -\frac{1}{6} \times \frac{7}{7} + \frac{1}{2}$$

Therefore,

$$\Rightarrow -1 + 36 \Rightarrow 26 \Rightarrow 13$$

$$\Rightarrow \frac{-1 + 3}{6}$$

$$\Rightarrow \frac{2}{6}$$

$$\Rightarrow \frac{1}{3}$$

$$\text{Hence, } -16 \times 47 + 12 - 37 \times 16 = 13 - \frac{1}{6} \times \frac{4}{7} + \frac{1}{2} - \frac{3}{7} \times \frac{1}{6} = \frac{1}{3}.$$

19. Find the multiplicative inverse of following

1. 16

$$\frac{1}{6}$$

Ans: Multiplicative inverse of any number is a number which can be multiplied to a number to get 11 .

Hence, the multiplicative inverse of $16\frac{1}{6}$ is

$$\Rightarrow 16 \times x = 1 \Rightarrow x = \frac{1}{16}$$

$$\Rightarrow \frac{1}{6} \times x = 1$$

$$\Rightarrow x = 6$$

Therefore, the multiplicative inverse of $16\frac{1}{6}$ is $\frac{1}{16}$.

2. $-38 - \frac{3}{8}$

Ans: Multiplicative inverse of any number is a number which can be multiplied to a number to get 11 .

Hence, the multiplicative inverse of $-38\frac{-3}{8}$ is

$$\Rightarrow -\frac{3}{8} \times x = 1$$

$$\Rightarrow -38 \times x = 1 \Rightarrow x = -\frac{1}{38}$$

$$\Rightarrow x = -\frac{8}{3}$$

Therefore, the multiplicative inverse of $-38 - \frac{3}{8}$ is $-\frac{8}{3}$.

3. $419\frac{4}{19}$

Ans: Multiplicative inverse of any number is a number which can be multiplied to a number to get 1 .

Hence, the multiplicative inverse of $419\frac{4}{19}$ is

$$\Rightarrow 419 \times x = 1 \Rightarrow x = \frac{1}{419}$$

$$\Rightarrow \frac{4}{19} \times x = 1$$

$$\Rightarrow x = \frac{19}{4}$$

Therefore, the multiplicative inverse of $419\frac{4}{19}$ is $194\frac{19}{4}$.

Long Answer Questions

4 or 5 Marks

20. Find three Rational number between $36\frac{3}{6}$ and $34\frac{3}{4}$

Ans: The rational number of any number can be calculated as;

$$(p+q) \frac{(p+q)}{2}$$

Hence, the mean of two Rational numbers is a Rational number.

For given numbers;

$$36 = 12\frac{3}{6} = \frac{1}{2} \text{ and } 34\frac{3}{4}$$

Mean can be calculated as;

$$\Rightarrow 12 + 342 \Rightarrow 542 \Rightarrow 58$$

$$\begin{aligned} & \frac{1}{2} + \frac{3}{4} \\ \Rightarrow & \frac{\quad}{2} \\ & \frac{5}{4} \\ \Rightarrow & \frac{\quad}{2} \\ & \frac{5}{8} \\ \Rightarrow & \frac{\quad}{8} \end{aligned}$$

$$\text{Since, } 12 < 58 < 34 \frac{1}{2} < \frac{5}{8} < \frac{3}{4};$$

$$\text{Now Mean of } 12 \frac{1}{2} \text{ and } 58 \frac{5}{8}$$

Mean is,

$$\Rightarrow 12 + 582 \Rightarrow 982 \Rightarrow 916$$

$$\begin{aligned} & \frac{1}{2} + \frac{5}{8} \\ \Rightarrow & \frac{\quad}{2} \\ & \frac{9}{8} \\ \Rightarrow & \frac{\quad}{2} \\ & \frac{9}{16} \\ \Rightarrow & \frac{\quad}{16} \end{aligned}$$

Since,

$$12 < 916 < 58$$

$$\frac{1}{2} < \frac{9}{16} < \frac{5}{8}$$

$$\text{Mean of } 58 \frac{5}{8} \text{ and } 34 \frac{3}{4}$$

Mean is,

$$\Rightarrow 58 + 342 \Rightarrow 5 + 68 \times 2 \Rightarrow 1116$$

$$\begin{aligned} & \frac{5}{8} + \frac{3}{4} \\ \Rightarrow & \frac{\quad}{2} \\ & \frac{5 + 6}{8 \times 2} \\ \Rightarrow & \frac{11}{16} \end{aligned}$$

$$\therefore 58 < 1116 < 342 \therefore \frac{5}{8} < \frac{11}{16} < \frac{3}{4}$$

Hence, $916, 58, 1116, \frac{9}{16}, \frac{5}{8}, \frac{11}{16}$ are the three rational numbers are between $36\frac{3}{6}$ and $34\frac{3}{4}$.

21.

1. Reciprocal of $-12 - \frac{1}{2}$

Ans: Reciprocals of any number are going to be the inverse of that number.

Hence, the reciprocal of $-12 - \frac{1}{2}$ is;

$$1 - 12 = -2 - \frac{1}{2} = -2 - \frac{1}{2}$$

Therefore, Reciprocal of $-12 - \frac{1}{2}$ is $-2 - \frac{1}{2}$.

2. Additive inverse of $49\frac{4}{9}$

Ans: Additive inverse of any number is a number which can be added to a number to get 00.

For the given number, we get

$$\Rightarrow 49 + x = 0 \Rightarrow \frac{4}{9} + x = 0$$

$$\Rightarrow \Rightarrow \quad x = -49x = -\frac{4}{9}$$

Therefore, an additive inverse of $49\frac{4}{9}$ is $-49 - \frac{4}{9}$.

3. Multiplicative inverse of $[16+49] \times 43 \left[\frac{1}{6} + \frac{4}{9} \right] \times \frac{4}{3}$

Ans: Multiplicative inverse of any number is a number which can be multiplied to a number to get 11 .

For given number, we get

$$\begin{aligned} & \Rightarrow [16+49] \times 43 \Rightarrow (1 \times 3 + 2 \times 4) 18 \times 43 \Rightarrow (3+8) 18 \times 43 \Rightarrow \frac{(1 \times 3 + 2 \times 4)}{18} \times \frac{4}{3} \text{ Therefore,} \\ & \Rightarrow \frac{(3 + 8)}{18} \times \frac{4}{3} \end{aligned}$$

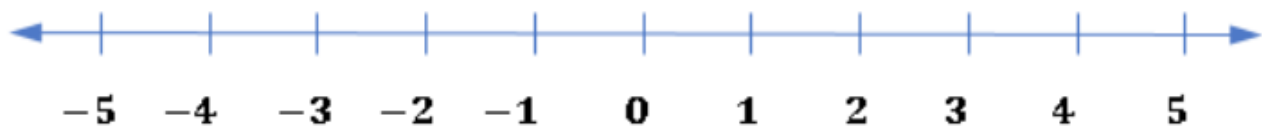
$$\begin{aligned} & \Rightarrow 1118 \times 43 \Rightarrow 2227 \\ & \Rightarrow \frac{11}{18} \times \frac{4}{3} \\ & \Rightarrow \frac{22}{27} \end{aligned}$$

Hence, multiplicative inverse of $[16+49] \times 43 \left[\frac{1}{6} + \frac{4}{9} \right] \times \frac{4}{3}$ is $2722\frac{27}{22}$.

22. Match the correct

(a) Whole number

(i)



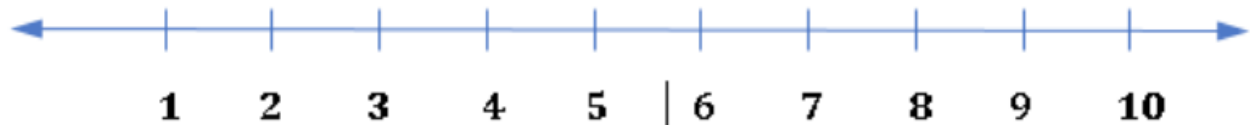
(b) Natural number

(ii)



(c) Integer

(iii)



(d) Rational Number

(iv)



Ans: The correct pairs are as follows;

(a) (ii)

(b) (iii)

(c) (i)

(d) (iv)

Whole numbers starts from 00 .

Natural numbers are positive numbers and starts from 11.

Integers will be positive, negative or 00 numbers.

Rational numbers are the dfractional numbers.