

I. MULTIPLE CHOICE QUESTIONS (MCQ)

For each question, there are four Options, out of which one is correct. Choose the correct one :

- If $x = \frac{1}{2}$ and $y = \frac{-1}{2}$, then
 (a) $x + y > 0$ (b) $x - y < 0$ (c) $x - y = 1$ (d) $x + y = 1$
- Which of the following rational numbers is in the standard form ?
 (a) $\frac{-9}{16}$ (b) $\frac{-49}{91}$ (c) $\frac{-12}{26}$ (d) $\frac{28}{-105}$
- The reciprocal of a negative rational number
 (a) is a positive rational number.
 (b) is a negative rational number.
 (c) does not exist.
 (d) can be either a positive or a negative rational number.
- The value of $\left(-\frac{9}{16} \times \frac{24}{27}\right)$ is
 (a) $\frac{-1}{3}$ (b) $\frac{-3}{7}$ (c) $\frac{-5}{12}$ (d) $\frac{-1}{2}$
- If $x = \frac{-3}{5}$ and $y = \frac{2}{7}$, then which of the following is correct ?
 (a) $|x \times y| = |x| \times |y|$ (b) $|x \times y| < |x| \times |y|$
 (c) $|x \times y| > |x| \times |y|$ (d) None of these
- If the price of 10 pens is ₹ $158\frac{1}{2}$, then the price of such 1000 pens is
 (a) ₹ 12580 (b) ₹ 15580 (c) ₹ 15850 (d) ₹ 15650
- The sum of two rational numbers is -3 . If one of the numbers is $-\frac{10}{3}$, the other number is
 (a) $\frac{11}{3}$ (b) $\frac{-17}{3}$ (c) $\frac{-1}{3}$ (d) $\frac{1}{3}$
- What number should be subtracted from $-\frac{3}{5}$ to get -3 ?
 (a) $\frac{-7}{5}$ (b) $\frac{12}{5}$ (c) $\frac{7}{5}$ (d) $\frac{-13}{5}$
- If -1 is obtained on doubling a rational number, then the rational number is
 (a) 2 (b) $\frac{-1}{4}$ (c) $\frac{1}{2}$ (d) $\frac{-1}{2}$
- The multiplicative inverse of 0 is
 (a) 0 (b) 1 (c) $\frac{0}{1}$ (d) not existing

II. TRUE / FALSE

1. We can insert as many rational numbers as we want between -2 and $\frac{1}{3}$.
2. The product of two rational numbers is always a positive integer.
3. All rational numbers can be represented on a number line.
4. '0' is the only rational number whose additive inverse is the number itself.
5. $-\frac{2}{3}$ lies on the right of 0 on the number line.
6. The product of zero and a rational number is 1.
7. $\frac{1}{2} \times \frac{3}{2} = \frac{3}{2} \times \frac{1}{2}$
8. Zero is not the reciprocal of any number.
9. The product of 1 and a rational number is the rational number itself.
10. The additive inverse of $\frac{-6}{-17}$ is $\frac{-17}{6}$.

III. FILL IN THE BLANKS

1. For any rational number a ($a \neq 0$), $a \div (-a) =$ _____ .
2. $\frac{-2}{15} + \frac{7}{12} = \frac{7}{12} +$ _____ .
3. The percentage of the least to the greatest of the numbers in $\frac{3}{7}, \frac{1}{7}, \frac{2}{7}, \frac{4}{7}$ is _____ .
4. The denominator of a rational number cannot be _____ .
5. If $\frac{-2}{5} = \frac{13}{x}$, then $x \approx$ _____ .
6. The sum of two rational numbers is always a _____ number.
7. The difference of two rational numbers is a _____ number.
8. Three or more rational numbers can be added by grouping them in _____ order.
9. _____ is called the identity element for addition of rational numbers.
10. The sum of any rational number and _____ is the rational number itself.

IV. MATCH THE COLUMNS

1.

Column A

(a) $\left| \frac{2}{3} - \frac{3}{4} \right|$ is equal to _____ .

(b) The additive inverse of $\frac{-3}{5} =$ _____ .

(c) The multiplicative inverse of $-\frac{2}{7}$ is _____ .

(d) A rational number between $\frac{1}{2}$ and $-\frac{1}{3}$ is _____ .

Column B

(p) $\frac{1}{12}$

(q) $\frac{-1}{12}$

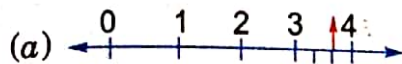
(r) $\frac{3}{5}$

(s) $\frac{7}{-2}$

(2)

2.

Column A



Column B

(p) $\frac{12}{5}$

(q) $\frac{3}{5}$

(r) $3\frac{2}{3}$

(s) $\frac{2}{7}$

Section B

I. SHORT AND LONG ANSWER TYPE QUESTIONS

- Find three rational numbers between -2 and -3 .
- How many rational numbers can be found between two distinct rational numbers 'a' and 'b'?
- Verify the following :

(i) $\frac{5}{7} \times \frac{-12}{5} = \frac{-12}{5} \times \frac{5}{7}$

(ii) $\frac{-3}{4} \times \frac{17}{8} \times \frac{-1}{2} = \frac{-1}{2} \times \frac{-3}{4} \times \frac{17}{8}$

(iii) $\frac{5}{-7} + \frac{7}{5} + \frac{-3}{2} = \frac{7}{5} + \frac{-3}{2} + \frac{5}{-7}$

(iv) $\frac{3}{4} + \frac{-4}{3} + \frac{5}{6} = \frac{-4}{3} + \frac{5}{6} + \frac{3}{4}$

(v) $\frac{2}{-9} + \frac{-3}{5} + \frac{1}{3} = \frac{-3}{5} + \frac{2}{-9} + \frac{1}{3}$

- The sum of two rational numbers is $-\frac{13}{33}$. If one of them is $-\frac{7}{11}$, find the other.

- What number should be added to $\frac{8}{14}$ to get $\frac{-2}{7}$?

- What number should be subtracted from $\frac{-5}{4}$ to get 0?

- If $x = -\frac{1}{3}$ and $y = -\frac{2}{5}$, prove that :

(i) $|x + y| = |x| + |y|$

(ii) $|x \times y| = |x| \times |y|$

- What should be added to $\frac{3}{4}$ so that the sum may be zero?

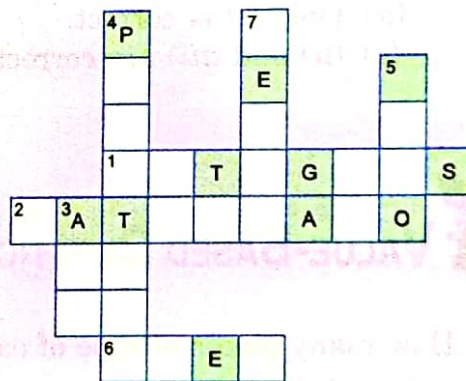
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PUZZLES

- Read the given clues and then fill in the boxes :

Across : →

- Smallest set of numbers which is closed under subtraction.
- A number of the form $\frac{p}{q}$ where, p, q are integers and $q \neq 0$.
- A number divisible by 2.



Down : ↓

- Related to an operation on rational numbers which gives same result even when the numbers change places.
- Opposite of the word negative.
- Additive identity for rational numbers.
- A prime number which is sum of an even number and a prime number.

9. The product of two rational numbers is $-\frac{12}{35}$. If one of them is $\frac{3}{5}$, find the absolute value of the difference of two rational numbers.

10. Simplify and write as a rational number of the form $\frac{p}{q}$:

(i) $\frac{15}{2} + \frac{-11}{3} + 6 + \frac{-7}{6} + \frac{9}{8}$

(ii) $\frac{6}{7} + 1 + \frac{-7}{9} + \frac{-12}{7} + \frac{19}{21}$

II. MENTAL MATHEMATICS

1. Which rational number has no reciprocal ?
2. Which rational number is its own opposite ?
3. By what number should we multiply $\frac{-1}{6}$ so that the product may be $\frac{-23}{9}$?

4. Find six rational numbers between $\frac{3}{8}$ and $\frac{-1}{2}$.

5. For any two rational numbers x and y , which of the following statements is (are) correct ?

(i) $x > y$

(ii) $x = y$

(iii) $x < y$

(a) Only (i) is correct.

(b) Only (iii) is correct.

(c) (ii) and (iii) are correct.

(d) All the three are correct.

HOTS

Higher Order Thinking Skills

1. How many rational numbers exist between any two distinct rational numbers ?
2. Is $(4 + 2) = (2 + 4)$? What does it show ?
3. Is 0.3 the multiplicative inverse of $3\frac{1}{3}$? Why or why not ?
4. Using appropriate properties find :

$$\frac{-2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6}$$



VALUE-BASED QUESTIONS



1. How many pieces of rope of each $5\frac{1}{6}$ metres long can be cut from a rope of $77\frac{1}{2}$ metres long ?
2. If area of a rectangle is $\frac{120}{49}$ cm² and one of its sides is $\frac{10}{7}$ cm, find the length of other side.

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