

VIII H.W - 17th Thursday (Rational Numbers)

1) Which of the following forms a pair of equivalent rational numbers?

(a) $\frac{14}{32}$ and $\frac{21}{35}$ (b) $\frac{-15}{21}$ and $\frac{20}{-28}$ (c) $\frac{-5}{7}$ and $\frac{-20}{26}$ (d) $\frac{6}{-16}$ and $\frac{-9}{-36}$

2) Which of the following rational number is in the standard form?

(a) $14/27$ (b) $-49/91$ (c) $-13/52$ (d) $-27/105$

3) Which of the following rational number is the greatest among the following?

(a) $\frac{3}{-7}$ (b) $\frac{-5}{14}$ (c) $\frac{-16}{56}$ (d) $\frac{-13}{28}$

4) A number which is to be added to $-\frac{7}{3}$ to get -2 is

(a) $\frac{2}{3}$ (b) $-\frac{2}{3}$ (c) $\frac{1}{3}$ (d) $\frac{3}{2}$

5) The sum of two rational numbers is $\frac{29}{21}$. If one of the numbers is $\frac{2}{3}$, then the other number is

(a) $-\frac{2}{9}$ (b) $-\frac{3}{5}$ (c) $\frac{5}{7}$ (d) $-\frac{5}{3}$

6) The product of two rational numbers is $-\frac{21}{5}$. If one of the numbers is $\frac{7}{5}$, then the other number is

(a) $-\frac{3}{4}$ (b) $\frac{7}{2}$ (c) $-\frac{3}{8}$ (d) $-\frac{7}{2}$

7) $\frac{21}{5}$ is additive inverse of (a) -4.2 (b) $-\frac{5}{21}$ (c) -4.5 (d) $\frac{5}{21}$

Name the property :-

(i) $\left(-\frac{3}{7}\right) + \frac{4}{6} = \frac{4}{6} + \left(-\frac{3}{7}\right)$

(ii) $\frac{2}{3} \times \frac{1}{7} = \frac{1}{7} \times \frac{2}{3}$

(iii) $\frac{3}{2} \times \left(\frac{7}{5} + \frac{1}{2}\right) = \frac{3}{2} \times \frac{7}{5} + \frac{3}{2} \times \frac{1}{2}$

(iv) $\frac{3}{5} \times \left(\frac{4}{3} \times \frac{1}{5}\right) = \left(\frac{3}{5} \times \frac{4}{3}\right) \times \frac{1}{5}$

(v) $\frac{5}{2} \times \left(-\frac{7}{3} \times \frac{-8}{3}\right) = \left(\frac{5}{2} \times \frac{-7}{3}\right) \times \left(\frac{-8}{3}\right)$

Fill in the blanks :-

- 1) _____ is the multiplicative inverse of $2\frac{1}{2}$
- 2) For a rational number to be positive, the numerator and denominator should be _____
- 3) Between two given numbers, we may not get an _____ but always a _____ number.
- 4) The product of a rational number and its reciprocal is _____
- 5) If x is reciprocal of y , then reciprocal of y is _____
- 6) Between two rational numbers x and y , there is a rational number _____
- 7) The negative of a negative rational number is the _____
- 8) The reciprocal of -7 is _____
- 9) The two rational numbers which are equal to their reciprocals are _____ and _____
- 10) The rational number that does not have its reciprocal is _____

T/F? Justify your answer if false

- 1) 4 is the smallest composite number.
- 2) All whole numbers are natural numbers.
- 3) The rational number between 3 and 2 is $\frac{3-2}{2}$.
- 4) Every integer is a rational number.
- 5) Every rational number is an integer.
- 6) There exists a rational number which is equal to its negative.
- 7) Between any two rational numbers, there are infinite rational numbers.
- 8) Every whole number is a rational number.
- 9) Rational numbers are closed under the operation of division.
- 10) The difference of two rational numbers is a rational number.

Answer the following :-

- 1) Write the additive inverse of the following :-

(i) $-\frac{6}{-5}$ (ii) $\frac{2}{-7}$ (iii) $-\frac{5}{11}$

2) Find the multiplicative inverse of the following: -

(i) -17 (ii) $-\frac{12}{17}$ (iii) $-\frac{3}{8} \times -\frac{5}{2}$

3) Find five rational numbers between $-\frac{2}{5}$ and $\frac{1}{5}$.

4) Write three rational numbers greater than -3 .

5) Prove that:

$$\left[-\frac{2}{3} - \left(\frac{4}{-5}\right)\right] - \frac{1}{2} = -\frac{11}{30}$$

6) Represent $\frac{5}{3}$ and $-\frac{5}{3}$ on the number line.

7) By what number should we multiply $-\frac{8}{13}$ to get the product 32?

8) Simplify using suitable property:

$$\frac{91}{41} \left(-\frac{2}{3}\right) + \left(\frac{4}{3}\right) \frac{91}{41} + \left(-\frac{2}{3}\right) \frac{91}{41}$$

9) If $x = \frac{1}{7}$, $y = \frac{2}{3}$ and $z = -\frac{1}{3}$, verify that $x \times (y+z) = (x \times y) + (x \times z)$

10) From a cord of 16m length, two pieces of length $3\frac{1}{3}$ m and $2\frac{2}{5}$ m are cut off. Find the length of the remaining cord.

11) Evaluate: $\left|\frac{9}{7}\right| - \left|-\frac{2}{7}\right| + \frac{3}{7} - \left|\frac{4}{-7}\right|$

12) If $\frac{4}{9} \div x = -\frac{10}{3}$, then find the value of x .

13) The cost of $3\frac{2}{5}$ m of cloth is ₹ 442. Find the cost of cloth per metre.

14) Find the sum of additive inverse and multiplicative inverse of 5.

15) If $\frac{2}{3}$ of a number exceeds its $\frac{3}{5}$ by 1, find the number.

VIII H.W. - 17th Feb (Answers)

1) $-15x - 28 = 420$
 $21 \times 20 = 420$ (b)

2) $\frac{14}{27}$ (a)

3) $-\frac{3 \times 8}{7 \times 8}$, $-\frac{5 \times 4}{14 \times 4}$, $-\frac{16}{56}$, $-\frac{13 \times 2}{28 \times 2}$
 $-\frac{24}{56}$, $-\frac{20}{56}$, $-\frac{16}{56}$, $-\frac{26}{56}$

greatest rational number is $-\frac{16}{56}$ (c)

4) $-\frac{1}{3} + x = -2$
 $x = -2 + \frac{1}{3} = \frac{-6 + 1}{3} = \frac{1}{3}$ (c)

5) $\frac{2}{3} + x = \frac{29}{21}$
 $x = \frac{29}{21} - \frac{2 \times 7}{3 \times 7} = \frac{29 - 14}{21} = \frac{15}{21} = \frac{5}{7}$ (c)

6) $\frac{1}{5} \times x = -\frac{21}{40}$
 $x = \frac{-21 \times 5}{40 \times 7} = -\frac{3}{8}$ (c)

7) $-\frac{21}{5} = -4.2$ (a)

* Name the property:

- (i) Commutative property of addition of rational numbers
- (ii) Commutative property of multiplication of rational numbers
- (iii) Distributive property of multiplication over addition of rational numbers.
- (iv) Associative property of multiplication of rational numbers
- (v) associative property of multiplication of rational numbers.

* Fill in the blanks

1) $\frac{2}{5}$

- 2) of same sign
- 3) integer, rational number.
- 4) 1
- 5) 2
- 6) $\frac{x+y}{2}$

- 7) number itself
- 8) $-\frac{1}{7}$

- 9) 1, -1

- 10) 0

* True or False

- 1) True
- 2) False, 0 is not a natural number.
- 3) False, $\frac{3+2}{2}$
- 4) True
- 5) False, fractions are not integers.
- 6) False
- 7) True
- 8) True
- 9) False, division by zero is not defined.
- 10) True.

* Answers the following

1. (i) $-\frac{6}{5}$

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

(iii) $\frac{5}{11}$

2. (i) $-\frac{1}{17}$ (ii) $-\frac{17}{12}$ (iii) $\frac{16}{15}$

3. $\frac{-2 \times 10}{5 \times 10}$ $\frac{1 \times 10}{5 \times 10} \Rightarrow \frac{-20}{50}$ $\frac{10}{50}$

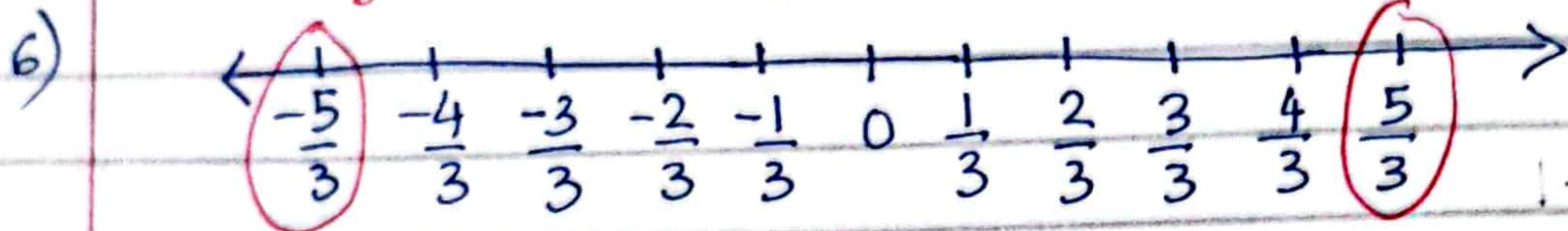
\therefore five rational numbers between $-\frac{2}{5}$ and $\frac{1}{5}$ are $-\frac{19}{50}, -\frac{17}{50}, 0, \frac{1}{50}, \frac{3}{50}$

4) $-2, -1, 0$

5) $\left(\frac{-2 \times 5}{3 \times 5} + \frac{4 \times 3}{5 \times 3}\right) - \frac{1}{2}$

$$= \frac{-10 + 12}{15} - \frac{1}{2} = \frac{2 \times 2}{15 \times 2} - \frac{1 \times 15}{2 \times 15} = \frac{4 - 15}{30}$$

$$= -\frac{11}{30}$$



Thus A and B represent $\frac{5}{3}$ and $-\frac{5}{3}$ on the number line.

7) $-\frac{8}{13} \times x = 32$

$$\therefore x = \frac{32 \times 13}{-8} = -52$$

8) $\frac{91}{41} \left[-\frac{2}{3} + \frac{4}{3} - \frac{2}{3} \right] = \frac{91}{41} \left[-\frac{4}{3} + \frac{4}{3} \right] = \frac{91}{41} \times 0 = 0$

9) LHS, $\frac{1}{7} \times \left(\frac{2}{3} - \frac{1}{3} \right) = \frac{1}{7} \times \frac{1}{3} = \frac{1}{21}$

RHS, $\left(\frac{1}{7} \times \frac{2}{3} \right) - \left(\frac{1}{7} \times \frac{1}{3} \right) = \frac{2}{21} - \frac{1}{21} = \frac{1}{21}$

\therefore LHS = RHS.

Hence verified

10) Total length of 2 pieces = $\frac{10 \times 5}{3 \times 5} + \frac{12 \times 3}{5 \times 3} = \frac{50 + 36}{15} = \frac{86}{15}$

$$\therefore \text{length of remaining cord} = 16 - \frac{86}{15} = \frac{240 - 86}{15}$$

$$= \frac{154}{15} = 10\frac{4}{15} \text{ m}$$

11) $\frac{9}{7} - \frac{2}{7} + \frac{3}{7} - \frac{4}{7} = \frac{9 - 2 + 3 - 4}{7} = \frac{6}{7}$

12) $\frac{4}{9} \times \frac{1}{x} = -\frac{10}{3}$

$$\frac{1}{x} = -\frac{10 \times 9}{3 \times 4} = -\frac{15}{2}$$

$$\therefore x = -\frac{2}{15}$$

$$13) \text{ Cost of } \frac{17}{5} \text{ m of cloth} = ₹ 442$$

$$\therefore \text{ Cost of 1 m of cloth} = 442 \div \frac{17}{5} = 442 \times \frac{5}{17}$$

$$= 26 \times 5 = \underline{\underline{₹ 130}}$$

$$14) -5 + \frac{1}{5} = -\frac{25+1}{5} = -\frac{24}{5} = -4\frac{4}{5}$$

15) Let the number be x

$$\frac{2^{\times 5} x}{3^{\times 5}} - \frac{3^{\times 3} x}{5^{\times 3}} = 1$$

$$\frac{10x - 9x}{15} = 1$$

$$\frac{x}{15} = 1$$

$$\therefore x = 15$$

Hence, the number = 15
