

**HOME ASSIGNMENT**

**RATIONAL NUMBERS**

**SINGLE OPTION CORRECT**

- Product of two irrational numbers are \_\_\_\_\_
  - Rational number
  - Irrational Number
  - Natural Number
  - Either rational or irrational
- If we divide the sum of  $\frac{65}{12}$  and  $\frac{12}{7}$  by their differences we will get \_\_\_\_\_.
  - $\frac{311}{599}$
  - $\frac{599}{311}$
  - $-\frac{599}{311}$
  - $-\frac{311}{599}$
- The associative property is applicable to:
  - Addition and subtraction
  - Multiplication and division
  - Addition and multiplication
  - Subtraction and division
- The additive identity of rational numbers is:
  - 0
  - 1
  - 2
  - 1
- What should be subtracted from  $-\frac{2}{3}$  to get -1?
  - $\frac{1}{3}$
  - $-\frac{1}{3}$
  - $\frac{2}{3}$
  - $-\frac{2}{3}$
- Which of the following is the smallest rational number?
  - $\frac{1}{2}$
  - 0
  - $-\frac{1}{2}$
  - 1
- Which of the following properties of rational numbers is given below?
$$\frac{7}{4} \times \left( \frac{-8}{3} + \frac{-13}{12} \right) = \frac{7}{4} \times \frac{-8}{3} + \frac{7}{4} \times \frac{-13}{12}$$
  - Commutativity of addition
  - Associativity of multiplication
  - Distributive of multiplication over addition
  - Distributive of addition over multiplication
- The rational number which is not lying between  $\frac{5}{16}$  and  $\frac{1}{2}$  is \_\_\_\_\_.
  - $\frac{3}{8}$
  - $\frac{7}{16}$
  - $\frac{1}{4}$
  - $\frac{13}{32}$

9. There are 42 students in a class. Out of these  $\frac{3}{4}$  of the boys and  $\frac{2}{3}$  of the girls come to school by bus. The total number of boys and girls of the same class who come to school by bus is 30. How many boys are there in the class?

- A. 20                                  B. 24                                  C. 26                                  D. 16

10. Which of the following options is **INCORRECT**?

- A. The rational number 0 is the additive identity for rational numbers  
 B. The additive inverse of the rational number  $\frac{a}{b}$  is  $-\frac{a}{b}$  and vice-versa  
 C. Rational numbers are closed under the operations of subtraction, multiplication and division  
 D. There are infinite rational numbers between any two rational numbers

11. State 'T' for true and 'F' for false.

- (i) The rational number  $\frac{-8}{-3}$  lies neither to the right nor to the left of zero on the number line  
 (ii) The rational numbers  $\frac{1}{2}$  and  $-\frac{5}{2}$  are on the opposite sides of 0 on the number line.  
 (iii) 0 is the smallest rational number.  
 (iv) For every rational number  $x$ ,  $x + 1 = x$ .

- A.    B.    C.    D.

(i)	(ii)	(iii)	(iv)
F	T	T	F

(i)	(ii)	(iii)	(iv)
T	T	F	F

(i)	(ii)	(iii)	(iv)
F	T	F	F

(i)	(ii)	(iii)	(iv)
T	T	F	F

12. If  $X = \frac{2 + 3 \times 2}{-5}$  then  $|-X|$  is equal to \_\_\_\_\_.

- A.  $\frac{8}{5}$                                   B.  $-\frac{8}{5}$                                   C. 0                                  D. 1

13. The multiplicative inverse of  $-\frac{a}{b}$  is \_\_\_\_\_

- A.  $\frac{a}{b}$                                   B.  $\frac{b}{a}$                                   C.  $-\frac{b}{a}$                                   D.  $-\frac{a}{b}$

14. The multiplicative identity of rational numbers is:

- A. 0                                  B. 1                                  C. 2                                  D. -1

15. Which of the following statements is **TRUE**?

- A. Every point on the number line represents a rational number.                                  C.  $(17 \times 12)^{-1} = 17^{-1} \times 12$   
 B. The product of a rational number and its reciprocal is 0.                                  D. Reciprocal of  $\frac{1}{a}$ ,  $a \neq 0$  is  $a$

16. Find  $(x + y) \div (x - y)$  if  $\frac{x}{4} \div y = \frac{3}{2}$
- (A)  $7/5$  (B)  $10/3$  (C)  $-1/2$  (D)  $-7/5$
17. Which of the following statement is true?
- (A) Every point on the number line represents a rational number (C)  $(17 \times 12)^{-1} = 17^{-1} \times 12$
- (B) The product of a rational number and its reciprocal is 0. (D) Reciprocal of  $\frac{1}{a}, a \neq 0$  is a
18. Additive inverse of  $\frac{3}{-4}$  is \_\_\_\_.
- (A)  $3/4$  (B)  $1/4$  (C) 3 (D) 0
19. Which of the following statement is false?
- (A) Every fraction is a rational number (B) Every rational number is a fraction
- (C) Every integer is a rational number (D) All of these
20. What is the value of the fraction  $1 + \frac{2}{1 + \frac{3}{1+4}}$  when written as a decimal ?
- (A) 1.5 (B) 2.25 (C) 2.5 (D) 2.6
21. The last digit in the finite decimal representation of the number  $\left(\frac{1}{5}\right)^{2024}$  is
- (A) 2 (B) 4 (C) 6 (D) 8
22. Sum of two rational numbers is  $-\frac{1}{12}$ . If one of the number is  $-\frac{5}{6}$ . The other is \_\_\_\_
- (A)  $1/4$  (B)  $3/4$  (C)  $5/4$  (D)  $7/4$
23. The product of two rational numbers is  $-\frac{28}{81}$ . If one of them is  $\frac{14}{27}$  find the other.
- (A)  $-1/3$  (B)  $-2/3$  (C)  $-5/3$  (D)  $-4/3$
24.  $\frac{-3}{5} \times \left(\frac{21}{-4}\right) \times (-6) \times \left(\frac{-10}{9}\right)$  is equal to
- (A) 19 (B) 20 (C) 21 (D) 22

25. The value of  $x$  satisfying the equation  $\frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{x}}}} = \frac{3}{4}$  is \_\_\_\_\_

- (A) 2                                      (B) - 2                                      (C) 3                                      (D) 1

26. Verify that  $|x \times y| = |x| \times |y|$  by taking -

- (i)  $x = \frac{-1}{2}, y = \frac{-1}{3}$                       (ii)  $x = \frac{2}{3}, y = \frac{-7}{2}$                       (iii)  $x = \frac{11}{2}, y = \frac{5}{121}$                       (iv)  $x = \frac{-3}{5}, y = \frac{-5}{3}$

27. Simplify and express the result as a rational number in the standard form.

- (i)  $\frac{-7}{16} \times (-24)$                       (ii)  $\frac{7}{-3} \times \frac{1}{28}$

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

29. Arrange the rational numbers in the descending order -

- (i)  $\frac{-4}{9}, \frac{-5}{12}, \frac{7}{-18}, \frac{2}{-3}$                       (ii)  $\frac{3}{-4}, \frac{-5}{12}, \frac{-7}{16}, \frac{9}{24}$                       (iii)  $3\frac{4}{5}, 6\frac{2}{5}, -7\frac{2}{3}, -5\frac{1}{4}$

30. Verify that  $(x + y) + z = x + (y + z)$

- (i)  $x = 2, y = -3, z = \frac{-3}{5}$                       (ii)  $x = \frac{-2}{3}, y = \frac{7}{4}, z = \frac{-3}{5}$   
 (iii)  $x = 3\frac{2}{3}, y = \frac{-3}{5}, z = 2$                       (iv)  $x = \frac{2}{9}, y = \frac{-1}{3}, z = \frac{7}{9}$

**MULTIPLE OPTIONS CORRECT**

1. Rational Number between -2 and 5.

- A.  $\frac{3}{2}$                                       B.  $13/4$                                       C.  $-1/4$                                       D.  $-11/3$

3. Which of the following is the correct definition of rational number

- A.  $Q = \{\frac{p}{q} : p \neq 0 \text{ and } p, q \in I\}$                       B.  $Q = \{\frac{p}{q} : q \neq 0 \text{ and } p, q \in I\}$   
 C.  $Q = \{p \cdot q^{-1} : q \neq 0 \text{ and } p, q \in I\}$                       D.  $Q = \{\frac{p}{q} : q \neq 0 \text{ and } p \in R, q \in I\}$

2. In a given diagram - 520 is

- A. Whole Number      B. Integer  
C. Rational Number    D. None

4. Which of the following are/is twin prime between 1 to 50

(If  $x$  &  $y$  are twin primes then both  $x$  &  $y$  must be individually prime & they should differ by 2)

- A. 3, 5                      B. 11, 13  
C. 15, 17                  D. 41, 43

5. Which of the following numbers have irrational square root?

- A. 125                      B. 6025                      C. 175                      D. 9025

6. '0' is not \_\_\_\_\_

- A. Natural number.      B. A whole number      C. An integer              D. A rational number

7. The rational number that does not have a reciprocal is

- A. 0                          B.  $\infty$                           C. 1                          D. -1

8. Which of the following options will give result as 1?

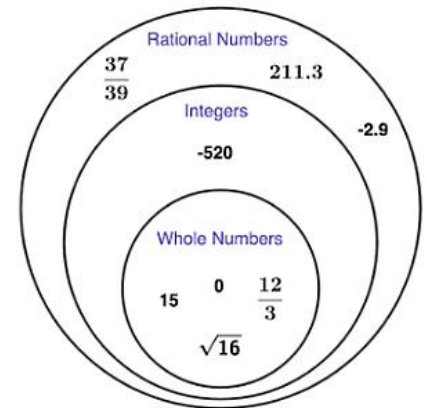
- A. Sum of a number and its additive inverse      B. Difference of a number & its multiplicative inverse  
C. Product of a number & its multiplicative inverse    D. Division of a number by itself.

9. The value of  $4 + \frac{1}{1 - \left(\frac{3}{2 + \frac{1}{3}}\right)}$

- A.  $\frac{1}{6}$                           B.  $\frac{7}{6}$                           C.  $\frac{3}{7}$                           D. None of these

10. In a recipe making, every  $1\frac{1}{2}$  cup of rice requires  $2\frac{3}{4}$  cups of water. Express this, in the ratio of rice to water.

- A.  $1\frac{5}{6}$                           B.  $\frac{11}{6}$                           C.  $\frac{6}{11}$                           D.  $2\frac{1}{3}$



## SUBJECTIVE PROBLEMS

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1. Solve the following

A. Find the two rational numbers equivalent to  $\frac{3}{7}$

B. Write each of the following rational numbers with positive denominator:

$$\frac{3}{-7}, \frac{11}{-28}, -\frac{19}{-13}$$

2. Find the value of  $\left\{-\frac{8}{11} \times \left(1\frac{1}{3}\right)\right\} + \left\{\left(\frac{9}{11} \div \left(\frac{2}{6} + 3\right)\right) + 1\right\}$

3. If  $x = -\frac{7}{11}, y = \frac{2}{-5}, z = -\frac{3}{22}$  verify  $x + (y + z) = (x + y) + z$

4. Solve the following:

A.  $\frac{4}{13} + -\frac{5}{8} + -\frac{8}{13} + \frac{9}{13}$       B.  $\frac{2}{3} + -\frac{4}{5} + \frac{1}{3} + \frac{2}{5}$

C. The sum of the two rational numbers is -8. If one of the numbers is  $-\frac{15}{7}$ , find the other.

5. Evaluate :  $-\frac{12}{5} + \left(-\frac{9}{20}\right) + \frac{2}{5} + \frac{4}{25} - \frac{11}{10}$

6. Multiply the following

A.  $-\frac{11}{3}, -\frac{9}{-22}$       B.  $\left(-\frac{5}{6} + \frac{2}{3}\right), -\frac{7}{-3}$

7. Simplify:

(i)  $\left(\frac{3}{2}\right) \times \left(\frac{1}{6}\right) + \left(\frac{5}{3}\right) \times \left(\frac{7}{2}\right) - \left(\frac{13}{8}\right) \times \left(\frac{4}{3}\right)$       (ii)  $\left(\frac{13}{9}\right) \times \left(-\frac{15}{2}\right) + \left(\frac{7}{3}\right) \times \left(\frac{8}{5}\right) + \left(\frac{3}{5}\right) \times \left(\frac{1}{2}\right)$

8. Mr. Peter bought a pizza, he ate two-fifth of it, his son ate one-fifth of it and his wife ate the rest. What amount of the pizza did his wife eat?

9. A basket contains three types of fruits weighing  $\frac{58}{3}$  kg in all. If  $\frac{73}{9}$  kg of these be apples,  $\frac{19}{6}$  kg be oranges and the rest pears. What is the weight of the pears in the basket?

10. Ravi multiplied  $\frac{25}{8}$  and  $\frac{16}{15}$  to obtain  $\frac{400}{120}$ . He says that the simplest form of this product is  $10\frac{3}{3}$  and Chandra says the answer in the simplest form is  $3\frac{1}{3}$ . Who is correct? (or) Are they both correct? Explain



THANKS!



**Keep smiling!**

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### ANSWER KEY & SOLUTION

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#### SINGLE OPTION CORRECT

- |       |   |       |       |
|-------|---|-------|-------|
| 1. B  | 2. B  | 3. C  | 4. A  |
| 5. A  | 6. C  | 7. C  | 8. C  |
| 9. B  | 10. C                                       | 11. D | 12. A |
| 13. C | 14. B                                       | 15. D | 16. A |
| 17. D | 18. A                                       | 19. B | 20. B |
| 21. C | 22. B                                       | 23. B | 24. C |
| 25. B | 27. (i) $\frac{21}{2}$ (ii) $\frac{-1}{12}$ |       |       |

#### MULTI OPTIONS CORRECT

- |            |            |         |            |
|------------|------------|---------|------------|
| 1. A, B, C | 2. B, C    | 3. B, C | 4. A, B, D |
| 5. A, B, C | 6. A, C, D | 7. A    | 8. C, D    |
| 9. A, B    | 10. B      |         |            |