

**Chapter End Test**  
(2019-20)

Date : \_\_\_\_\_  
Duration : 45 Min.  
Max. Marks : 25

**Mathematics**  
Topic: Rational Numbers

**Class**  
**VIII**

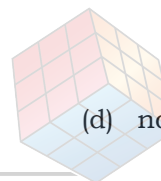
**Instructions:**

- ▶ All questions are compulsory.
- ▶ Section A is comprised of 15 multiple choice questions carrying 1 mark each.
- ▶ Section B is comprised of 3 questions carrying 3, 3 and 4 marks respectively.
- ▶ Use of calculator is not permitted.
- ▶ Objectives of test paper. (i) To assess the conceptual understanding of students. (ii) To make them attempt subjective questions as required in CBSE Board Exam.

**Section - A**

- Which of the following is incorrect ?  
(a) rational numbers are closed under addition  
(b) rational numbers are closed under multiplication  
(c) rational numbers are closed under division  
(d) rational numbers are closed under subtraction.
- If M is the reciprocal of a rational number N. Then the difference of product of M & N and 1 is:  
(a) MN (b) MN-1 (c) 0 (d) not possible
- The denominator of the rational number 5.2 in the  $\frac{p}{q}$  form is:  
(a) 100 (b) 6 (c) 5 (d) 1
- Which of the following statements show the distributive law for rational numbers x, y, z ?  
(a)  $[x \times y] + z = (x + z)(y + z)$  (b)  $[x + y] \times z = xz + yz$   
(c)  $[x \times y] \times z = x \times z \times y \times z$  (d) none
- The rational number which does not have a reciprocal is :  
(a) 5 (b) not defined (c) no such number (d) 0
- The rational number equal to its negative is  
(a) 1 (b) -5 (c) 0 (d) no such number
- The sum of negative of negative of a number and negative of positive of the number is :  
(a) the number itself (b) 0 (c) 1 (d) none
- Which of the following is the largest negative integer?  
(a) -999 (b) 0 (c) -1 (d) does not exist
- Which of the following is the largest set of numbers?  
(a) whole numbers (b) integers (c) rational numbers (d) natural numbers
- A rational number between half of 5 and half of 7 is :  
(a) 2 (b) 5.5 (c) 6 (d) 3
- When we divide additive inverse of 3 with the multiplicative inverse of 3, the result is :  
(a) -9 (b) 0 (c) 1 (d) 3

12.  $\frac{-3}{8} + \frac{1}{7} = \frac{1}{7} + \left(\frac{-3}{8}\right)$  is an example to show that:
- addition of rational numbers is commutative
  - rational numbers are closed under addition
  - addition of rational numbers is associative
  - rational numbers are distributive under addition
13. Which of the following expressions show that rational numbers are associative under multiplication ?
- $\frac{2}{3} \times \left(\frac{-6}{7} \times \frac{3}{5}\right) = \left(\frac{2}{3} \times \frac{-6}{7}\right) \times \frac{3}{5}$
  - $\frac{2}{3} \times \left(\frac{-6}{7} \times \frac{3}{5}\right) = \frac{2}{3} \times \left(\frac{3}{5} \times \frac{-6}{7}\right)$
  - $\frac{2}{3} \times \left(\frac{-6}{5} \times \frac{3}{5}\right) = \left(\frac{3}{5} \times \frac{2}{3}\right) \times \frac{-6}{7}$
  - $\left(\frac{2}{3} \times \frac{-6}{7}\right) \times \frac{3}{5} = \left(\frac{-6}{7} \times \frac{2}{3}\right) \times \frac{3}{5}$
14. Which of the following statements is always true ?
- $\frac{x-y}{2}$  is a rational number between x and y
  - $\frac{x+y}{2}$  is a rational number between x and y
  - $\frac{x \times y}{2}$  is a rational number between x and y
  - $\frac{x \div y}{2}$  is a rational number between x and y
15. The reciprocal of  $\frac{2}{5} \times \left(\frac{-4}{9}\right)$  is:
- $\frac{-45}{8}$
  - $\frac{45}{8}$
  - $\frac{-24}{59}$
  - none of these



## Section - B

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- Find six rational numbers between  $\frac{1}{3}$  and  $\frac{2}{5}$ .
- Divide the sum of  $\frac{3}{8}$  and  $\frac{-5}{12}$  by the reciprocal of  $\frac{-15}{8} \times \frac{16}{27}$ .
- Using appropriate properties find:

$$\frac{5}{3} \times \frac{2}{9} + \frac{2}{3} \times \frac{5}{7} - \frac{2}{9} \times \frac{1}{7} + \frac{7}{9} \times \frac{2}{3}$$

OR

Verify associative property for multiplication for the following:

$$x = \frac{1}{2}, y = \frac{21}{15} \text{ and } z = \frac{4}{7}$$



## Hints/Solutions to Chapter End Test (2019-20)

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### Section - A

- |         |         |         |         |
|---------|---------|---------|---------|
| 1. (c)  | 2. (c)  | 3. (c)  | 4. (b)  |
| 5. (d)  | 6. (c)  | 7. (b)  | 8. (c)  |
| 9. (c)  | 10. (d) | 11. (a) | 12. (a) |
| 13. (a) | 14. (b) | 15. (a) |         |

### Section - B

1.  $\frac{36}{105}, \frac{37}{105}, \frac{38}{105}, \frac{39}{105}, \frac{40}{105}, \frac{41}{105}$

2. Sum =  $\frac{3}{8} + \left(\frac{-5}{12}\right) = \frac{3}{8} - \frac{5}{12} = \frac{9-10}{24} = \frac{-1}{24}$

Product =  $\frac{-15}{8} \times \frac{16}{27} = \frac{-10}{9}$

Reciprocal of product =  $\frac{-9}{10}$

Required Ans. =  $\frac{\text{Sum}}{\text{Reciprocal of Product}} = \frac{-1}{24} \div \frac{-9}{10} = \frac{-1}{24} \times \frac{10}{-9} = \frac{5}{108}$

3.  $\left(\frac{5}{3} \times \frac{2}{9}\right) + \left(\frac{2}{3} \times \frac{5}{7}\right) - \left(\frac{2}{9} \times \frac{1}{7}\right) + \left(\frac{7}{9} \times \frac{2}{3}\right)$   
 $= \left(\frac{5}{3} \times \frac{2}{9}\right) - \left(\frac{2}{9} \times \frac{1}{7}\right) + \left(\frac{2}{3} \times \frac{5}{7}\right) + \left(\frac{7}{9} \times \frac{2}{3}\right)$  [by commutative property]

$= \frac{2}{9} \left[ \frac{5}{3} - \frac{1}{7} \right] + \frac{2}{3} \left[ \frac{5}{7} + \frac{7}{9} \right]$  [by distributive property]

$= \frac{2}{9} \times \left(\frac{35-3}{21}\right) + \frac{2}{3} \times \left(\frac{45+49}{63}\right)$

$= \left(\frac{2}{9} \times \frac{32}{21}\right) + \left(\frac{2}{3} \times \frac{94}{63}\right)$

$= \frac{64}{189} + \frac{188}{189}$

$= \frac{252}{189}$

$= \frac{4}{3}$

**OR**

$x = \frac{1}{2}, y = \frac{21}{15}, z = \frac{4}{7}$

Associative property for multiplication

$x \times (y \times z) = (x \times y) \times z$

LHS:  $x \times (y \times z)$

$= \frac{1}{2} \times \left(\frac{21}{15} \times \frac{4}{7}\right)$

$= \frac{1}{2} \times \frac{84}{105}$

$$= \frac{84}{210}$$

$$= \frac{2}{5}$$

$$\text{RHS: } (x \times y) \times z$$

$$= \left(\frac{1}{2} \times \frac{21}{15}\right) \times \frac{4}{7}$$

$$= \frac{21}{30} \times \frac{4}{7}$$

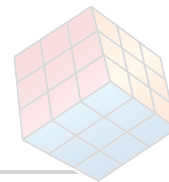
$$= \frac{84}{210}$$

$$= \frac{2}{5}$$

$$\text{LHS} = \text{RHS}$$



**STUDY**  
*mate*



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