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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

1. 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.

2. 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

3. The denominator of the rational number 5.2 in the $\frac{p}{q}$ form is:
(a) 100 (b) 6 (c) 5 (d) 1

4. Which of the following statements show the distributive law for rational numbers x, y, z ?
(a) [x × y] + z = (x + z) (y + z) (b) [x + y] × z = xz + yz
(c) [x × y] × z = x × z × y × z (d) none

5. The rational number which does not have a reciprocal is :
(a) 5 (b) not defined (c) no such number (d) 0

6. The rational number equal to its negative is
(a) 1 (b) –5 (c) 0 (d) no such number

7. 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

8. Which of the following is the largest negative integer?
(a) –999 (b) 0 (c) –1 (d) does not exist

9. Which of the following is the largest set of numbers?
(a) whole numbers (b) integers (c) rational numbers (d) natural numbers

10. A rational number between half of 5 and half of 7 is :
(a) 2 (b) 5.5 (c) 6 (d) 3

11. 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:

(a) addition of rational numbers is commutative
(b) rational numbers are closed under addition
(c) addition of rational numbers is associative
(d) rational numbers are distributive under addition

13. Which of the following expressions show that rational numbers are associative under multiplication ?

(a) $\frac{2}{3}\times\left(\frac{-6}{7}\times\frac{3}{5}\right)=\left(\frac{2}{3}\times\frac{-6}{7}\right)\times\frac{3}{5}$ (b) $\frac{2}{3}\times\left(\frac{-6}{7}\times\frac{3}{5}\right)=\frac{2}{3}\times\left(\frac{3}{5}\times\frac{-6}{7}\right)$

(c) $\frac{2}{3}\times\left(\frac{-6}{5}\times\frac{3}{5}\right)=\left(\frac{3}{5}\times\frac{2}{3}\right)\times\frac{-6}{7}$ (d) $\left(\frac{2}{3}\times\frac{-6}{7}\right)\times\frac{3}{5}=\left(\frac{-6}{7}\times\frac{2}{3}\right)\times\frac{3}{5}$

14. Which of the following statements is always true ?

(a) $\frac{x-y}{2}$ is a rational number between x and y

(b) $\frac{x+y}{2}$ is a rational number between x and y

(c) $\frac{x\times y}{2}$ is a rational number between x and y

(d) $\frac{x\div y}{2}$ is a rational number between x and y

15. The reciprocal of $\frac{2}{5}\times\left(\frac{-4}{9}\right)$ is:

(a) $\frac{-45}{8}$ (b) $\frac{45}{8}$ (c) $\frac{-24}{59}$ (d) none of these

Section – B

1. Find six rational numbers between $\frac{1}{3}$ and $\frac{2}{5}$.

2. Divide the sum of $\frac{3}{8}$ and $\frac{-5}{12}$ by the reciprocal of $\frac{-15}{8}\times\frac{16}{27}$.

3. 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:

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

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

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

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

$= \frac{84}{210}$

$= \frac{2}{5}$

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

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

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

$= \frac{84}{210}$

$= \frac{2}{5}$

LHS = RHS

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