

Mathematical Aptitude

Number System

Check Your Concepts

Q.1. Match the following:

Directions: In each of these questions, three of the four items are related to each other and thus form a group. Find the one that does not belong to this group. Write in the box provided against each group.

1. Match the following:

Column – I		Column – II	
A.	A rational number between $\frac{1}{4}$ and $\frac{1}{2}$ is	(i)	$\frac{1}{20}$
B.	A rational number between $-\frac{2}{5}$ and $\frac{1}{2}$ is	(ii)	0
C.	Multiplicative inverse of $-\frac{3}{7}$ is	(iii)	$\frac{3}{8}$
D.	The rational number that does not have a reciprocal is	(iv)	-1
E.	A negative rational number that is equal to its reciprocal is	(v)	$-\frac{7}{3}$

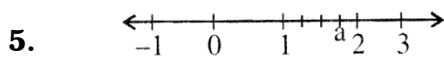
Q.2. Fill in the blanks:

Directions: Complete the following statements with an appropriate word / term to be filled in the blank space(s).

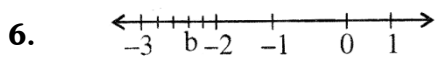
- Rational numbers are _____ under the operation of addition, subtraction and multiplication.
- The operations addition and multiplication are _____ and _____ for rational numbers.
- The additive inverse of a rational number $\frac{a}{b}$ is _____.
- _____ is the additive identity for rational numbers.
- _____ is the multiplicative identity for rational numbers.
- Multiplicative inverse of the rational number $\frac{a}{b}$ is _____.
- Rational number can be represented on a _____.

Q.3. True / False:**Directions:** Read the following statements and mark your response as true or false.

1. Between only two rational numbers there is only one rational number. []
2. For any three rational numbers a , b and c ; $a(b - c) = ab + be$. []
3. If a and b are any two rational numbers then $a < \frac{a+b}{2} < b$. []
4. Product of two rational numbers is not always a rational number. []



On the number line, 'a' represent $\frac{7}{4}$. []



On the number line, 'b' represent $\frac{13}{5}$. []

7. A rational number in decimal form is always non-terminating, []

Q.4. Multiple choice questions:**Directions:** Read the following questions and choose the answer that best answers the questions.

1. Which of the following statements is/are correct?
 1. The sum and difference of any two irrational numbers need not be irrational.
 2. Product of any two irrational numbers is irrational.
 3. For any two distinct irrational numbers a and b , the number a/b is irrational.

From option given below which is the correct set of above statements:

(a) 1, 2 and 3 (b) 1 and 2 (c) 2 and 3 (d) 1 alone
2. $\sqrt{2} + 5$ is

(a) rational (b) irrational (c) prime (d) none
3. Which of the following rational numbers will have a terminating decimal expansion?

(a) $\frac{13}{16}$ (b) $\frac{221}{12}$ (c) $\frac{239}{51}$ (d) $\frac{1}{98}$

4. $2\sqrt{5}$ is
 (a) rational (b) irrational (c) prime (d) none
5. Which one of the following numbers is rational?
 (a) $(2 + \sqrt{7})^2$ (b) $(3 - \sqrt{5})(3 + \sqrt{5})$ (c) $\sqrt{32}$ (d) $\frac{9}{3\sqrt{17}}$
6. If P is a prime number, then \sqrt{P} is
 (a) rational (b) irrational (c) prime (d) none
7. The number $\frac{2}{5\sqrt{3}}$ is
 (a) rational (b) irrational (c) prime (d) none

Q.5. Subjective questions:

1. Begin with the number 1, 234. Rearrange two adjacent numbers at a time. ("Adjacent" means "next to one another") What is the fewest number of steps it will take before you can write the number 4, 321?

Ans.

2. One summer Nisha kept a record of how many kilometers she rode on her skateboard. She won't tell what the number is but she will give you these clues: *It is less than 100. *It is more than 44.* If you count by 4s, you get the number's name. *The number can be divided evenly by 5 and 8. How many kilometers did Nisha go on her skateboard?

Ans.

3. A boy was set to multiply 432051 by 56827, but reading one of the figures in the question erroneously; he obtained 21959856177 as his answer. Which figure did he mistake?

Ans.

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