*** Answer The Following Questions In One Sentence.[1 Marks Each]** **[10]**

1. The negative of 1 is 1 itself

   Ans. : False.
   Solution:
   The negative of 1 is -1.

2. The population of India in 2004 - 05 is a rational number.

   Ans. : True.
   Solution:
   The population of India in 2004-05 is a rational number.

3. Every integer is a rational number.

   Ans. : True.
   Solution:
   Every integer is a rational number whose denominator remain 1.

4. Write the additive inverse of the following rational number:
   $\frac{-2}{17}$

   Ans. : $\frac{-2}{17}$
   Additive inverse of $\frac{-2}{17}$ is $-\left(\frac{-2}{17}\right)=\frac{2}{17}$

5. Find the multiplicative inverse (reciprocal) of the following rational numbers:
   $\frac{0}{3}$

   Ans. : Multiplicative inverse of $0=$ Does not exist as division by 0 is not admissible.

6. Is subtraction associative on rational numbers?

   Ans. : No, subtraction is not associative.

7. What is the negative of a negative rational number?

   Ans. :
   The number it self.

8. Find the multiplicative inverse (i.e., reciprocal) of:
   $\frac{-3}{-5}$

   Ans. : Multiplicative inverse of $\frac{-3}{-5}=\frac{-5}{-3}$

9. Add the following rational numbers.
   $2 \text{ and } \frac{-5}{4}$

   Ans. :

   We can write $2 \text{ as } \frac{2}{1}$
   The denominators of the given rational number are 1 and 4.
   LCM of 1 and 4 is 4
   Now,

$\frac{2}{1} = \frac{2\times4}{1\times4}$

$= \frac{8}{4}$

and $\frac{5}{-4} = \frac{-5\times1}{4\times1}$

$= \frac{-5}{4}$

$\therefore 2 + \frac{(-5)}{4}$

$= \frac{8}{4} + \frac{(-5)}{4}$

$= \frac{8+(-5)}{4}$

$= \frac{8-5}{4}$

$= \frac{3}{4}$

10. Name the property of multiplication shown by the following statement:

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

Ans. : Associative law of multiplication.

*** Questions With Calculation.[2 Marks Each]** **[8]**

11. Verify the property x × (y × z) = (x × y) × z of rational numbers by using:

$x = 1,\ y = \frac{-1}{2}$ and $z = \frac{1}{4}$

Ans. : Given, $x = 1,\ y = \frac{-1}{2}$ and $z = \frac{1}{4}$

Now, $LHS = x \times (y \times z)$

$= 1 \times \left(\frac{-1}{2} \times \frac{1}{4}\right)$

$= 1 \times \frac{-1}{8}$

$= \frac{-1}{8}$

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

$= \left(1 \times \frac{-1}{2}\right) \times \frac{1}{4}$

$= \frac{-1}{2} \times \frac{1}{4}$

$= \frac{-1}{8}$

$LHS = RHS$

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

12. Evaluate the following:

$\frac{-5}{14} - \frac{-2}{7}$

Ans. : $\frac{-5}{14} - \frac{-2}{7}$

$\frac{-5}{14} - \frac{-2}{7} = \frac{-5}{14} + \frac{2}{7}$

$= \frac{-5+4}{14}$ (LCM of 14, 7 = 14)

$= \frac{-1}{14}$

13. Express the following rational numbers in standard form.

$\frac{-12}{30}$

Ans. : $\frac{-12}{30}$

H.C.F of 12 and 30 = 6

Dividing the numerator and denominator by 6, and $\frac{-12}{30}$

$= \frac{-12 \div 6}{30 \div 6}$

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

14. An aeroplane covers 1020km in an hour. How much distance will it cover in $4\frac{1}{6}$ hours?

Ans. : Distance covered in 1 hours = 1020km

Distance covered in $4\frac{1}{6}$ hours

$= 1020 \times 4\frac{1}{6}$

$= 1020 \times \frac{25}{6}\text{km}$

$= \frac{25500}{6}\text{km}$

$= 4250\text{km}$

*** Questions With Calculation.[3 Marks Each]** **[12]**

15. The cost of $2\frac{1}{3}\text{m}$ metres of cloth is Rs. $75\frac{1}{4}$ Find the cost of cloth per metre.

Ans. : Cost of $2\frac{1}{3}\text{m}$ or $\frac{7}{3}\text{m}$ of cloths = Rs. $75\frac{1}{4}$

$= \text{Rs.}\frac{301}{4}$

$\therefore$ Costof 1m cloth = Rs. $\frac{301}{4} \div \frac{7}{3}$

$= \text{Rs.}\frac{301}{4} \times \frac{3}{7} = \text{Rs.}\frac{43 \times 3}{4 \times 1}$

$= \text{Rs.}\frac{129}{4} = \text{Rs. } 32\frac{1}{4}$

$= \text{Rs. } 32.25$

16. Simplify:

$\frac{-8}{19} + \frac{-4}{57}$

Ans. : $\frac{-8}{19} + \frac{-4}{57}$

The LCM of the denominator of 19 and 57 is 57.

Now,

We will express $\frac{-8}{19}$ in the form in which it takes denominator as 57.

$\frac{-8}{19} = \frac{-8 \times 3}{19 \times 3} = \frac{-24}{57}$

So,

$\frac{-24}{57} + \frac{-4}{57}$

$= \frac{-24-4}{57} = \frac{-28}{57}$

17. The product of two fractions is $9\frac{3}{5}$. If one of the fractions is $9\frac{3}{7}$, find the other.

Ans. : Product of two fractions $= 9\frac{3}{5}$

$= \frac{48}{5}$

One fraction $= 9\frac{3}{7} = \frac{66}{7}$

$\therefore$ Second fraction $= \frac{48}{5} \div \frac{66}{7}$

$= \frac{48}{5} \times \frac{7}{66}$

$= \frac{48 \times 7}{5 \times 66}$

$= \frac{336}{330}$

$= \frac{336 \div 6}{330 \div 6}$

$= \frac{56}{55} = 1\frac{1}{55}$

18. Using the rearrangement property find the sum:

$\frac{-13}{20} + \frac{11}{14} + \frac{-5}{7} + \frac{7}{10}$

Ans. : $\frac{-13}{20} + \frac{11}{14} + \frac{-5}{7} + \frac{7}{10}$

$= \left(\frac{-13}{20} + \frac{7}{10}\right) + \left(\frac{11}{14} + \frac{-5}{7}\right)$

$= \frac{-13+14}{20} + \frac{11+(-10)}{14}$

$= \frac{1}{20} + \frac{1}{14}$

$= \frac{7+10}{140}$

$= \frac{17}{140}$

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