Linear Equations

1. Solve for x :

   i. $4x - 7 - (x+4) = 3x + 4 - (2x - 1)$

   ii. $\dfrac{17(2 - x) - 5(x + 12)}{1 - 7x} = 8$

2. The sum of three consecutive even numbers is 30. Find the numbers.

3. The sum of three consecutive odd numbers is 63. Find the numbers.

4. The sum of two twin primes is 60. Find the two prime numbers.

5. The measures of the angles of a triangle are in the ratio 1 : 2 : 3. Find the angles.

6. The numerator of a fraction is 3 less than its denominator. If we add 1 to both numerator and denominator, it becomes equal to . Find the fraction.

7. Renu's mother is four times as old as Renu. After 5 years her mother will be three times as old as she will then be. Find their present ages.

8. The sum of four consecutive multiples of 7 is 70. Find these multiples.

9. The sum of two numbers is 50. If the larger number is divided by the smaller number we get . Find the numbers.

10. The perimeter of a triangle is 49 cm. One side is 7cm longer than another side and 5cm shorter than the third side. Find the sides.

11. In a quadrilateral ABCD, $\angle A = (2x + 4)^0$, $\angle B = (2x - 13)^0$, $\angle C = (3x + 11)^0$ and $\angle D = (4x - 5)^0$. Find the measures of the angles.

12. Half of the number of boys of Class 8 B went to the football ground to play.

    One-fourth of the number of boys went to the Library to take books. Remaining 10 boys went to the 3rd Language room. Find the number of boys of Class 8 B.

13. In ΔABC, $\angle A = \angle C$ and $\angle B = \angle A + \angle C$. Find the measures of the angles of the triangle.

Rational Numbers

I. Fill in the blanks

1. _____ has no reciprocal.
2. There are _____ numbers of a rational numbers between any two numbers.
3. The product of a number and its multiplicative inverse is _____.
4. Sum of a number and its negative is _____.
5. _____ is the multiplicative identity.
6. _____ is the additive identity.
7. Additive inverse of $\frac{3}{7}$ is _____
8. Multiplicative inverse of -2 is _____.
9. The numbers _____ and _____ are their own reciprocals.

II. Find the value of the following:-

i) $\frac{-21}{25} \times \frac{15}{-49} \times \frac{-35}{9}$

ii) $\frac{-43}{45} \times \left(\frac{-8}{5} + \frac{3}{5}\right)$

iii) $\frac{-21}{15} + \frac{7}{25} - \left(\frac{-4}{25}\right)$

iv) $\frac{-72}{45} \div \frac{32}{25}$

III. Verify $-(-x) = x$ by taking $\frac{-2}{5}$.

IV. Represent $\frac{-3}{7}$ and $\frac{9}{7}$ on a number line.

V. State the property used in the following :-

i) $\frac{-3}{58} \times \frac{7}{8} \times \frac{7}{5} = \frac{7}{8} \times \frac{-3}{5}$

ii) $\left(\frac{-2}{3} + \frac{5}{7}\right) + \left(\frac{3}{5}\right) = \frac{-2}{3} + \left(\frac{5}{7} + \frac{3}{5}\right)$

iii) $\frac{-7}{9} \left(\frac{3}{25} + \frac{2}{7}\right) = \frac{-7}{9} \times \frac{3}{25} + \frac{-7}{9} \times \frac{2}{7}$

iv) $\frac{-5}{19} + \frac{3}{57} = \frac{3}{57} + \frac{-5}{19}$

v) $\frac{-37}{49} \times \frac{49}{-37} = 1$

VI. Using suitable Property evaluate the following.

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

ii) $\frac{-14}{24} \times \frac{-13}{14} + \frac{14}{25} \times \frac{-1}{14}$

iii) $\frac{3}{-2} \times \frac{-2}{3} + \frac{3}{-3} \times \frac{-3}{3}$

iv) $\frac{2}{-3} \times \frac{-3}{-7} - \frac{2}{-7} \times \frac{10}{-7}$

7 5 7 5 21 13 9 21 13

VII. Find Five rational numbers between

i) 0 and 1 ii) $\frac{1}{3}$ and $\frac{1}{2}$ iii) $\frac{-1}{3}$ and $\frac{1}{4}$

ANSWER KEY

II) i) -1

ii) $\frac{-43}{45}$ iii) $\frac{24}{25}$ iv) $\frac{-5}{4}$

V) i) Commutative property of multiplication

ii) Associative property of addition

iii) Distributive property of multiplication over addition

iv) Commutative property of addition

VI.

i) $\frac{-7}{45}$ ii) $\frac{14}{25}$ iii) $\frac{-3}{7}$ iv) $\frac{-165}{187}$

Linear Equations in One Variable

Solve the following equations:

1) $x = \frac{4}{5}(x + 10)$

2) $\frac{2x}{3} + 1 = \frac{7x}{15} + 3$

3) $x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$

4) $m - \frac{m-1}{2} = 1 - \frac{m-2}{4}$

5) $\frac{3t-2}{4} - \frac{2t+3}{3} = \frac{5}{6} - t$

6) $\frac{5x-3}{3x+5} = \frac{3}{5}$

7) $\frac{x}{3} + \frac{4}{3} = \frac{2}{3}(4x - 1) - \left[2x - \frac{x+1}{3}\right]$

8) $\frac{17-3x}{5} - \frac{4x+2}{3} = 5 - 6x + \frac{7x+14}{3}$

9) $(5x - 1)(x + 3) - (x - 5)(5x + 1) = 40$

10) $\frac{y-(7-8y)}{9y-(3+4y)} = \frac{2}{3}$

2. The sum of four consecutive odd numbers is 368. Find its numbers

3. A number consisting of two digits becomes $\frac{5}{6}$ of itself, if its digits are interchanged. If the difference of the digits is 1, find the number.

4. 5 years ago, father's age was 7 times the age of his son. 5 years later, the father's age will be 3 times the age of his son. Find their present ages.

5. One number is 4 times the other number. If 6 is added to the smaller number and 4 is added to the larger number, then the later number becomes twice the other number. Find the numbers.

6. Angle C of a triangle ABC is the sum of the other two angles A and B. If the ratio of $\angle A$ and $\angle B$ is 3:2 , find the measure of all the three angles.

7. A number is as much greater than 31 as is less than 81. Find the number.

8. A number consists of two digits whose sum is 5. If we add 9 with the number, the digits in the number are interchanged.

9. 10 years ago, a man's age was 6 times the age of his son. 12 years later, the age of the son will be 27 years. What is the present age of the father ?

10. The perimeter of a rectangle is 9 times its breadth. If its length is 3cm more than twice its breadth, find the dimensions of the rectangle.

11. The ages(in years) of Ram and Shyam are in the ratio 5:7. If Ram is 9 years older and Shyam is 9 years younger. The age of Ram would have been twice the age of Shyam. Find their ages.

Answers :

1)40 2)10 3)$\frac{-25}{3}$ 4)$\frac{4}{3}$ 5) $\frac{28}{13}$

6)$\frac{15}{8}$ 7)$\frac{5}{2}$ 8) 4 9)1 10)$\frac{15}{17}$

2. 89,91,93,95 3.54 4.40yrs,10yrs 5.4, 16

6. 54^0, 36^0, 90^0 7. 56 8.23 9. 40 yrs 10. 2cm, 7cm

11. 15yrs, 21yrs