WORKSHEET-2

Q. 1. If the discriminant of the quadratic equation $3x^2 - 2x + c = 0$ is 16, then the value of c is:

(a) 1 (c) -1

(b) 0 (d) $\sqrt{2}$

Q. 2. The discriminant of the quadratic equation $3\sqrt{3}x^2 + 10x + \sqrt{3} = 0$ is _____

Q. 3. Solve $\sqrt{7}x^2 - 6x - 13\sqrt{7} = 0$ by factorisation method.

Q. 4. Find the roots of the equation $8x^2 - 14x - 15 = 0$.

Q. 5. The solution of the quadratic equation is as follows :

$$x = \frac{8 \pm \sqrt{(-8)^2 - 4(3)(2)}}{2(3)}$$

Then, find the quadratic equation.

Q. 6. (a) Find the sum and product of the roots of the quadratic equation $2x^2 - 9x + 4 = 0$.

OR

(b) Find the discriminant of the quadratic equation $4x^2 - 5 = 0$ and hence comment on the nature of roots of the equation.

Q. 7. Solve for x : $\frac{1}{x+1} + \frac{2}{x+2} = \frac{5}{x+4}$, $x \neq -1, -2, -4$.

Q. 8. Solve : $\frac{1}{(a+b+x)} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$, $x \neq 0, x \neq -(a+b)$

Q. 9. If the roots of the equation $(c^2 - ab)x^2 - 2(a^2 - bc)x + b^2 - ac = 0$ in x, are equal, then show that either $a = 0$ or $a^3 + b^3 + c^3 = 3abc$.

Q. 10. In a flight of 2800 km, an aircraft was slowed down due to bad weather. Its average speed is reduced by 100 km/h and by doing so, the time of flight is increased by 30 minutes. Find the original duration of the flight.

Q. 11. Sum of two natural numbers is 15 and sum of their reciprocals is $\frac{3}{10}$. Find the numbers.

Q. 12. Two pipes running together can fill a tank in $11\frac{1}{9}$ minutes. If one pipe takes 5 minutes more than the other to fill the tank separately, find the time in which each pipe would fill the tank separately.

Q. 13. If the equation $(1 + m^2)x^2 + 2mcx + c^2 - a^2 = 0$ has equal roots, then show that $c^2 = a^2(1 + m^2)$.

Q. 14. The numerator of a fraction is 3 less than its denominator. If 2 is added to both the numerator and the denominator, then the sum of the new fraction and original fraction is $\frac{29}{20}$. Find the original fraction.

Q. 15. A two-digit number is such that the product of its digits is 20. If 9 is added to the number, the digits interchange their places. Find the number.

Q. 16. Riya has a field with a flowerbed and grassland. The grassland is in the shape of rectangle while flowerbed is in the shape of square. The length of the grassland is found to be 3m more than twice the length of the flowerbed. Total area of the whole land is 1260 m^2.

(i) If the length of the flowerbed is x m then what is the total length of the field ?

(a) $(2x + 3)$ m
(b) $(3x + 3)$ m
(c) $6x$ m
(d) $(2x + 5)$ m

(ii) What will be the perimeter of the whole field ?

(a) $(8x + 6)$ m
(b) $(6x + 8)$ m
(c) $(4x + 3)$ m
(d) $(4x + 3)$ m

(iii) What is the value of x if the area of total field is 1260 m^2 ?

(a) 21 m
(b) 10 m
(c) 20 m
(d) 15 m

(iv) What is the area of grassland ?

(a) 180 m^2
(b) 360 m^2
(c) 400 m^2
(d) 860 m^2

(v) What is the ratio of area of flowerbed to area of grassland ?

(a) $\frac{20}{43}$
(b) $\frac{23}{40}$
(c) $\frac{26}{43}$
(d) $\frac{23}{46}$

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