WORKSHEET 1

CHAPTER 4 – QUADRATIC EQUATIONS

1. For the quadratic equation $x^2 - 2x + 1 = 0$, then value of $x + \frac{1}{x}$ is

   (*a*) -2 (*b*) 2 (*c*) 1 (*d*) -1

2. The roots of the equation $3^{x+2} + 3^{-x} = 10$ are

   (*a*) 3, -1 (*b*) 2, 0 (*c*) -2, 0 (*d*) 1, -3

3. The roots of the equation $ax^2 + bx + c = 0$ will be reciprocal of each other if

   (*a*) $b = c$ (*b*) $c = a$ (*c*) $a = b$ (*d*) $a = 0$

4. The roots of the equation $2x - \frac{3}{x} - 1 = 0$ are

   (*a*) $-1, \frac{1}{2}$ (*b*) $\frac{3}{2}, -1$ (*c*) $-1, \frac{3}{2}$ (*d*) $-1, -2$

5. The roots of the equation $3x^2 + 7x = -8$ are

   (*a*) both real and unequal (*b*) both real and equal

   (*c*) both imaginary (*d*) none of these

6. The length of a rectangle exceeds its width by 8 cm and the area of the rectangle is 240 cm^2. Find the dimension of the rectangle.

7. Find the value of k for which the equation $kx(x - 2) + 6 = 0$ has equal roots.

8. Solve the equation for x.

$$\frac{x+3}{x-2} - \frac{1-x}{x} = \frac{17}{x}$$

9. Solve for x:

$$a(a^2 + b^2)x^2 + b^2x - a = 0$$

10. The speed of a boat in still water is 8 km/hr. It can go 15 km upstream and 22 km downstream in 5 hours. Find the speed of the stream.

11. Find the value of x:

$$\sqrt{x^2 - 4} - (x - 2) = \sqrt{x^2 - 5x + 6}$$

12. Show that the equation $x^2 + ax - 4 = 0$ has real and distinct roots for all real values of a.

13. The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, find the other two sides.

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

15. If the sum of first n even natural numbers is 420, find the value of n.

16. The product of Ajay's age (in years) five years ago with his age (in years) 9 years later is 15 . Find Ajay's present age.

17. If the roots of the equation $x^2 + 2cx + ab = 0$ are real and unequal, prove that the equation $x^2 - 2(a + b)x + a^2 + b^2 + 2c^2 = 0$ has no real roots.

Name: ..... Teacher's signature: .....

Class: X ..... Date: .....

18. Two pipes running together can fill a cistern in $3\frac{1}{13}$ minutes. If one pipe takes 3 minutes more than the other to fill it, find the time in which each pipe would fill the cistern.

19. A shopkeeper buys a number of books for ₹ 80. If he had bough 4 more books for the same amount, each book would have cost ₹ 1 less. How many books did he buy?

20. It the list price of a toy is reduced by ₹ 2, Soham can buy 2 toys more for ₹ 360. Find the original price of the toy.

ANSWERS

WORKSHEET 1

1. (*b*) 2 **2.** (*c*) –2, 0 **3.** (*b*) $c = a$ **4.** (*b*) $\frac{3}{2}, -1$ **5.** (*c*) both imaginary **6.** 12 cm, 20 cm.

7. 6 **8.** $x = 4, \frac{9}{2}$ **9.** $-\frac{1}{a}, \frac{a}{a^2+b^2}$ **10.** 3 km/hr **11.** $x = 2, \frac{3+2\sqrt{21}}{3}$

13. Base = 12 cm, height = 5 cm **14.** $\frac{7}{10}$ **15.** $n = 20$ **16.** 6 years

18. Faster pipe = 5 minutes; Slower pipe = 8 minutes **19.** 16 **20.** ₹ 20