

## NCERT Solutions For Class 10 Chapter 4 Quadratic Equations Exercise 4.2

## Q1. Find the roots of the following Quadratic Equations by factorization.

(i) 
$$x^2 - 3x - 10 = 0$$

(ii) 
$$2x^2 + x - 6 = 0$$

(iii) 
$$\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$$

(iv) 
$$2x^2 - x + \frac{1}{8} = 0$$
 j

$$(v)100x^2 - 20x + 1 = 0$$

**Ans.** (i)
$$x^2 - 3x - 10 = 0$$

$$\Rightarrow x^2 - 5x + 2x - 10 = 0$$

$$\Rightarrow x(x-5)+2(x-5)=0$$

$$\Rightarrow (x-5)(x+2) = 0$$

$$\Rightarrow x = 5, -2$$

(ii) 
$$2x^2 + x - 6 = 0$$

$$\Rightarrow 2x^2 + 4x - 3x - 6 = 0$$

$$\Rightarrow 2x(x+2) - 3(x+2) = 0$$

$$\Rightarrow (2x-3)(x+2)=0$$

$$\Rightarrow x = \frac{3}{2}, -2$$

(iii) 
$$\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$$

$$\Rightarrow \sqrt{2}x^2 + 2x + 5x + 5\sqrt{2} = 0$$

$$\Rightarrow \sqrt{2}x^2(x+\sqrt{2})+5(x+\sqrt{2})=0$$

$$\Rightarrow (\sqrt{2}x+5)(x+\sqrt{2})=0$$

$$\Rightarrow x = \frac{-5}{\sqrt{2}}, -\sqrt{2}$$

$$\Rightarrow x = \frac{-5}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}, -\sqrt{2}$$

$$\Rightarrow x = \frac{-5\sqrt{2}}{2}, -\sqrt{2}$$

(iv) 
$$2x^2 - x + \frac{1}{8} = 0$$

$$\Rightarrow \frac{16x^2 - 8x + 1}{8} = 0$$

$$\Rightarrow 16x^2 - 8x + 1 = 0$$

$$\Rightarrow 16x^2 - 4x - 4x + 1 = 0$$

$$\Rightarrow 4x (4x-1)-1 (4x-1)=0$$

$$\Rightarrow (4x-1)(4x-1)=0$$

$$\Rightarrow x = \frac{1}{4}, \frac{1}{4}$$

(v) 
$$100x^2 - 20x + 1 = 0$$

$$\Rightarrow 100x^2 - 10x - 10x + 1 = 0$$

$$\Rightarrow 10x (10x - 1) - 1 (10x - 1) = 0$$

$$\Rightarrow (10x-1)(10x-1)=0$$

$$\Rightarrow x = \frac{1}{10}, \frac{1}{10}$$

## 2. Solve the following problems given:

(i) 
$$x^2 - 45x + 324 = 0$$

(ii) 
$$\chi^2 - 55\chi + 750 = 0$$

**Ans.** (i) 
$$\chi^2 - 45\chi + 324 = 0$$

$$\Rightarrow x^2 - 36x - 9x + 324 = 0$$

$$\Rightarrow x(x-36)-9(x-36)=0$$

$$\Rightarrow (x-9)(x-36) = 0$$

⇒
$$x = 9,36$$

(ii) 
$$x^2 - 55x + 750 = 0$$

$$x^2 - 25x - 30x + 750 = 0$$

$$\Rightarrow x(x-25)-30(x-25)=0$$

$$\Rightarrow (x-30)(x-25)=0$$

$$\Rightarrow x = 30, 25$$

Q3. Find two numbers whose sum is 27 and product is 182.

Ans. Let first number be x and let second number be (27-x)

According to given condition, the product of two numbers is 182.

Therefore,

$$x(27-x)=182$$

$$\Rightarrow 27x - x^2 = 182$$

$$\Rightarrow x^2 - 27x + 182 = 0$$

$$\Rightarrow x^2 - 14x - 13x + 182 = 0$$

$$\Rightarrow x(x-14)-13(x-14)=0$$

$$\Rightarrow (x-14)(x-13)=0$$

$$\Rightarrow x = 14, 13$$

Therefore, the first number is equal to 14 or 13

And, second number is = 27 - x = 27 - 14 = 13 or Second number = 27 - 13 = 14