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

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

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

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

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

$\Rightarrow x=9, 36$

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

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

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

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

$\Rightarrow x=30, 25$

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 $= 27 - 13 = 14$

********** END **********