Solve $x^2 - 6x = 16$

$x^2 - 6x - 16 = 0$ (set quadratic equal to 0)

$a = 1, b = -6, c = -16$ (identify a, b, c)

Find pair of numbers that multiply to 16

Because $c = -16$ is negative, the signs of the pair will be different

We know to make the bigger number of the pair to be the same sign as $b = -6$

Then we find the pair that adds up to $b = -6$

-16	
1	-16
2	-8
4	-4

$x^2 - 8x + 2x - 16 = 0$ (Rewrite the middle term b with the pair)

$(x^2 - 8x) + (2x - 16) = 0$ (Group)

$x(x-8) + 2(x-8) = 0$ (Factor each group)

$(x-8)(x+2) = 0$ ($(x-8)$ is common factor)

To finish, we use the

Zero-factor property

If $A \cdot B = 0$ then either $A = 0$ or $B = 0$

$x - 8 = 0$ or $x + 2 = 0$

$x = 8$ OR $x = -2$

are solutions ∎