Solve $x^2 - 6x = 16$

$$x^2 - 6x - 16 = 0 \quad \text{(set quadratic equal to 0)}$$
$$a = 1, b = -6, c = -16 \quad \text{(identify } a, b, c\text{)}$$

Find pair of numbers that multiply to 16.

1×16	16
2×8	16
4×4	16

Because c is negative, the sign of the pair will be different. We have to make the bigger number it given to the same sign as $b = -6$.

Then we find the pair that works up to 8 and -16 (or -8 and 16).

$$\begin{aligned} x^2 - 8x + 2x - 16 = 0 &\quad \text{(rewrite the middle term } b \text{ with the pair)} \\ (x^2 - 8x) + (2x - 16) = 0 &\quad \text{(group)} \\ x(x - 8) + 2(x - 8) = 0 &\quad \text{(factor each group)} \\ (x - 8)(x + 2) = 0 &\quad (x - 8) \text{ is common factor} \end{aligned}$$

To finish, we use the

> Zero-factor property:
> If $A \cdot B = 0$ then either $A = 0$ or $B = 0$

$$x - 8 = 0 \quad \text{or} \quad x + 2 = 0$$
$$x = 8 \quad \text{or} \quad x = -2$$