Bellwork Sample Problem

Completing the Square

Solve the following quadratic equation by Completing the square

$$k^2 + 8k + 12 = 0$$

Step 1: $b = 8$

Step 2: $\frac{b}{2} = \frac{8}{2} = 4 \;/\; 4^2 = 16$

Step 3: $k^2 + 8k + 12 = 0$

$-12 \quad -12$

$k^2 + 8k = -12$

Step 4:

$+16 \quad +16$

$k^2 + 8k + 16 = 4$

Step 5: $\left(k + \frac{b}{2}\right)^2$ ↳ $(k+4)^2 = 4$

Step 6: $\sqrt{(k+4)^2} = \sqrt{4}$

$k + 4 = \pm 2$

Step 7:

$k + 4 = 2$

$\boxed{k = -2}$

$k + 4 = -2$

$\boxed{k = -6}$

Step 1: Identify b
Step 2: Find b and divide it by 2 then square the result
Step 3: Rewrite all the terms that contain x on one side
Step 4: Add the number that you got in step 2 on each side of the equation
Step 5: Factor the perfect square trinomial
Step 6: Take the square root on both sides
Step 7: Solve for x