Algebra 2 Name_____

Completing the Square

Find the value of c that completes the square.

1) $x^2 - 40x + c$

$\boxed{c = 400}$

2) $x^2 + 30x + c$

$\boxed{c = 225}$

Solve each equation by completing the square.

3) $x^2 - 16x + 48 = 0$

$x^2 - 16x + \underline{64} = -48 + \underline{64}$

$\sqrt{(x-8)^2} = \sqrt{16}$

$x = 8 \pm 4$

$\boxed{x = 12,\ x = 4}$

4) $x^2 - 12x + 11 = 0$

$x^2 - 12x + \underline{36} = -11 + \underline{36}$

$\sqrt{(x-6)^2} = \sqrt{25}$

$x = 6 \pm 5$ $\boxed{x = 11,\ x = 1}$

5) $x^2 + 20x - 75 = 0$

$x^2 + 20x + \underline{100} = 75 + \underline{100}$

$(x+10)^2 = 175$

$\boxed{x = -10 \pm 5\sqrt{7}}$

6) $x^2 + 20x - 71 = 0$

$x^2 + 20x + \underline{100} = 71 + \underline{100}$

$\sqrt{(x+10)^2} = \sqrt{171}$

$\boxed{x = -10 \pm 3\sqrt{19}}$

7) $x^2 + 2x + 33 = 0$

$x^2 + 2x + \underline{1} = -33 + \underline{1}$

$\sqrt{(x+1)^2} = \sqrt{-32}$

$\boxed{x = -1 \pm 4i\sqrt{2}}$

8) $x^2 + 10x + 37 = 0$

$-37 \quad -37$

$x^2 + 10x + \underline{25} = -37 + \underline{25}$

$\sqrt{(x+5)^2} = \sqrt{-12}$

$\boxed{x = -5 \pm 2i\sqrt{3}}$

9) $x^2 - 4x + 53 = 0$

$x^2 - 4x + \underline{4} = -53 + \underline{4}$

$\sqrt{(x-2)^2} = \sqrt{-49}$

$\boxed{x = 2 \pm 7i}$

10) $x^2 + 14x + 65 = 0$

$-65 \quad -65$

$x^2 + 14x + \underline{49} = -65 + \underline{49}$

$\sqrt{(x+7)^2} = \sqrt{-16}$

$\boxed{x = -7 \pm 4i}$

11) $x^2 - 2x + 60 = 0$

$x^2 - 2x + \underline{1} = -60 + \underline{1}$

$\sqrt{(x-1)^2} = \sqrt{-59}$

$\boxed{x = 1 \pm i\sqrt{59}}$

12) $x^2 + 8x + 77 = 0$

$x^2 + 8x + \underline{16} = -77 + \underline{16}$

$\sqrt{(x+4)^2} = \sqrt{-61}$

$\boxed{x = -4 \pm i\sqrt{61}}$