Bellwork:

simplify: $(-2+5i)(-1+4i)$

$2 - 8i - 5i + 20(i^2 - 1)$

$2 - 8i - 5i - 20$

$-18 - 13i$

Chapter 4.7: Complete the Square

process of solving quadratics by
a special form of factoring.

$x^2 + 6x + 9$

$(x+3)(x+3)$

$(x+3)^2$

ex. Solve: $x^2 - 8x + 16 = 25$

$$\left(\frac{b}{2}\right)^2$$

$$\left(\frac{8}{2}\right)^2$$

$$\sqrt{(x-4)^2} = \sqrt{25}$$

$$x - 4 = \pm 5$$

$$x = 4 \pm 5$$

$$x = 9, -1$$

To complete the square.....

- get the x's on one side.

- add $\left(\frac{b}{2}\right)^2$ to both sides

- factor....... with $\frac{b}{2}$

- SOLVE.....

ex. find the value of c that makes $x^2 + 16x + c$ a perfect square trinomial. Then write as a factored trinomial.

$$\left(\frac{16}{2}\right)^2 = \boxed{64 = c}$$

$$\boxed{(x + 8)^2}$$

ex. Solve by completing the square:

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

$$\quad\quad\quad\quad -4 \quad -4$$

$$\left(\frac{12}{2}\right)^2 \quad x^2 - 12x + 36 = -4 + 36$$

$$\sqrt{(x - 6)^2} = \sqrt{32}$$

$$x - 6 = \pm\sqrt{32}$$

$$x = 6 \pm \sqrt{32}$$

$$\boxed{x = 6 \pm 4\sqrt{2}}$$

2   16

2   8

2   4

2   2

Solve by competing the square:

$$2x^2 + 8x + 14 = 0$$

$$\frac{2x^2}{2} + \frac{8x}{2} + \frac{14}{2} = \frac{0}{2}$$

$$\left(\frac{4}{2}\right)^2 \qquad x^2 + 4x + 7 = 0$$

$$x^2 + 4x + \underline{4} = -7 + \underline{4}$$
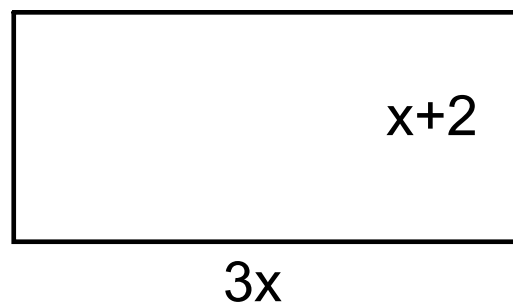
$$\sqrt{(x+2)^2} = \sqrt{-3}$$

$$x + 2 = \pm\sqrt{3}\,i$$

$$\frac{x + 2}{-2} \quad \frac{}{-2} = -2 \pm \sqrt{3}\,i$$

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

the area of the rectangle is 72
square units. What is the value of x?

x+2

3x

Write in vertex form. What is the vertex?

$$y = x^2 - 10x + 22$$

$$y = a(x-h)^2 + k$$

$$y = \left(x^2 - 10x + \underline{25}\right) + 22 - \underline{25}$$

$$y = (x - 5)^2 - 3$$

$$(5, -3)$$

The height of a baseball after it is hit is given by the function: $y = -16t^2 + 96t + 3$ find the max height of the ball.

Homework: Chapter 4.7 pg.288
#'s 3-8,16-18,22-27,36,46