12.7.15

1. Take a blue paper from the yellow table by the door.
2. Cut around the notes so they will fit into your notebook.
3. Glue them into your notebook on your next available page. (p. 24)
4. In your table of contents title this: Notes for Completing the Square.

Completing the Square

You can form a perfect square trinomial from $x^2 + Bx$ by **adding** $\left(\frac{B}{2}\right)^2$.

$$x^2 + Bx + \left(\frac{B}{2}\right)^2 = \left(x + \frac{B}{2}\right)^2$$

Example 1: Complete the square $x^2 + 22x + \square$ $x^2+22x+121$

Steps:	
1. Identify ***B***	$b=22$
2. Divide ***B*** by 2	$\frac{b}{2} = \frac{22}{2} = 11$
3. Square $\frac{B}{2}$	$(11)^2 = 121$ $(x+11)^2$

$(x+1)^2$

You Try It! Complete the square

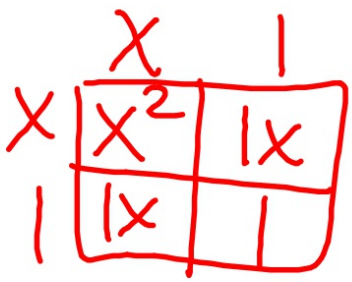
1.) $x^2 + 2x + 1$

2.) $x^2 - 6x + 9$ $(x-3)^2$

$b=2$

$\frac{b}{2}=1$

$(1)^2=1$



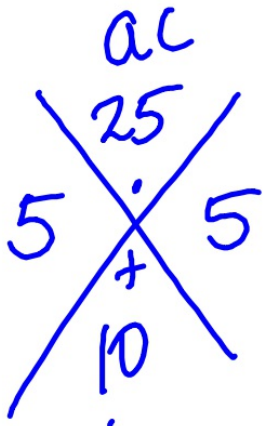
x^2+2x+1

$b=-6$

$\frac{b}{2}=-3$

$(-3)^2=9$

Solving by Completing the Square	
Example 2: Solve $x^2 + 10x - 1 = 0$ by Completing the Square.	
Steps: 1. Rewrite so all terms with *x* are on the same side	$x^2+10x=1$ $+25 \quad +25$
2. Find $\left(\frac{B}{2}\right)^2$	$b=10 \quad \frac{b}{2}=\frac{10}{2}=5 \quad (5)^2=25$
3. Add $\left(\frac{B}{2}\right)^2$ to both sides of the equation	$x^2+10x+25=26$
4. Factor the trinomial **THINK:** $(x+\frac{B}{2})^2$	$\sqrt{(x+5)^2}=\sqrt{26}$
5. Take the square root of both sides	$x+5=\pm\sqrt{26}$ $-5 \quad -5$
6. Solve for x	$x=\sqrt{26}-5 \quad x=-\sqrt{26}-5$



$(x+5)(x+5)$