

### Steps for Completing the Square

- 1) Move the constant to the right side of the equation.
- 2) If there is a number in front of the  $x^2$  term, then divide EVERYTHING by that number.
- 3) Divide the number in front of the  $x$  by 2, and then square it.
- 4) Add that number to both sides of the equation.
- 5) Shrink the left side to  $(x - \frac{b}{2})^2 \rightarrow$  use the same sign (+ or -) as the number in front of the  $x$  in the original problem
- 6) Square root both sides to get  $x - \frac{b}{2}$  by itself. Put  $\pm$  with the number on the right side.
- 7) Get  $x$  by itself.

### Rewrite the Equation in Vertex Form

- 1) Move the constant to the left side of the equation with the  $y$ .
- 2) If there is a number in front of the  $x^2$  term, then divide EVERYTHING by that number (including the  $y$ ).
- 3) Divide the number in front of the  $x$  by 2, and then square it.
- 4) Add that number to both sides of the equation.
- 5) Shrink the left side to  $(x - \frac{b}{2})^2 \rightarrow$  use the same sign (+ or -) as the number in front of the  $x$  in the original problem
- 6) Move the constant on the side with the  $y$  back over to the other side of the equation.
- 7) Multiply everything by the value underneath the  $y$  to get  $y$  by itself.