Determine the value of "m" that makes each expression a perfect square trinomial. Write the sum of your answers in the middle square.

a) $x^2 - 6x + m$

b) $x^2 + 20x + m$

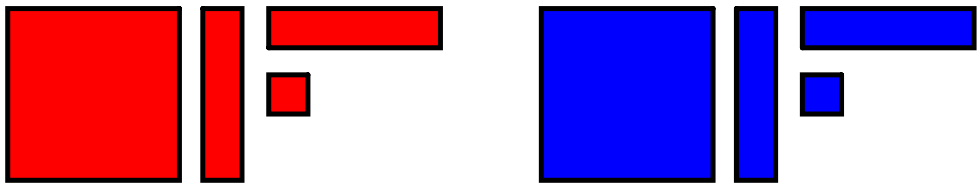
c) $x^2 - 10x + m$

d) $x^2 + 30x + m$

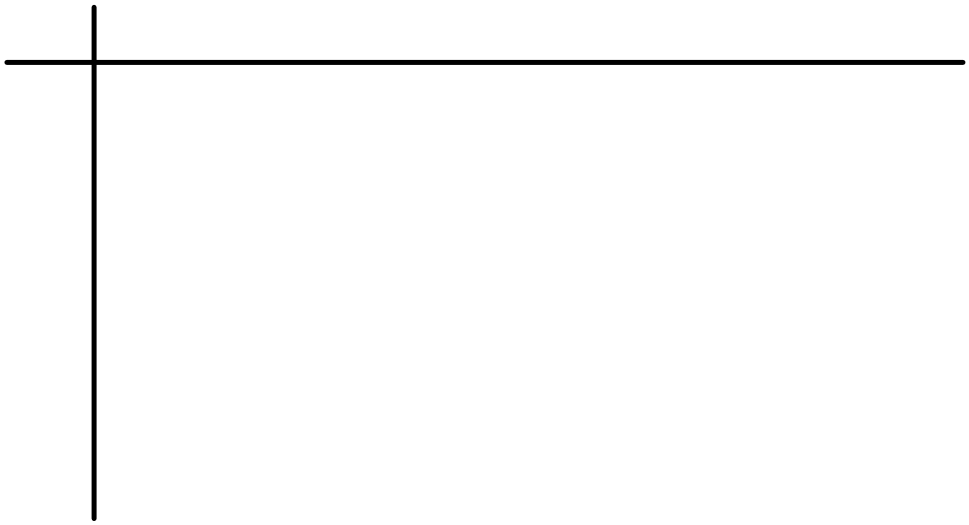
5.1 Completing the Square

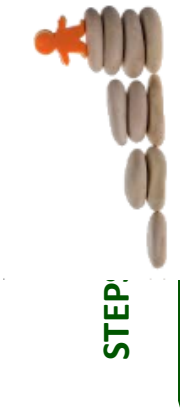
The process of completing the square allows you to change a quadratic equation from standard form to vertex form.

standard form		vertex form
$y = x^2 + 4x + 3$	*expand* ← / → *complete the square*	$y = (x + 2)^2 - 1$



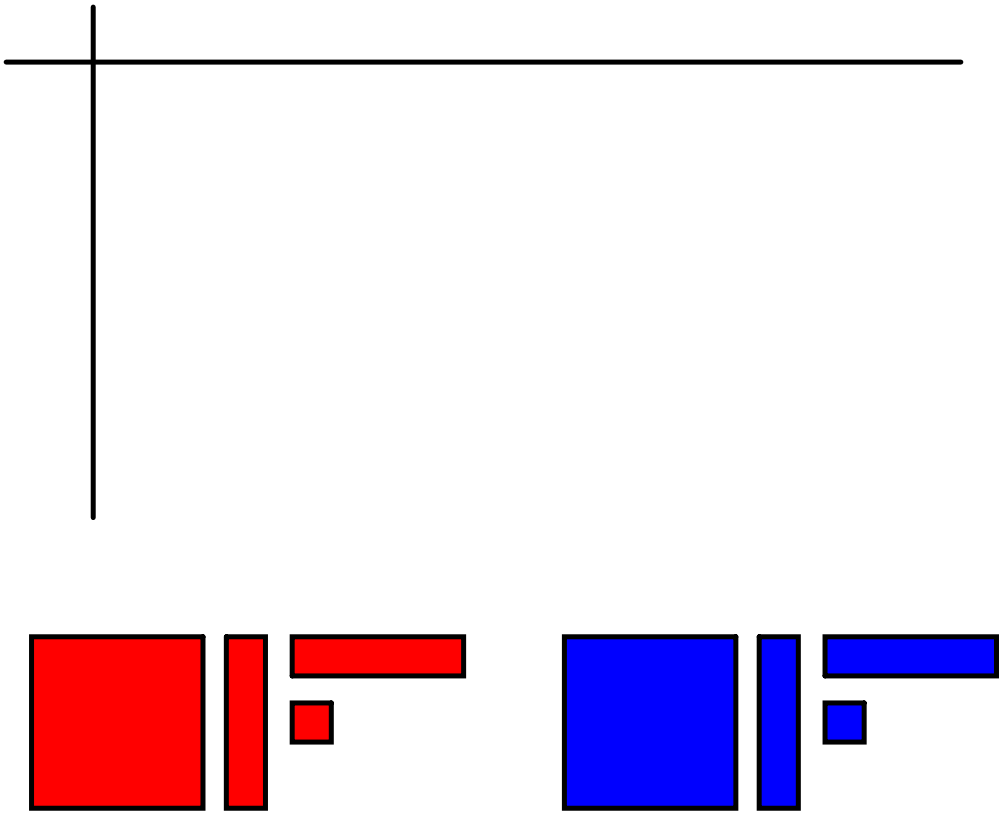
Ex. 1 Use tiles to complete the square for $y = x^2 + 2x + 7$.





Ex. 2 Rewrite each equation in vertex form using tiles to complete the square.

a) $y = x^2 + 8x - 3$



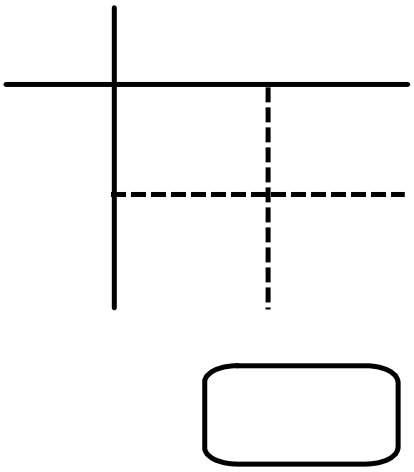
b) $y = x^2 - 6x + 2$

We can use a chart instead of algebra tiles.

- The x^2 and x-terms will go in the chart.
- The constant term will stay apart.

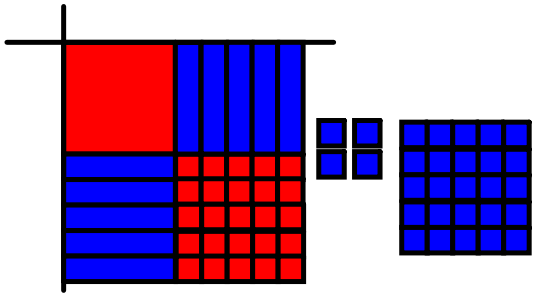
Ex. 3 Rewrite $y = x^2 + 8x - 3$ in vertex form by algebraically completing the square.

Chart



Ex. 4 Rewrite each of the following in vertex form by completing the square with tiles, then algebraically.

a) $y = x^2 - 10x - 4$ Algebraically



b) $y = x^2 + 12x - 5$ Algebraically