4-6 Vertex Form Using Completing the Square

Goal: Use completing the square to write quadratic equations in vertex form:

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

Why: It helps us understand why $h = \frac{-b}{2a}$ works, and how to find the vertex (h, k) point. This point tells us the maximum/minimum value of a quadratic. (This method is appearing more and more on standardized tests.)

Directions: Write the equation in vertex form using completing the square and identify the vertex. (Note this is different from solving, in that you want to leave "y" by itself.)

#1 $y = 2x^2 + 8x - 3$	Steps
	Group the x's together by factoring.
	Find the magic number _____ to "complete the square." Remember to COMPENSATE.
	Factor using magic number and simplify.
Max/Min @ (___, ___)	PEMDAS back to standard form to check.

#2 $y = -x^2 + 8x - 10$	Steps
	Group the x's together by factoring.
	Find the magic number _____ to "complete the square." Remember to COMPENSATE.
	Factor using magic number and simplify.
Max/Min @ (___, ___)	PEMDAS back to standard form to check.

#3 $y = 3x^2 + 6x$	Steps
	Group the x's together by factoring.
	Find the magic number _____ to "complete the square." Remember to COMPENSATE.
	Factor using magic number and simplify.
Max/Min @ (___, ___)	PEMDAS back to standard form to check.

#4 $y = 2x^2 + 4x - 3$	Steps
	Group the x's together by factoring.
	Find the magic number _____ to "complete the square." Remember to COMPENSATE.
	Factor using magic number and simplify.
Max/Min @ (___, ___)	PEMDAS back to standard form to check.

	Steps
	Group the x's together by factoring.
	Find the magic number _____ to "complete the square." Remember to COMPENSATE.
	Factor using magic number and simplify.
Max/Min @ (___, ___)	PEMDAS back to standard form to check.

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