

Process Standards:

Students will be able to:

- Effectively communicate their mathematical knowledge.
- Identify errors and their work and revise when necessary.
- Exhibit characteristics of a cooperative learner.
- Organize class materials so that they are easily accessible and able to be used as an additional resource in problem solving situations.

Content Standards:

Students will be able to:

- Use technology to assist in data collection and interpretation of functions.
- Perform operations and transformations on functions, polynomials, and other mathematical entities.
- Recognize equivalent forms of an expression, equation, function or relation.
- Generate equivalent forms of an expression, equation, function or relation.

Remember in task #8, you prepared for factoring quadratic expressions by getting a feel for what happens when you multiply two linear expressions. This activity has a similar first step for learning how to put quadratic expressions into vertex form.

1. Multiply out each of these vertex form expressions to get an equivalent quadratic expression in standard form. In other words, write each of these as an expression of the form $x^2 + bx + c$.

a. $(x + 5)^2 + 9$

b. $(x - 3)^2 - 12$

c. $(x + 4)^2 - 7$

d. $(x - 1)^2 + 8$

2. Use what you learned from your work in Question 1 to try to write each of these Quadratic expressions in expressions of the form $(x - h)^2 + k$.

a. $x^2 - 6x + 4$ b. $x^2 + 12x - 17$ c. $x^2 - 8x + 5$
d. $x^2 - 20x$ e. $x^2 + 11x - 7$

3. Describe the process you used in order to go from vertex to standard form.

4. Describe the process you used in order to go from standard to vertex form.

5. With respect to the unit problem, why do you think it is necessary for us to learn how to change an expression in standard form into vertex form?