

**Process Standards:**

Students will be able to:

- Interpret results in ways that are meaningful for the given context.
- Effectively communicate their mathematical knowledge.
- 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:

- Select and apply appropriate computational strategies to problem solving and life situations.
- Use technology to assist in data collection and interpretation of functions.
- Perform operations and transformations on functions, polynomials, and other mathematical entities.
- Interpret situations that involve variable quantities.
- Model a wide range of phenomena using a variety of functions.
- Select and produce appropriate graphical representations.

Complete the "Exploring Quadratics Lab" with your group. Design a graphic organizer that answers the following questions. You will present your results to the class.

1. What do you notice about the shape of each of the graphs?
2. How do you know if your graph has a maximum or minimum point? How might you describe this special point? Do you know its formal name?
3. What determines which way the graph opens?
4. How can you create a graph that has the same shape as the original one but the new vertex is either higher or lower on the screen?
5. How can you create a graph that has the same shape as the original one but the new vertex is to the left or to the right on the screen?
6. How can you create a graph that has the same shape and vertex as the original one but whose graph is "wider" or "narrower"?

7. Now, without your graphing calculator, create a new function whose shape is narrower or wider, and where the vertex is higher or lower and to the left or to the right than the original function. Check your function using your calculator. Where you correct?