Directions: For this exploration you will be scored using the rubric on the back. Complete work is expected on all parts of the task. This means you need to show your work, explain your thinking, verify your answers for reasonableness and record your findings in a way that allows you to recreate your thinking. Zero credit will be given for unsupported answers. You will lose points for unorganized, messy or incomplete work. All work must be done on a separate sheet of paper; do not try to squeeze your work and answers in the small spaces on this page. The rubric page attached will serve as the cover page to your exploration. In addition to completing the task you will write a paragraph using complete sentences discussing: What about the task challenged you most? How much time did the task take you? Was this task difficult or easy for you? How much time did it take you to complete? Did you try multiple strategies before coming up with a solution? Other important thoughts?

For this exploration you will be identifying parabolas in the real world. You will choose one picture of a parabola, transcribe it onto a graph, and then present all of the important info onto a poster, pamphlet, or book. Work in groups of 2-4 people.

Before creating the poster, find the basic information about the quadratic equation.

   a. Does the parabola open upward or downward? How does this effect the equation?
   b. What is the axis of symmetry?
   c. What are the coordinates of the vertex of the parabola?
   d. What is the maximum/minimum value of the parabola and how was it determined? What is it in the real world?
   e. What is the y-intercept of the parabola?
   f. How do you find other points on the parabola? Find at least 3 other points.
   g. What are the real life units of this parabola (feet, yards, etc...). How does that relate to the units on the coordinate plane?

Once all the important information is gathered, find the quadratic equation that represents the picture.

   1. Write the quadratic equation in vertex form.
   2. Re-write the quadratic equation in standard form.
   3. Solve the quadratic equation using any method to prove you have correctly identified your x-intercepts.

Open ended: Please answer the following questions in complete sentences.

   4. Why did you choose this parabola?
   5. Why do you think the parabola shape is used in the construction of the object? OR Why do you think this object follows a parabolic curve?
   6. What have you learned from completing this exploration?

Adapted from: http://dobrenelmath.weebly.com/uploads/5/8/1/8/58182041/quadratic_project.pdf

Real World Quadratics