

Background content: Prior to doing this activity, students should have working knowledge of the following:

- Transformations of functions
- Basic graphical features of parabolas (vertex, intercepts, line of symmetry, concavity)
- Completing the square

Philosophy behind this activity:

This activity provides students with a real scenario to apply their knowledge about quadratic functions, particularly parabolas.

Learning Goals:

1. Evaluating a quadratic function and the relationship between time and quality
2. Graphing quadratic function
3. Rewriting a quadratic function in vertex form
4. Using information gathered from the scenario to solve problems

Implementation Notes:

1. Since the activity is based on a real scenario, I have held back on immediately assisting students that are struggling with the material, as many of them are well-equipped to find solutions. With that being noted, students struggle to put the function into vertex form due to lack of practice/understanding with completing the square.
2. I have checked in with students before they move on to question 4 to ensure they have the correct graph.
3. As a class, we have discussed questions 7-9 since the responses can be varied.