

# Quadratic Project - Can you Graph It?

How can your knowledge and understanding of a parabola be applied in the real world?

## Part A: Parabolic Motion

- Create a quadratic motion (from left to right)
- Calculate the distance and height your object travels
- The vertex and the y-intercept cannot be the same point

## Part B: Create a quadratic function that models your image

- Write an equation in standard form
- Write an equation in vertex form
- Convert between forms (standard to vertex and vice versa)

## Part C: Include the following values, show calculations, and DEMONSTRATE UNDERSTANDING in the context of your image.

- |  |                                      |
|--|--------------------------------------|
| • Axis of Symmetry                     | • Discriminant                       |
| • Direction of Opening                 | • Vertex and what it represents      |
| • X-intercepts and what they represent | • Y-intercept and what it represents |
| • Domain and what it represents        | • Range and what it represents       |

## Part D: Put it together

Create a product that includes all of the above listed information and shows understanding and interpretation of your parabolic motion. This project will be presented at Project Exhibition Day.

Name \_\_\_\_\_

| <b><u>Quadratic Project Rubric</u></b>   | <b>Points Possible:</b> | <b><u>Your Score</u></b> |
|--|-------------------------|--------------------------|
| Real-life example  | 10 points               |                          |
|  |                         |                          |
| <b><u>Identify, Understand and Interpret in Context:</u></b><br><b>(*turn in calculations)</b> |                         |                          |
| Quadratic Equation in Standard Form  | 10 points               |                          |
| Quadratic Equation in Vertex Form  | 10 points               |                          |
| Convert between forms*   | 10 points               |                          |
| Axis of Symmetry*  | 4 points                |                          |
| Direction of Opening   | 2 points                |                          |
| Vertex* and interpretation   | 5 points                |                          |
| Discriminant*  | 4 Points                |                          |
| Zeros/X-intercepts* and interpretation   | 10 Points               |                          |
| Y-intercept* and interpretation  | 5 points                |                          |
| Domain and interpretation  | 10 Points               |                          |
| Range and interpretation   | 10 Points               |                          |
|  |                         |                          |
| <b><u>Product:</u></b>   |                         |                          |
| Organization with features clearly labeled   | 5 points                |                          |
| Readability/Neatness   | 5 points                |                          |
|  |                         |                          |
| <b><u>Total:</u></b>   | 100 points              |                          |

Name \_\_\_\_\_

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|--|-------------------------|--------------------------|
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|  |                         |                          |
| <b><u>Identify, Understand and Interpret in Context:</u></b><br><b>(*turn in calculations)</b> |                         |                          |
| Quadratic Equation in Standard Form  | 10 points               |                          |
| Quadratic Equation in Vertex Form  | 10 points               |                          |
| Convert between forms*   | 10 points               |                          |
| Axis of Symmetry*  | 4 points                |                          |
| Direction of Opening   | 2 points                |                          |
| Vertex* and interpretation   | 5 points                |                          |
| Discriminant*  | 4 Points                |                          |
| Zeros/X-intercepts* and interpretation   | 10 Points               |                          |
| Y-intercept* and interpretation  | 5 points                |                          |
| Domain and interpretation  | 10 Points               |                          |
| Range and interpretation   | 10 Points               |                          |
|  |                         |                          |
| <b><u>Product:</u></b>   |                         |                          |
| Organization with features clearly labeled   | 5 points                |                          |
| Readability/Neatness   | 5 points                |                          |
|  |                         |                          |
| <b><u>Total:</u></b>   | 100 points              |                          |