

# Quadratic Attributes and Equations

## Student Activity

Name \_\_\_\_\_  
Class \_\_\_\_\_

In this activity you will identify attributes of quadratic functions from an image. You will also write the equation of each quadratic function and check your work by graphing on the image.

To reset the memory on your TI-84 Plus CE press  $\boxed{2\text{nd}} \boxed{[\text{MEM}]} 7$ : Reset, 1: All RAM, 2: Reset to set the calculator to its default settings. This will set reset the RAM and clear all settings and work from your calculator.

1. The arc in the bridge in the image is parabolic. To insert this image on your calculator press  $\boxed{2\text{nd}} \boxed{[\text{FORMAT}]}$  and arrow down to background. Use the spinner's left and right arrows until this image is selected. You can also turn on the Grid Line on this screen if you would like.



- a) What is the vertex of the parabola?
- b) Does direction does this parabola face?
- c) When compared to the parent function  $f(x) = x^2$ , has this parabola been vertically stretched or compressed?
- d) Write the equation of the parabola that represents the arc of the bridge in vertex form.
- e) Graph your parabola to check your work. Do you need to make any adjustments?

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2. The arc of the water in the image is parabolic. To insert this image on your calculator press  $\boxed{2\text{nd}} \boxed{[\text{FORMAT}]}$  and arrow down to background. Use the spinner's left and right arrows until this image is selected. You can also turn on the Grid Line on this screen if you would like.



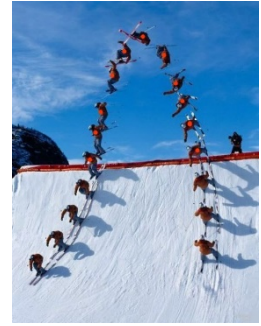
- a) What are the zeros of this parabola?
- b) What is the vertex of this parabola?
- c) What is the y-intercept of this parabola?
- d) Does direction does this parabola face?
- e) When compared to the parent function  $f(x) = x^2$ , has this parabola been vertically stretched or compressed?
- f) Write the equation of the parabola that represents the arc of the water in factored form.
- g) Graph your parabola to check your work. Do you need to make any adjustments?

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3. A time lapse image of a ski jumper is shown at the right. The path of the athlete is parabolic. To insert this image on your calculator press **2nd** [FORMAT] and arrow down to background. Use the spinner's left and right arrows until this image is selected. You can also turn on the Grid Line on this screen if you would like.



- What is the vertex of the parabola?
- Does direction does this parabola face?
- When compared to the parent function  $f(x) = x^2$ , has this parabola been vertically stretched or compressed?
- Write the equation of the parabola that represents the path of the athlete in vertex form.
- Graph your parabola to check your work. Do you need to make any adjustments?

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4. The image at the right is of a rainbow rail at a local skatepark. This rainbow rail is approximately parabolic. To insert this image on your calculator press **2nd** [FORMAT] and arrow down to background. Use the spinner's left and right arrows until this image is selected. You can also turn on the Grid Line on this screen if you would like.



- a) What is the vertex of the parabola?
- b) Does direction does this parabola face?
- c) When compared to the parent function  $f(x) = x^2$ , has this parabola been vertically stretched or compressed?
- d) Write the equation of the parabola that represents the rainbow rail in vertex form.
- e) Graph your parabola to check your work. Do you need to make any adjustments?