# Performance Task Module 6

## Problem 1

As you have previously learned, the graphs of all quadratic functions have a line of symmetry that contains the vertex and divides the parabola into mirror image halves. Consider the table of values generated by a quadratic function below:

|  |  |
| --- | --- |
| x | y |
| 1.5 | -8 |
| 2.5 | 7 |
| 3.5 | 16 |
| 4.5 | 19 |
| 5.5 | 16 |
| 6.5 | 7 |
| 7.5 | -8 |

1. What is the line of symmetry for the graph of this function?
2. The vertex of a parabola represents either the maximum or minimum value of the quadratic function. Name the vertex of this function and determine whether it is a maximum or a minimum. Explain your process for this determination.
3. Use the table of values to write the quadratic function in vertex form.

## Problem 2:

A juggler throws a ball into the air, releasing it 5 feet above the ground with an initial vertical velocity of 15 ft/sec. She catches the ball with her other hand when the ball is 4 feet above the ground. Using the model , find out how long the ball is in the air.

## Problem 3:

On dry asphalt the distance d (in feet) needed for a car to stop is given by



where s is the car’s speed (in miles per hour). What speed limit should be posted on a road where drivers round a corner and have 80 feet to come to a stop?