

Name _____ Date _____

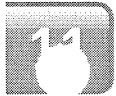
Just Watch that Pumpkin Fly!

Investigating the Vertex of a Quadratic Function

Investing in the stock market is always a risk. Sometimes there can be big payouts but other times you can end up losing it all.

1. Maya has saved up some money and decides to take a risk and invest in some stocks. She invests her money in Doogle, a popular computer company. Unfortunately she lost it all over a matter of months. The change in her money during this investment can be represented by the function $v(x) = 75 + 72x - 3x^2$, where v is the value of her investment and x is the time in months.
 - a. How much money did Maya first invest in the company? What does this value represent in the function?
 - b. Determine the x -intercepts of the function. Explain what each intercept means in terms of the problem situation.
 - c. Determine the vertex. Explain what it means in terms of the problem situation.
 - d. Determine when her portfolio reached a value of \$360.

2. Jack invested some of his money in Home-mart, a large home improvement store in his town. A few years after investing, the company went out of business and Jack lost all his money. The growth and decline of his money over this time can be represented by the function $v(x) = -2x^2 + 98x + 100$, where v is the value of his investment and x is the time in months.
- a. Describe this function in terms of the problem situation. Include information regarding the y -intercept, the x -intercepts, and whether the function has an absolute maximum or absolute minimum.
- b. Determine the axis of symmetry for this parabola. Then determine the vertex and explain what it means in terms of the problem situation.



Name _____ Date _____

c. Jack's account has \$1288 in it after 22 months. Use the axis of symmetry to determine another time when the account will have \$1288 in it. Show and explain your work.

d. Draw a graph of this function on the grid provided. Label the axes, vertex, axis of symmetry, x-intercepts, and the set of symmetric points that you determined.

