

Name _____ Date _____

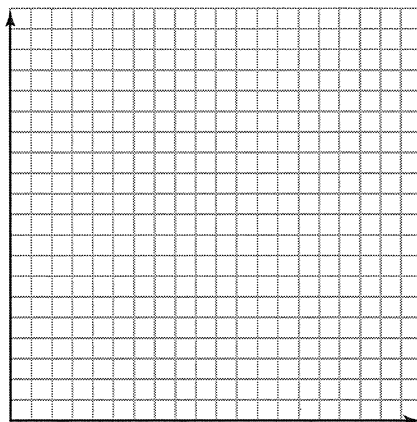
Are You Afraid of Ghosts? Factored Form of a Quadratic Function

1. The Squeaky Clean Car Wash charges \$20 for its deluxe wash. At this price, the car wash averages 200 customers per day. The car wash has determined that for every \$0.25 that they decrease the price of the wash, they will see an increase of 5 customers per day.
 - a. Complete the table to determine the revenue the car wash will see based on the number of price decreases.

Number of Price Decreases	Price of Car Wash (dollars)	Number of Customers	Revenue (dollars)
0			
1			
4			
15			
30			
60			
75			
n			

- b. The manager of the car wash thinks that he should just keep decreasing the price to bring in the most customers. Based on the table, is this a good decision? Explain your reasoning.
 - c. Write the revenue for the car wash as a function, $R(n)$, in standard form. Then, identify a , b , and c for the function.

- d. Based on the equation, will the graph of the revenue function open up or down? Explain your reasoning.
- e. Graph the revenue function. Then sketch the graph and label the axes.



- f. At what number of price decreases will the revenue be maximized? What is the maximum revenue the car wash will see at that price?
- g. What should the price be to maximize revenue? How many customers will the car wash see at that price? Show your work.
- h. Determine the x-intercepts of the revenue function. Explain what they mean in terms of the problem situation.
- i. Determine the y-intercept of the revenue function. Explain what it means in terms of the problem situation.

