

NAME \_\_\_\_\_

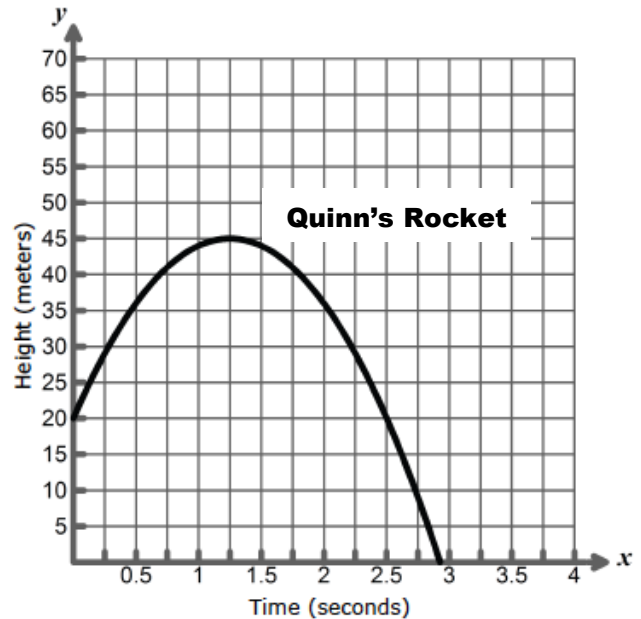
DATE \_\_\_\_\_

PER. \_\_\_\_\_

### APPLICATIONS OF QUADRATIC FUNCTIONS

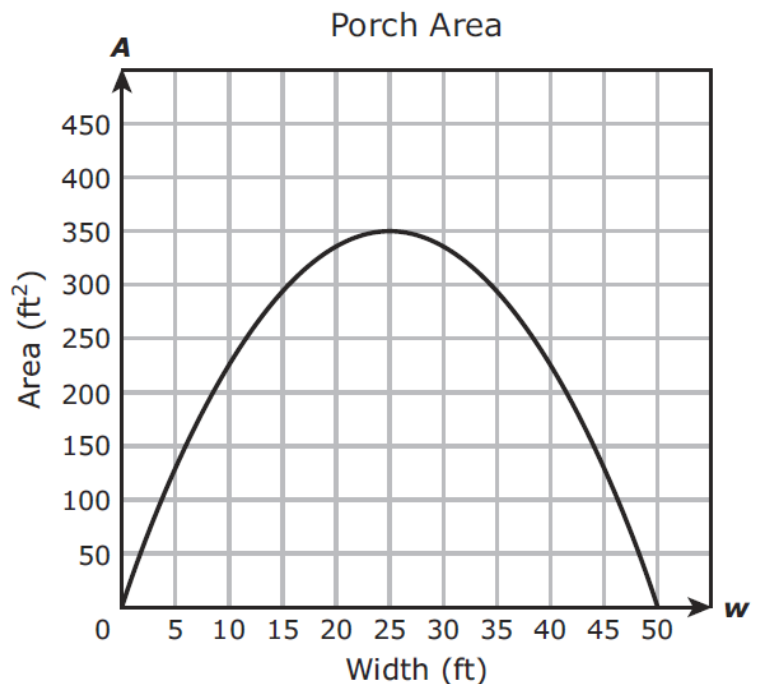
1. Quinn, Gladys, and Bob went outside to launch model rockets. Each person in the group chooses one rocket to analyze. Answer the following questions for Quinn's rocket.

- a) From what height was Quinn's rocket launched?
- b) When did the rocket hit the ground?
- c) When did it reach its greatest height?
- d) What was its greatest height?
- e) How many seconds was Quinn's rocket in the air?
- f) For approximately how many seconds was the rocket 30 meters or higher?



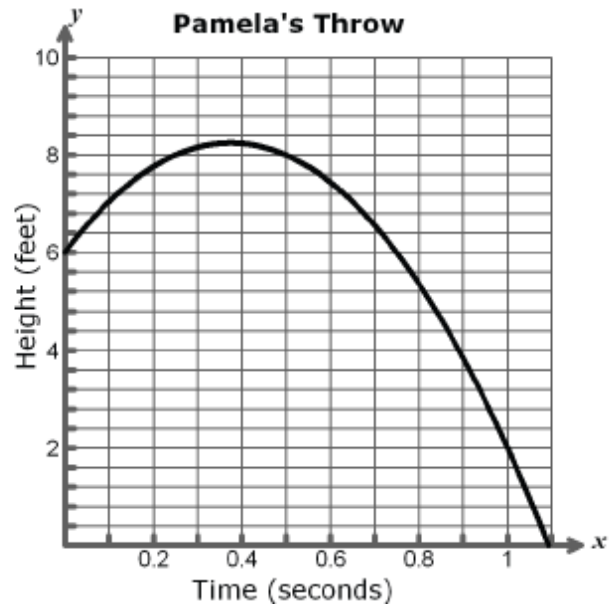
2. The graph models A, the area in square feet of a rectangular porch with a length that is  $0.56w$  less than 28 ft given a width of  $w$  feet.

- a) Independent variable : \_\_\_\_\_  
Dependent variable: \_\_\_\_\_
- b) x-intercepts: \_\_\_\_\_
- c) Vertex: \_\_\_\_\_
- d) What is the width in feet of the porch with the greatest area?



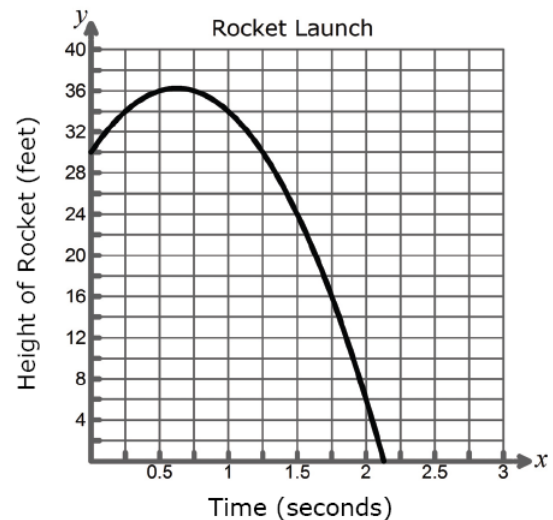
**3. Pamela is throwing a tennis ball that was hit out of the court. The graph represents the height of the tennis ball versus time.**

- a) The tennis ball was thrown from a height of \_\_\_\_\_ feet.
- b) When did the ball hit its maximum height?
- c) What was its maximum height?
- d) When did it hit the ground?
- e) When was it at a height of 2 feet above the ground?
- f) What is the independent variable?
- g) What is the dependent variable?



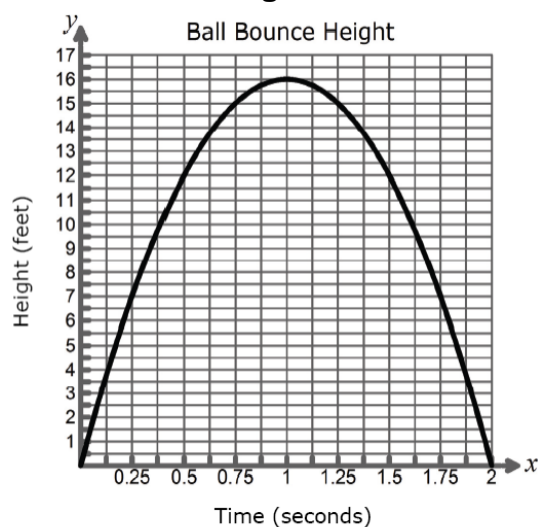
**4. The graph below represents the height of a rocket that is launched from the top of a building. Which statement best describes the path of the rocket?**

- A** The rocket reached the ground between 2.25 seconds and 2.5 seconds.
- B** The rocket was below 34 feet between 0.25 seconds and 1 second.
- C** The rocket reached its maximum between 1 second and 1.25 seconds.
- D** The rocket descended 8 feet between 1.5 seconds and 1.75 seconds.



5. The graph below shows the height of a ball versus time for one bounce. For how many seconds was the ball at a height of 7 feet or more above the ground?

- A 0.25 seconds
- B 1 seconds
- C 1.5 seconds
- D 1.75 seconds



**Review. Show all work.**

6. For their season opener, the freshman basketball team sold 90 tickets for a total of \$334. Adult tickets for the game cost \$5 and student tickets cost \$3. How many adult tickets were sold? (*Hint: Set up a system of equations, and solve using matrices*)

7. The area,  $A$ , of a parallelogram is  $30x^{12}y^9$  square feet. The height,  $h$ , of the parallelogram is  $5x^5y^2$ . The area of a parallelogram can be found by using the formula  $A = bh$ . Find the length of this parallelogram's base,  $b$ .