Quadratics - Day 5
Assignment

Name $\qquad$
Date $\qquad$ Per. $\qquad$

Complete the following.
Engineer Erik launched a model rocket from the top of a building that is 80 feet tall. The rocket has an initial upward speed of 160 feet per second. The path of the rocket can be modeled by the following equation: $h=-16 t^{2}+160 t+80$.

1. Complete the table.

| Time <br> (in sec.) | Process | Height <br> (in ft.) |
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2. Graph the path of the rocket.

3. What is a reasonable domain for this graph?
4. What is a reasonable range for this graph?
5. What is the height of the rocket at 3 seconds?
6. How long will it take the rocket to reach 336 feet in height? $\qquad$
7. At how many seconds will it be 464 feet in height?
8. How long will it take to reach maximum height?
9. What is the maximum height?
10. Will the rocket go higher than 500 feet?

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Bart tossed an apple to Starr, who was on a balcony 40 feet above him, with an initial velocity of 56 feet per second. Starr missed the apple on the way up, but caught it on the way down. How long was it in the air? (Use the formula, $-16 t^{2}+56 t+40$.)
11. If $v=$ initial velocity (initial speed), what is the initial velocity?
12. What is the function?
13. What was the maximum height of the apple?
14. How long did it take to reach maximum height?
15. How long was the apple in the air?
16. What is a reasonable range for this situation?

Athletic Adam threw a ball straight up with an upward speed of 40 feet per second. His hand was 8 feet above the ground when he released the ball. Write a function that models the path of the ball. (Use the formula, $h=-16 t^{2}+40 t+8$.)
17. How long was the ball in the air?
18. What was the maximum height of the ball?
19. How long did it take to reach maximum height?
20. After it reached maximum height, how long did it take to drop to Earth?
21. What is a reasonable domain for this situation?

