

Target 5.1 Review for Test

Date _____ Period _____

- 1) A hose used by the fire department shoots water out in a parabolic arc. Let x be the horizontal distance from the hose's nozzle, and y be the corresponding height of the stream of water, both in feet. The quadratic function is $y = -0.016x^2 + 0.5x + 4.8$.
- a. What does the 4.8 from the equation mean?
- b. What is the horizontal distance from the nozzle to where the stream hits the ground?
- c. Will the stream go over a 6-foot high fence that is located 28 feet from the nozzle? Explain your reasoning.

- 2) The stopping distance "d" (in meters) that a car needs to come to a complete stop when traveling at speed "x" (in m/sec) can be modeled by the equation $d = 0.009(x + 15)^2 + 3$. On a certain road, drivers cannot see a stop sign until they are approximately 20 meters away. What is the maximum speed that should be posted in order to allow cars enough room to stop in time? Round your answer to the nearest tenth.
- 3) The length of a rectangle is 3 more than 4 times its width. It's area is 126 square inches, what are the dimensions of the rectangle?

Answers to Target 5.1 Review for Test (ID: 1)

- 1) A. 4.8 feet is the starting height of the stream of water. B. 38.95 feet. C. Yes. You could do this two ways: substitute 28 into the equation for x to see what the height of the stream is (6.26 feet) or substitute 6 in for y and use the quadratic formula to find the distance for 6 feet (2.62 feet & 28.63 feet). Both prove that the stream is higher than 6 feet, 28 feet from the start.
- 2) 28.46 m/sec
- 3) Width is either -6 or 5.25 inches, so we'll go with 5.25 inches because -6 inches is not appropriate. Width is 5.25 inches and length is 24 inches.