## Algebra 1

## WS 9.5C Quadratic Application

1. The height of a diver above the water during a dive can be modeled by $h=-16 x^{2}+8 x+48$, where $h$ is the height in feet and $x$ is the time in seconds. Find the time it takes for the diver to reach a point 8 feet above the water.
2. The height of a fireworks rocket launched from a platform 35 feet about ground can be approximated by $h=-5 t^{2}+30 t+35$, where h is the height in meters and t is the time in seconds. How high is the rocket after 3 seconds?
3. A golf player hits a golf ball from a tee with initial velocity of 64 feet per second. The height of the golf ball $t$ seconds after it is hit is given by $h=-16 t^{2}+64 t$. How long is the golf ball in the air?
4. Consider the flight of an aircraft used to simulate weightlessness. Its flight path can be approximated by the following equation: $h=-10 x^{2}+300 x+9750$, where $h$ is the height in meters and x is the time in seconds.
a. After how many seconds will the aircraft land on the ground?
b. What is the altitude after 20 seconds?
c. At what time is the plane at 8500 meters?
5. The graph below describes a small business profit as related to the selling cost of the items sold. The profit is represented by the function $f(x)=-2 x^{2}+80 x$, where $f(x)$ is the total profit and $x$ is the selling cost of the items sold.
a. What is the maximum profit for the small business?
b. What is the selling cost for a profit of $\$ 600$ ?
c. At what point does the function start to decrease? What could be a reason for this decrease to happen?

