

**Real-World Applications – Day 7**  
Unit 2B: Quadratic Functions - Modeling

For each of the following:

- A. Identify the x-intercept(s) and tell what they mean**
- B. Identify the y-intercept and tell what it means**
- C. Identify the maxima/minima of the function and tell what it means**
- D. Graph and label the function**

1. Kameron throws a football at 44 feet per second from a height of 8 foot. The equation that shows the path of the football is  $h(t) = -16t^2 + 44t + 8$ .



2. A farmer has a plot of land marked off for a garden, but believes that he can put more in the space than he is currently by moving one side in, and another side out. The current plot of land that he has marked off is 1500 foot by 120 foot. The area they cover as they walk is given by the equation  $A(x) = (1500 - x)(120 + x)$



3. Alan is hiding in a tower that is 1500 foot tall and plans on throwing a rock to the ground trying to hit a can he has placed in a circle. If he throws the rock downward at 24 feet per second, the rock will follow the path modeled by the equation  $h(t) = -16t^2 - 24t + 1500$



4. The sophomore class is selling candles. All the candles are the same size and price. At this time the students are charging \$20 per candle and are selling 2000 units per year. It has been projected that for every increase in the cost by \$2 will result in the students losing the sale of 500 units per year. The equation that models the maximum profit that the students will earn from selling candles is  $C(r) = (20 + 2r)(10000 - 500r)$

