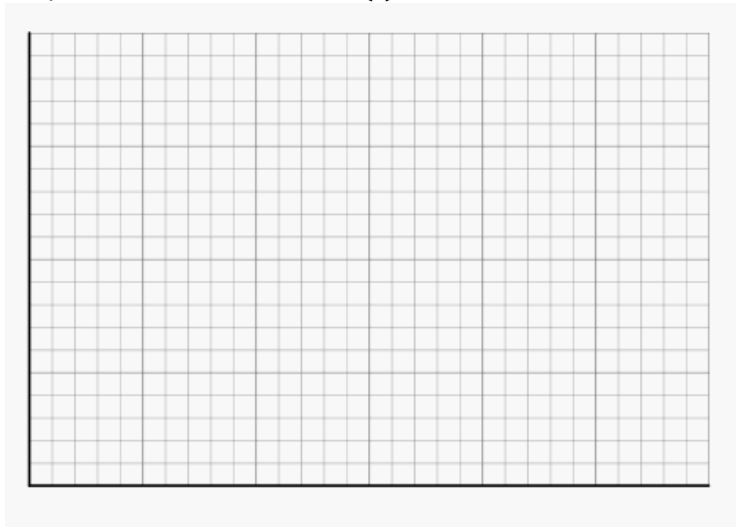


Real-World Applications – Day 4
Unit 2B: Quadratic Functions - Modeling

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**

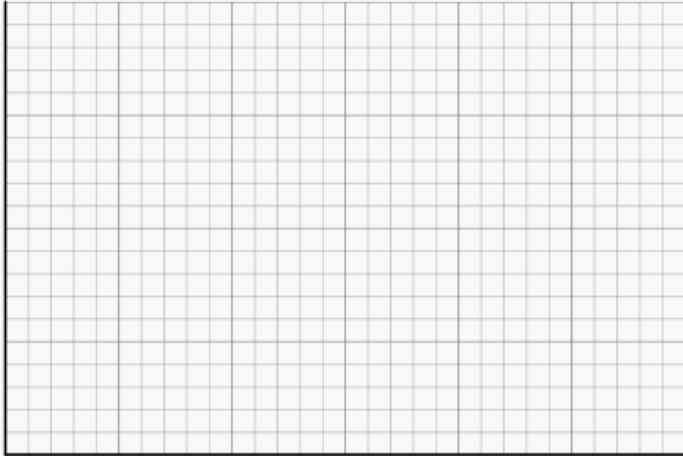
1. Andrew shoots a soccer ball at 75 feet per second from a height of 1 foot. The equation that shows the path of the soccer ball is $h(t) = -16t^2 + 75t + 1$.



2. The school wanted to put up a tent that would shade the area where they plan on holding the PBIS picnic. The staff unpacks the tent and is in an area that is 30 foot by 400 foot, but they want to maximize the area under the tent so they bring one side in while walking the other out. The area they cover as they walk is given by the equation $A(x) = (400 - x)(30 + x)$



3. A mechanic is changing the oil in a vehicle from down in a pit. The mechanic realizes that he has forgotten the oil filter up in the garage and asks his assistant to toss him down one for this vehicle. The assistant tosses the filter down at 5 feet per second from a height of 10 feet above the pit floor. This is modeled by the equation $h(t) = -16t^2 - 5t + 10$



4. The Hoopston Chronicle sells their papers for \$1.25 per issue currently. At this rate the paper is selling about 1500 papers per week. The paper however needs to increase the price that they are charging for the paper to accommodate for problems that have come up in their office. For every quarter they increase the price of the paper it has been projected that they will lose 45 papers per week in sales. The maximum profit and the amount of increase you should charge is given by the equation $C(r) = (1.25 + 0.25r)(1500 - 45r)$

