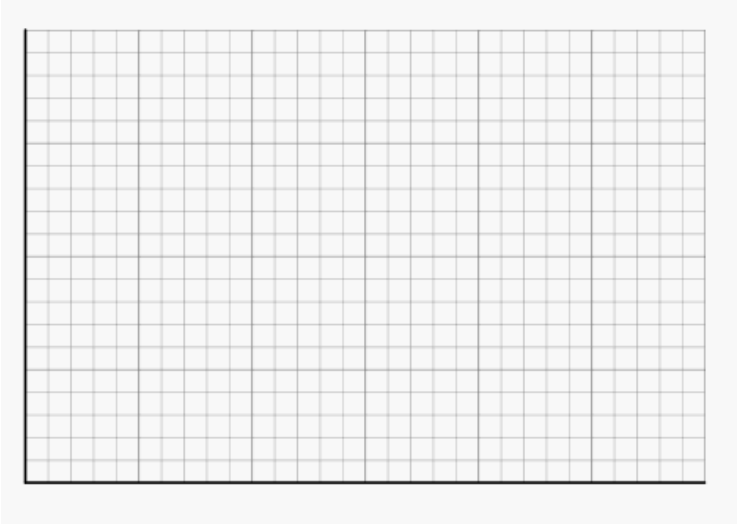
Real-World Applications – Day 1

Unit 2B: Quadratic Functions - Modeling

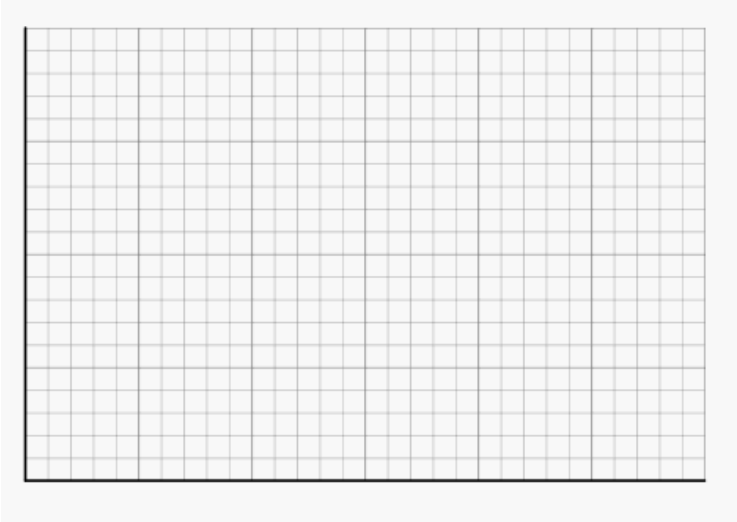
For each of the following:

- **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**

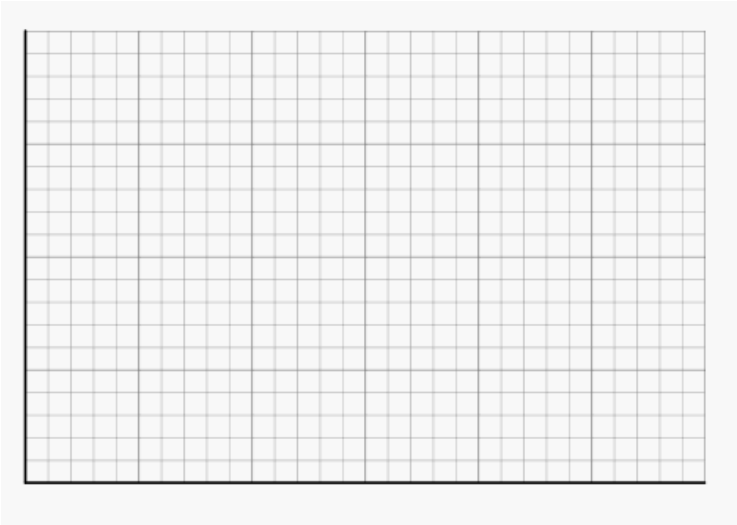
1. Christian throws a football at 40 feet per second from a height of 5 foot. The equation that shows the path of the football is $h(t) = -16t^2 + 40t + 5$.



2. A farmer has noticed that some of the wild animals around have been picking through their garden and want to put a fence around it. The area of land that he wants to fence in is given by the equation $A(x) = (15 - x)(3 + x)$



3. Standing at the top of an office building a man decides to toss a penny over the ledge. The path of the penny after the man throws it from 500 feet with a downward force of 10 feet per second. This is modeled by the equation $h(t) = -16t^2 - 10t + 500$



4. You want to run a car-rental business here in Hoopeston. You want to charge $12 per day to rent a vehicle and believe that you will average 60 rentals per week. For every fifty-cent increase in the rental price, the average business can expect to lose 5 rentals per week. The maximum profit and the amount of increase you should charge is given by the equation $C(r) = (12 + 0.50r)(60 - 5r)$