You are planning a water balloon attack on your math teacher. You plan to strategically place 4 people around the front parking lot and to use water balloon launchers to strike from a distance.

Here are the parameters of your attack:

**1.** Locations: Alpha is 40 feet up on top of the library, Beta is 10 feet high on the front breezeway, Charlie is 30 feet high in a tree, and Delta is on the ground by side entrance to the music rooms.

**2.** Each water balloon launcher can have a vertical velocity from 5 ft/s all the way up to 90 ft/s.

**3.** You want the 4 water balloons to each land 1 second apart (to the nearest tenth) from the one that hit before. (Everyone launches at the same time so if Alpha lands on the ground in 5.2 seconds, Beta must land in 6.2 seconds, Charlie in 7.2 seconds, and lastly Delta in 8.2 seconds)

**4.** The four people’s water balloons must land in this order: **Alpha first (Red), Beta second (Blue), Charlie third (Green), and then Delta last (Purple).**

How to work on the problem:

You get to choose how fast each balloon gets launched. This will determine how long each balloon stays in the air. Once you know the time for the first balloon you can start working on the second one, etc.

What you will turn in:

1. One graph on graph paper that has the parabolas for all 4 balloons (color code each one)

* For each parabola clearly label the coordinate of the y-intercept (0,y), the vertex (x,y), and the point where it hits the x-axis (x, 0) with their actual values.
* Label each parabola with the name of the person (see color code above).
* Choose a good scale so that you can show all four parabolas on 1 graph but take up one full page. Clearly label the scale.
* Label x and y axis and title the graph.

2. Turn in a list on the next page (separate from the graph) containing the following information for Alpha, Beta, Charlie, and Delta:

 Name:

 Equation:

 Maximum Height:

 Time of impact:

You may work alone or in pairs. If you work in a pair you will turn in one project with both names on it.

This project is due: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

