**Post-Launch Analysis**

Your assembled team began with calculations to predict the height, speed, and time of your rocket flight. On the day of the launch, the team considered the 3 phases of the rocket’s flight: the boost phase, the coast phase, and the recovery phase. Today, we will consider how the functions we have discussed this semester are able to accurately describe the path of the rocket’s flight.

With your teammates, work together to answer the following questions on a separate sheet of paper. Be sure to write neatly, in complete sentence while numbering the questions as you go along.

1. Before launch, your team sketched what you believed the altitude vs. time graph would like. Do the results match your hypothesis? What forces are acting on the rocket that may have caused your prediction to be different than the actual data?

2. Study the Altitude vs. Time graph of our rocket’s data, and the accompanying data set; what appears to be the rocket’s apogee, or maximum height?

3. At what time is this maximum height achieved?

4. What was the rocket’s total flight time, from lift-off to touchdown?

5. By studying the graph, how long did you expect the boost phase to last? What about the coast phase, and recovery phase?

6. **Look at both model rocket Fathom workspaces**. As you look at both Altitude vs. Time graphs, discuss the similarities and differences. What do you think could have caused the differences in the two launches?

7. Study the first model’s Fathom workspace. How does the average rate of change on the ascent compare to the average rate of change of the descent?

8. Study the second model’s Fathom workspace. How does the average rate of change on the ascent compare to the average rate of change of the descent?

9. Imagine the second rocket was built with a parachute that was twice the size of the original. What would you expect as a result in a new altitude vs. time graph?

10. Imagine the second rocket was built with a motor that was more powerful, and was ignited for a longer period of time. What would you expect as a result in a new altitude vs. time graph?

11. Study the second model’s **Velocity vs. Time** graph. Write a paragraph describing the rocket’s flight and velocity. Make sure to designate when one phase of flight ends, and another begins.