

Buggy Lab and The Crash!

Name: _____

Fast Buggy Velocity

1. Open the spreadsheet Buggy Lab Student Data and click on the “Fast Buggy” tab.
2. Using a fast buggy, a meterstick or other position measuring device, and a stopwatch, record the position of the buggy at 8 or more different times. Alternatively, you may use a video recording device and motion analysis software to record the positions and times.
3. Enter your positions and times in the data table. Once complete, paste your data table below.

Paste your data table here!

4. Plot the position of the buggy vs. the elapsed time. Make sure to title your graph, include the correct labels and units, and add a trendline with the equation. Paste your completed graph below:

Paste your fast buggy graph here!

5. In the table below, record the magnitude of the slope of the line and the units.

Slope magnitude	Units

What does the slope represent?

6. Write the equation for the fast buggy in the space provided.

Slow Buggy Velocity

1. Open the spreadsheet Buggy Lab Student Data and click on the "Slow Buggy" tab.
2. Using a slow buggy, a meterstick or other position measuring device, and a stopwatch, record the position of the buggy at 8 or more different times. Alternatively, you may use a video recording device and motion analysis software to record the positions and times.
3. Enter your positions and times in the data table. Once complete, paste your data table below.

Paste your data table here!

4. Plot the position of the buggy vs. the elapsed time. Make sure to title your graph, include the correct labels and units, and add a trendline with the equation. Paste your completed graph below:

Paste your fast buggy graph here!

5. In the table below, record the magnitude of the slope of the line and the units.

Slope magnitude	Units

What does the slope represent?

6. Write the equation for the slow buggy in the space provided.

Fast and Slow Buggy Graphical Comparison

1. Open the third tab in the spreadsheet, Slow Buggy and Fast Buggy.
2. Enter your data. Make sure you follow the directions on the spreadsheet! Once your data has been entered, paste it below.

Paste your combined data here!

3. Select ALL of the headings and the data. Plot a scatter graph and be sure both plotted dots are visible. Add a title, axes labels and units, as well as a trendline for each graph with the equation. Paste your completed graph below.

Paste your graph here!

4. How can you quickly tell which line is the fast buggy and which is the slow buggy? (Don't worry about color...look at a property of the graph!)

The Crash!

Your task is now to determine where the two cars will meet if separated by a 3-meter distance. You will place the fast car at the 3-meter position and make it travel towards the zero line. At the same time, your partner will start the slow buggy at the zero position. You will then determine where the two cars will crash using both graphical and algebraic methods.

1. Open the last tab in the spreadsheet.
2. Using your equation for the slow buggy, enter enough data to predict the position of your car starting at 0 meters and zero seconds and moving towards the 2-meter spot.
3. Using your equation for the fast buggy, enter enough data to predict the position of your car starting at 3 meters and zero seconds and moving to the 0-meter spot.
4. Paste your data below.

Paste your data here!

5. Select all of your data and plot a graph of position vs. time. Paste your completed graph below.

Paste your graph here!

6. From the graph, at what position will your two buggies meet?

Meeting position magnitude	Units

7. On a separate sheet of paper, algebraically determine where the two buggies will meet. When you finish, take a picture of your completed work and paste it below.

Paste the work for the algebraic determination of the meeting point here!

8. Which of the two methods is more PRECISE? (Look up precision in Google!)

9. Why is the method you chose more precise?

10. Set the two buggies 3 meters apart have them move toward each other. Record the actual meeting point (the Crash) below.

Crash Position	Units

11. On a separate sheet of paper, calculate the percent difference between the more precise method of determining the crash position and the actual crash position. Value 1 is the precise method value and Value 2 is the actual crash position. Take a picture of your work and paste it below!

Paste your % Difference calculation here!