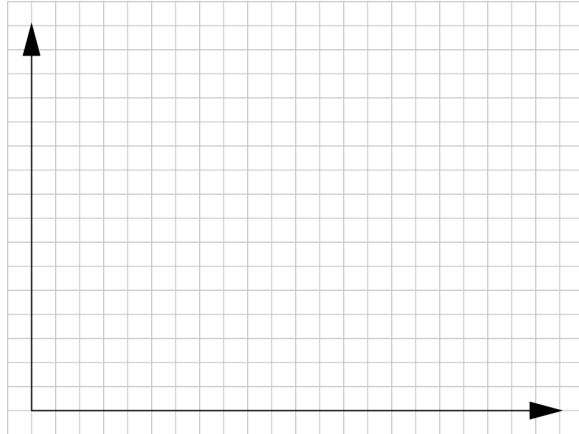


Measuring Paragraphs

Prediction Page

We predict how the height of a paragraph depends on its width.

1. How do you think the height of a paragraph depends on its width? Even before you see the paragraphs, make a prediction. In this case, your prediction will be the sketch of a graph. Put **width** on the horizontal axis and **height** on the vertical axis.



2. Explain why you think the data will have the *shape* you predict:

Collecting Data

- ❖ Measure the height and width of the paragraphs. Enter the data into the table:

❖ Width	❖ Height

Measuring Paragraphs--In the Lab

Instructions and objectives for the lab.

How Do You Know When You're Done?

- ❑ You have measured all of the paragraphs, graphed them, and found a function that approximates the data pretty well.
- ❑ You can explain why the model—the mathematical function—has the form it does.

Setup

You need a sheet of paragraphs (page 46) and a ruler (centimeters work best).

Collecting Data

- ❖ Measure the height and width of the paragraphs. Enter the data into the table:

❖ Width	❖ Height

- ❖ *Enter the data* ① into the computer.

Data Analysis

- ❖ *Make a scatter plot* ① of your data. Follow "Graphing Data in Science" guidelines.
- ❖ Find the simplest and intuitive mathematical model—function—that fits the data as well as possible.
- ❖ *Plot the function* ① on your scatter plot.
- ❖ Find the largest and smallest values of the parameters for which the function still looks reasonable. (Use +/- error values on Logger Pro)

Tasks, Questions, and Exploration

Here are questions to answer and some additional data analysis tasks.

1. What was your specific equation for the mathematical relationship? (Include relevant numbers and units of measurement, as well as an explanation of what any symbols represent.)
2. Include a printed copy of the graph you made via Logger Pro.
3. Explain why the function makes sense. That is, why does it have that mathematical form as opposed to some other form?
4. There are one or more parameters (numerical constants) in your formula. Explain what your constant(s) represent(s) in this situation.
5. What are the largest and smallest values for your parameter(s) that still fit your data reasonably well? (Look at +/- error values given by the curve fit in Logger Pro.)