

Reaction Time

One of the things you will be measuring frequently in this laboratory is *time*: when something started, when something finished, how long it took something to occur, etc. Like most things in the laboratory, time is something that is impossible to measure *perfectly*. When you do make a measurement of time, it is important to understand *how good* your measurement is going to be. For example, counting off *Mississippi's* is not going to give you as good a measurement as using a stopwatch. But even when using a stopwatch, your **reaction time** is going to slightly affect your measurement. In this lab, we are going to find out *how much* your reaction time will affect time measurements.



Tasks:

1. Design a technique for measuring someone's reaction time.
2. Measure the reaction time of three of your group members. Take as many trials as you deem appropriate.
3. As a group, decide, based on all the data you took, what to use as your "rule of thumb" reaction time.
4. Also, decide *how precise* you can expect time measurements to be. That is, are you able to measure to the nearest second? Half-second? Better than that?

I. Brainstorm and plan

15 min

Groups of 4

How will you answer your question? Who will take what data? What will you do to the data to form conclusions? How will you present the data to clearly show your conclusions?

*Get approval from the TA before you begin taking data.

II. Carry out the experiment

30 min

Groups of 4

Write the lab report as you work.

III. Group presentations

40 min

Whole Class

The **Journalist** and **Data Interpreter** of your group lead a five-minute discussion of your findings. The **Data Interpreter** presents the data from your measurements and the **Journalist** answers questions about the design of the experiment. When other groups present, help them see how they might have improved their experiment or conclusions.

IV. Class discussion

15 min

Whole Class

In the future, you're not going to want to sit down and measure your reaction time every time you use a stopwatch. So, as a class, come to a consensus on what can be used as a "rule-of-thumb" for both the average *reaction time* and *how accurate* any given time measurement can be.

V. Evaluate your experiment

20 min

Groups of 4

Use the remainder of your time to write the evaluation section, in which you discuss how you might have improved your experiment. *Turn in your lab report.*

MAJOR GOAL:

Explain the reason for doing multiple trials in any experiment, and what to do with the different numbers that result.