

3.4: Procedures

You will record measurements from three different systems and analyze errors.

Reaction Time

1. Draw a table in which to record your data for the distance a ruler falls, as you attempt to grasp it; you will need to have 5 successful trials recorded (see example table on following page). Do not fill in data until you have read the instructions for obtaining that data.

Table 3.4.1: Falling Ruler Data

Trial #	Distance Ruler Fell (cm)
1	
2	
3	
4	
5	

2. **Each person** will record only their own data, as each person in your group attempts to grasp a ruler while it falls. One person will hold the top of a ruler so that the ruler hangs down vertically, while you place your index finger and thumb at the bottom edge of the ruler as if **you** are about to pinch the ruler. (See image).

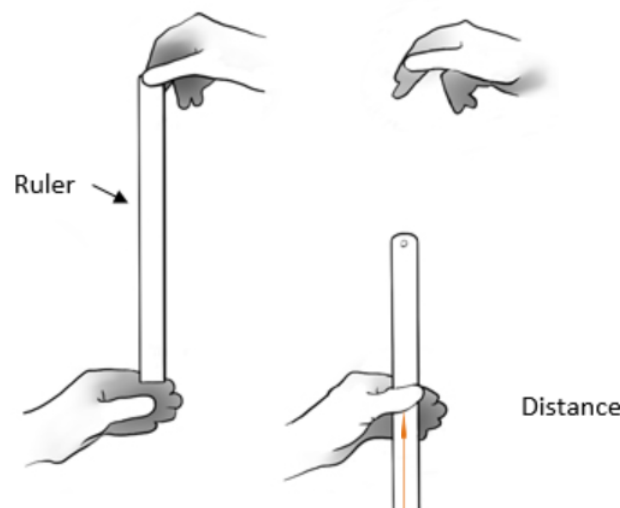


Figure 3.4.1: Image by BiologyCorner is licensed under CC BY-NC 3.0

3. The person holding the ruler should allow the ruler to drop without warning. **You** will then pinch the ruler as fast as you can. Record the distance the ruler falls **in centimeters**, for each of five successful trials. If the ruler falls to the floor, this is not a successful trial; repeat the trial.

Burning Candle

4. Draw a table in which to record your data for the length of the candle, before and after it burns, and every 2 minutes while it burns. Read the instructions for obtaining the data.

Table 3.4.2: Burning Candle Data

Time (minutes)	Length (centimeters)
Pre-burn	

Time (minutes)	Length (centimeters)
2	
4	
6	
8	
10	
Post-burn	

5. Use the aluminum foil to create a candle stand. Measure the length of the unlit wax candle **in centimeters**. Record this value as the pre-burn value.

Warning

Be careful that you do not burn yourself or the ruler during this experiment.

6. Light the candle and allow it to burn for the duration of this mini-experiment. Measure the total length of the candle + flame, **in centimeters**, every 2 minutes for a total of 10 minutes.



Figure 3.4.2: Candle by Teresa Ciardi is used under a CC-BY 4.0 license.

7. Extinguish the candle flame. Measure the length of the unlit wax candle **in centimeters**. Record this value as the post-burn value.

Clocks

8. Look at the clock in the room and record the time. Then look at the time on your watch or cell phone and record the time. You will only have one trial for this mini-experiment.

Table 3.4.3: Time on clock and watch/ phone

Time on Clock	Time on Watch/Phone

Clean-up:

- Rinse your match and throw it away
- Throw away the foil
- Clean up any spilled wax

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