

## 6 Scientific Method - Senses Lab

### Materials:

- Ruler – for every two students
- Graph paper and handout – for each student
- Handouts

### Procedures:

1. Students fill out their problem statement described in the handout directions. Next each student comes up with an if/then hypothesis. You might need to explain how to make an if/then statement. To help the students, you can say, “If I use the sense of touch to grab the ruler, then touch will be the fastest sense in the experiment”.
2. Organize students in groups of two. One student will be dropping the ruler and the other student will catch it. The student who is catching the ruler will repeat the experiment five times for each of the three senses (touch, sight, sound). Once that student catches the ruler 15 times and records the data, then the partners switch duties.
3. Ruler: The student, who is dropping the ruler, holds the top part of the ruler vertical at the 30 cm end. The two fingers holding the ruler are closest to the edge of the ruler. The student who is catching the ruler puts the top of their index finger at the 0 cm mark and their thumb on the other side of the ruler. This allows the student to grab or pinch the ruler. The catching student has their fingers close to the ruler but not touching it. Once the other student drops the ruler, the catcher tries to catch the ruler with their same fingers. The highest point where the catching student’s index finger lands is recorded on the handout. Repeat three times.
4. Sight: The catching student puts their finger on the 0 cm mark. The dropping student drops the ruler without any other clues. The catcher tries to grab the ruler once it is dropped. Record the result. Repeat three more times.
5. Touch: The catching student puts their finger on the 0 cm mark and closes his/her eyes. The student who drops the ruler taps the catcher on the arm and drops the ruler at the same time. Once the catcher’s arm is touched, they try to grab the ruler. Record the result. Repeat three more times.
6. Sound: The catching student puts their finger on the 0 cm mark and closes his/her eyes. The student who drops the ruler says “now” and drops the ruler at the same time. Once the catcher hears “now,” they try to grab the ruler. Record the result. Repeat four more times.
7. Students create a bar graph with the average of the senses as the IV (independent variable) and the numbers 0 to 30 cm as the DV (dependent variable).

### State the problem:

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**Hypothesis:**

If \_\_\_\_\_,

Then \_\_\_\_\_.

**Procedures:**

In groups of two, one student will drop the ruler and one will catch the ruler. Both students can use the results of the student who catches the ruler.

The student who is dropping the ruler holds the top of ruler vertical at the 30 cm end. The catching student puts the top of their index finger at the 0 cm mark and their thumb on the other side of the ruler. This allows the student to grab or pinch the ruler. The catching student has their fingers close to the ruler but not touching it. Once the other student drops the ruler, the catcher tries to catch the ruler between their thumb and index fingers. The highest point on the ruler where the catching student's index finger lands is recorded on handout. Repeat three times.

**Sight:** The catching student puts their finger on the 0 cm mark. The dropping student drops the ruler without any other clues. The catcher tries to grab the ruler once it is dropped. Record your results. Repeat three more times.

**Touch:** The catching student puts their finger on the 0 cm mark and closes his/her eyes. The dropping student taps the catcher on the arm and drops the ruler at the same time. Once the catcher's arm is touched, they try to grab the ruler. Record your results. Repeat three more times.

**Sound:** The catching student puts their finger on the 0 cm mark and closes his/her eyes. The student who drops the ruler says "now" and drops the ruler at the same time. Once the catcher hears "now," they try to grab the ruler. Record your results. Repeat three more times.

**Experiment:**

Trial	Sight	Touch	Sound
1			
2			
3			
4			
5			
Average			

1) Independent variable: \_\_\_\_\_ Dependent variable: \_\_\_\_\_

**Graphing:**

Students create a bar graph with the averages on the x-axis and the numbers 0 to 30 cm on the y-axis. Make sure to title and label the x and y axes.

**Analysis:**

2) Which sense was fastest? \_\_\_\_\_ Which sense was slowest? \_\_\_\_\_

3) Did the ruler drop to the floor during any of your trails? \_\_\_\_\_

4) What experimental term is it when a ruler is dropped to the floor? \_

5) Were the results of the sight trials the same as the average? \_\_\_\_\_

6) Why did you perform five trials for each sense instead of one? \_\_\_\_\_

**Conclusion:**

7) \_\_\_\_\_