



FUTURE GOALS™

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Speedy Senses - Part 1 Student Lab Packet

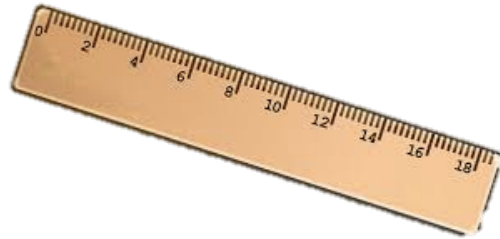
Name: _____ Date: _____

Speedy Senses Part 1: How fast are your reactions?

Purpose: In this experiment I will be measuring _____
by _____.

Procedure:

1. Have your partner sit at a table with their dominant hand (the hand they write with) hanging over the edge of the table.
2. Holding the ruler at the top, make sure that the bottom of the ruler is in line with their index finger.
3. Remind your partner that you will be dropping the ruler, and that they should grab it as fast as possible.
4. When dropping the ruler, be careful not to make any sounds or movement that will give your partner a warning that you'll be dropping the ruler. Your partner should be reacting **ONLY** to the sight of the ruler falling.
5. Drop the ruler 3 different times. Each time, record the location on the ruler where your partner catches it (in centimeters).
6. Switch places with your partner and then perform the experiment again.



Data Collection:

My Partner's Name: _____

My Partner's Test Results:

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	

My Test Results:

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	

Data Analysis:

Who had the faster reaction time – you or your partner? How can you tell?

Did you notice any problems during your experiment that might have affected your results? Explain.



Conclusion:

Was there a difference in the reaction time between different people in your class? Is that what you expected? Explain why or why not.

Are there certain traits that you expect would have an effect on reaction time? For example, how do you think the reaction time would compare between:

- an athletic person & someone who does not play sports?

- an older person & a younger person?



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Speedy Senses – Part 2 Student Lab Packet

Name: _____

Date: _____

Speedy Senses Part 2: Which hand is faster?

Purpose: In this experiment, the reaction times of dominant and non-dominant hand muscles will be compared.

Hypothesis: If the reaction times for dominant and non-dominant hand muscles are measured, then the _____ hand muscle will react faster because _____.

Procedure:

1. Have your partner sit at a table with their dominant hand (the hand they write with) hanging over the edge of the table.
2. Holding the ruler at the top, make sure that the bottom of the ruler is in line with their index finger.
3. Remind your partner that you will be dropping the ruler, and that they should grab it as fast as possible.
4. When dropping the ruler, be careful not to make any sounds or movement that will give your partner warning that you'll be dropping the ruler. Your partner should be reacting ONLY to the sight of the ruler falling.
5. Drop the ruler 3 different times, and record where your partner catches it (in centimeters) as Trials 1, 2, & 3.
6. Have your partner switch hands, so they are now using their non-dominant hand to catch the ruler. Repeat steps #2 - #5.

7. Trade places with your partner, and then collect the reaction time data for your dominant and non-dominant hand. Record the results under Trial 4, 5, & 6.

Data Collection:

My Partner's Name: _____

Table 1. Dominant & Non-Dominant Ruler Measurements

Dominant Hand Results

	Ruler measurement (in centimeters)
Trial 1	
Trial 2	
Trial 3	
Trial 4	
Trial 5	
Trial 6	
Average	

Non-Dominant Hand Results

	Ruler measurement (in centimeters)
Trial 1	
Trial 2	
Trial 3	
Trial 4	
Trial 5	
Trial 6	
Average	

Helpful hint: To calculate the average measurement, add up the values for all six trials and then divide the final answer by 6.

Now, let's convert your measurements in centimeters to seconds.

Table 2. Dominant & Non-Dominant Reaction Times

Put your averages from
Table 1 in this column



Use the Centimeters-to-
Seconds Conversion Chart
to complete this column



	Ruler measurement (cm)	Reaction time (sec)
Average Dominant Hand Reaction Time		
Average Non-Dominant Hand Reaction Time		

Data Analysis:

Which hand had the faster reaction time? Was it the same for both you and your partner?

Did you notice any problems during your experiment that might have affected your results? Explain.



Conclusion:

Summarize your results.

Was there a difference in the reaction time between your dominant and non-dominant hand? Is that what you expected? Explain why or why not.

Explain your results.

What do you think caused the difference in reaction times between your dominant and non-dominant hands? Explain why you think this affected the reaction time.

Propose future experiments.

After seeing the results from this experiment, what additional experiments would you like to perform to test reaction time?

Centimeters-to-Seconds Conversion Chart

Distance (centimeters)	Reaction Time (seconds)
5	.101
10	.143
15	.175
20	.202
25	.226
30	.247
35	.267
40	.286
45	.303
50	.319
55	.335
60	.350
65	.364
70	.378
75	.391
80	.404
85	.416
90	.429
95	.440
100	.452



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Speedy Senses – Part 3 Student Lab Packet

Name: _____

Date: _____

Speedy Senses Part 3:

Which sense is fastest – sight, hearing, or touch?


Purpose: In this experiment, the reaction times of the different sensory systems – sight, hearing and touch – will be compared.

Hypothesis: If the reaction times for sight, hearing and touch are measured, then the _____ system will react the fastest because

_____.

Procedure:

1. Have your partner sit at a table with their dominant hand (the hand they write with) hanging over the edge of the table.
2. Holding the ruler at the top, make sure that the bottom of the ruler is in line with their index finger.
3. Remind your partner that you will be dropping the ruler, and that they should grab it as fast as possible.
4. **Testing Sight.** Your first drop will be test the visual system's reaction time. When dropping the ruler, be careful not to make any sounds or movement that will give your partner warning that you'll be dropping the ruler. Your partner should be reacting ONLY to the sight of the ruler falling.
5. Drop the ruler 3 different times, and record what part of the ruler your partner catches (in centimeters) under the "Sight" table as Trials 1, 2, & 3.

- 
6. **Testing Hearing.** Now have your partner close their eyes. In this drop, you will test their reaction to sound. Right as you drop the ruler, call out the word, "Go". This will be the only signal to your partner that you are dropping the ruler. Be careful not to touch the ruler to your partner's hand before the drop. Your partner should be reacting ONLY to the sound of your voice.
 7. Drop the ruler three different times, and record what part of the ruler your partner catches (in centimeters) under the "Hearing" table.
 8. **Testing Touch.** Have your partner close their eyes, and have them loosely touch their fingers to the ruler. In this drop, you will test their reaction to only touch. Give your partner no sound signal that you are dropping the ruler. Your partner should be reacting ONLY to the movement of the ruler when it starts to fall.
 9. Drop the ruler 3 different times, and record what part of the ruler your partner catches (in centimeters) under the "Touch" table.
 10. Switch places with your partner and then perform the experiment again.

Data Collection:

My Partner's Name: _____

My Partner's Test Results

My Test Results

Sight

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	

Sight

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	

Hearing

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	

Hearing

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	

Touch

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	

Touch

	Ruler measurement
Trial 1	
Trial 2	
Trial 3	



Data Analysis:

Which sensory system reacted the fastest? How can you tell? Was it the same for both you and your partner?

Did you notice any problems during your experiment that might have affected your results? Explain.

Conclusion:

Was there a difference in the reaction time between sight, hearing, or touch? Is this what you expected? Explain why or why not.

Centimeters-to-Seconds Conversion Chart

Distance (centimeters)	Reaction Time (seconds)
5	.101
10	.143
15	.175
20	.202
25	.226
30	.247
35	.267
40	.286
45	.303
50	.319
55	.335
60	.350
65	.364
70	.378
75	.391
80	.404
85	.416
90	.429
95	.440
100	.452