Conclusion Questions (Friction Lab):

1. How can you find the weight of the object you are pulling with the force sensor?
2. How can you find the weight of the masses you added?
3. What are the units for each of the columns in your data table(s)?
4. For each of the 4 forces in the "sliding sled Free Body Diagram" we discussed before starting our data taking, state the following: a) Object exerting the force. b) Object the force is exerted on. c) Direction of force. d) Newton's "third law pair" for that force. ***Use the following data table to keep your thoughts organized. Force #1 is done for you to help get you started.***

Force	**Object Exerting**	**Object Receiving**	**Direction**	**Description of Newton's 3rd Law Pair**
Tension	Force Sensor	Wooden Sled	+	Sled pulling back on Force sensor

5. Using Newton's 2nd Law (The law that connects force and motion), explain how you know how long you should draw the weight and normal vectors in you Free Body Diagram.
6. How must the force sensor be angled with the table in order to get a true "horizontal" pull?
7. How can you relate the "Pulling Force" ($F_{tension}$) to the "Friction Force in this lab?
8. In order to answer #7, how must you describe the horizontal motion of the object?
9. Using Newton's 2nd Law (The law that connects force and motion), explain how you arrived at your answer in question #8.

Graphical Analysis Questions

1. What does the slope of our graphs represent?
2. What are the units of the slope?
3. How does the coefficient of friction resulting from the sand paper side and the coefficient of friction resulting from wooden side compare relatively if they both have the same surface area? Does this surprise you? Explain.
4. What can we conclude about the relationship between the magnitude of the coefficient of friction and magnitude of the friction (how much friction is present)?
5. What happens to the friction force when the normal force increases? What are your thoughts on why this happens?
6. According to your graph, what factors does the Coefficient of Friction depend on.
7. If the coefficient of friction is always greater than zero, but less than one, what can you conclude about the relationship between the normal force and friction force.
8. How could you change all coefficients of friction in this lab by changing one thing?
9. Suggest a great way to lower the coefficient of friction without changing the 2 surfaces that are rubbing together.