

**STATIC, SLIDING & ROLLING FRICTION**

PP. 386-387

**Directions:** *Use this outline to work through the lab. Read the lab carefully and follow directions. Write all data on this sheet and answer all questions here.*

I. **PURPOSE** [Read over the lab and write a **one sentence** summary for the “Purpose”.]

**II. MATERIALS**

A. List all materials and equipment used/needed:

**III. PROCEDURE**

\*Read and follow the procedure in the text. Complete the following information first.

Questions WITHIN the lab procedure [plus some extras ☺]

1. Define **STATIC FRICTION**:
2. Define **SLIDING FRICTION**:
3. Define **ROLLING FRICTION**:
4. Which type of friction do you think is the largest force?
5. Which is the smallest?

**Form a hypothesis that states what you expect to find out about the different types of friction while doing this lab. Explain why you think this will happen.**

#### IV. DATA & CALCULATIONS

- A. Data Table [from text] Make sure that your spring scale is “zeroed”.

	Static Friction (N)	Sliding Friction (N)	Rolling Friction (N)
Trial 1			
Trial 2			
Trial 3			
Average			

- B. Calculations: Calculate the average for each type of friction and place the answers in the data table above.

#### V. CONCLUSION

##### A. Analysis questions.

1. Which of the three types of friction was the largest force (on average)?
2. Which of the three types was the smallest (on average)?

##### B. Final Analysis:

1. Did your answers above agree with your original hypothesis? Explain your answer (whether it is “yes” or “no”).
2. When calculating the static friction, the book was at rest; when calculating sliding friction, the book was moving at constant speed. According to this, explain why the applied force (reading on the spring scale) must be equal to the corresponding friction.
3. Application: If the car manufacturer you work for wants to develop the best braking system, which type of friction would you suggest should be used to create brakes with the greatest force? Explain.

##### C. Possible Errors: