

## Friction

Name \_\_\_\_\_ Date \_\_\_\_\_

### Source Notes:

This lab was modeled after the “Friction” lab  
“Laboratory Physics”, Murphy Doyle, Merrill, 1990.  
ISBN 0-675-02477-3

Jim Haine - Wissahickon High School, Ambler PA.  
1997(?)  
Modified 2010

### Teacher Notes:

Most of this lab was designed to compare the forces more than find specific or correct coefficients.  
This experiment also has a primary goal of using the force sensor and getting more information from the graphs.

### Modifications:

This was designed to use the Pasco Data Studio Software. Other measuring tools could easily be used.

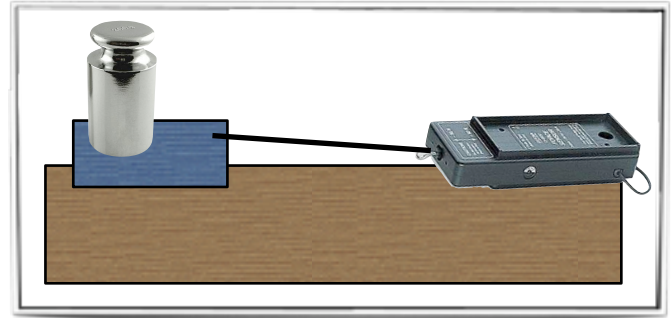
**Grade**

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### Introduction

For this lab, it is very important that all speeds are constant, and that the line between the sensor and the block is always straight.



**Weight of the block** \_\_\_\_\_

$$F = \mu N$$

Force of Friction (N) = coefficient of friction (no units) x Normal Force (N)

### Part 1. Surfaces

Trial	Sliding Material	Surface Material	Measured Friction
1			
2			
3			
4			

### Questions

Did the results make sense? Why or why not.

Discuss one example of a “real world” reason for testing the friction between surfaces.

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### 2. Speed

Trial	Relative Speed	Measured Friction
1	slow	
2	medium	
3	fast	

#### Questions

Did the results make sense or were you surprised by your answers?

Many students feel that this section could be improved. How would you change the procedure to make the results better?

### 3. Area

Trial	Area	Measured Friction
1	The large "face"	
2	A side "edge"	
3	The small "end"	

#### Questions

Did the results make sense or were you surprised by your answers?

Many students feel that this section could be improved. How would you change the procedure to make the results better?

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## 4. Normal Force

Total weight of the block and an additional .5 kg mass \_\_\_\_\_

Trial	Additional Mass	Normal Force	Measured Friction
1	0.000 kg		
2	0.100 kg		
3	0.200 kg		
4	0.300 kg		
5	0.400 kg		
6	0.500 kg		

### Calculations

**Create** a graph including a straight line through the points you found.

**Calculate** the slope of the line by picking two **new** points.

(one near the top, and one near the bottom)

What does this slope **define**?

