

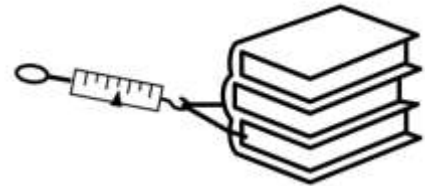


Friction

Lab #4

Purpose: To determine the connection between weight (normal force) and friction.

Method: Pair up with one other student to form a team. Place a loop of string in about the middle of a textbook so you can pull the book across the top of a lab bench. Use a spring scale to pull the book using the loop of string. Pull the book at an even speed. Be sure you are pulling straight ahead and not upward. Measure the force required to pull the book and record your force for Trial 1. Repeat twice more so you can get an average value. Now place a second book on top of the first and repeat the three trials. Do the experiment a third time pulling three books.



Data Chart:

Trial	1 Book Friction (N)	2 Books Friction (N)	3 Books Friction (N)
1			
2			
3			
Average			

Data Processing: Calculate the average force required to pull each stack of books and record your answer in the data table above.

- When the books are moving at a constant velocity, what is the acceleration?

- When the acceleration is zero, are forces balanced or unbalanced? Explain how you know this.

- If the forces are balanced but you are applying a force to make the books move, what force is balancing your pulling force?

- Divide all three average friction values by the average friction of one book. Compare the answers to the number of books. What do you notice about the friction force when you triple the weight (triple the number of books)?

