Physics 122 **Vectors Activity: Friction and Incline Planes**

Testing friction on an incline surface

Purpose: In this activity, you will use 4 different surfaces to predict and calculate which one has the greatest and least amount of friction.

Materials: Cards, rubber pad, wooden pad, carpet, cardboard, protractor with attached string.

Hypothesis: Which surface do you think will have the greatest friction? _____
Which surface do you think will have the least friction? _____
Give a brief explanation as to why you chose each surface.
_____
_____

Data Table: Fill in the data table below for each surface

Trial	***Cardboard***		***Rubber***		***Wood***		***Carpet***	
	Angle /	***μ***	**Angle /**	***μ***	**Angle /**	***μ***	**Angle /**	***μ***
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Average Coefficient of Static Friction (*μ*)								

Calculations: Determine the *parallel* and *perpendicular* forces acting on each surface. Show work for the ***cardboard example only***

Weight of Cards: _____

	Cardboard	Rubber	Wood	Carpet
Parallel Force (N)				
Perpendicular Force (N)				

Conclusion:

- Which surface was identified as the one with the greatest friction? The least?
- How did your hypothesis compare to the actual results?
- In what direction is the parallel force in this activity? How do you know?
- Could there have been any human errors that may have affected your results?

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