



Friction Lab

Grade Level: 11-12

<p>Overview</p>	<p>After this lab, students will be able to do the following:</p> <ul style="list-style-type: none"> • Determine the coefficient of friction between two objects in two different conditions (once while at rest and once in motion) • Analyze why the two values are different/determine what affects the friction coefficient • Be able to use BackPackIt
<p>Objective</p>	<p>After conducting the experiment on friction, students will write a one page lab report explaining their results on what affects the friction coefficient due the next class.</p>
<p>Standards</p>	<p>State standards that students should meet are:</p> <ul style="list-style-type: none"> • Understanding how physics affects the natural world • Understand the physical environment through experimentation • Be able to communicate what they learned through a written report
<p>Materials</p>	<p>Materials students will need are the following:</p> <ul style="list-style-type: none"> • Pencil and Notebook for showing work and results • Force Sensor • Wooden Block • Scale • Wooden Plank • Tape • Small Weights • Positive Attitudes!

<p>Procedure</p>	<p>The following steps will be followed in this lesson plan:</p> <ol style="list-style-type: none"> 1. Students will form groups of three and read the lab procedure together. 2. Students will assign who will record results, who will conduct the experiment, etc. 3. Students will weigh the block. 4. Students will attach the force sensor to the wooden block using tape. 5. Students will place the block first on a smooth surface and pull on the block until it just starts to move and record the force. 6. Students will pull on the block so that it remains at a constant velocity and record that force. 7. Students will add a small, known weight to the block and repeat steps five and six. 8. Students will repeat steps five through seven on a smooth surface, such as a lab table. 9. Students will complete needed calculations together. 10. Students will write a lab report that includes their collected data, and an analysis of what affects the friction coefficient. 11. Students will share results on BackPackIt, using the whiteboard tool. 12. Students will be graded on participation and on their lab reports.
<p>Evaluation</p>	<p>To evaluate how students learned, the following methods will be used:</p> <ul style="list-style-type: none"> • Students will use the whiteboard tool from BackPackIt to evaluate their own results before writing the lab report. • Students must turn in a lab report that states their results from the lab and what they think the results mean • Students will fill out a survey relating to how well each student worked together as a group

References:

Indiana's Academic Standards and Resources. Retrieved from <http://www.indianastandardsresources.org/>.

Retrieved from

<http://www.google.com/images?hl=en&source=imghp&biw=1276&bih=839&q=force+diagram&ggb=2&aq=f&aqi=g4g-m6&aql=&oq=>