

Name: _____ Date: _____ Period: _____
Force & Motion – The Basics

Focus Question: What causes objects to move or stay in place?

Materials: Lab sheet, PhET Force and Motion – The Basics (online), Colored pencils

1. Have you ever played tug-of-war? Explain the game and what it takes to win.
2. You are watching a boy and his dog play tug-of-war with a stuffed toy. Can you predict who will win? _____

Are you able to determine the strength of the boy or the dog by simply looking at the photo? _____



PhET Interactive Simulations (aCC BY-NC-SA 2.0)

3. Use this PhET simulation to complete the rest of the lesson - <http://phet.colorado.edu/en/simulation/forces-and-motion-basics>

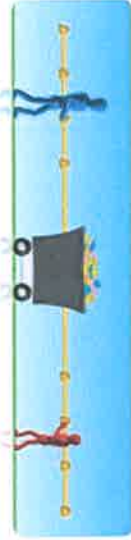
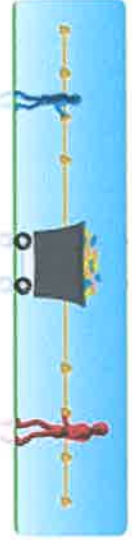
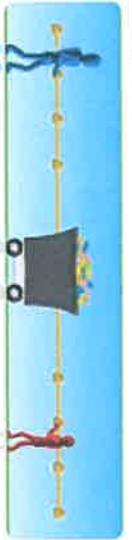


******Be sure to run the HTML5 version and click on the Sum of Forces and Values options.

4. Complete the two tables on the following pages. When you are done return here to answer a few more questions.

5. Look at your tables. What are some “rules” that you can use to make predictions about which way the cart will move?

- a) Does it matter that the people are red or blue? Explain your answer.
- b) Does a large person always win each competition? Provide evidence to support your answer.
- c) If two people are pulling on opposite sides, does the cart always stay still? Explain your ideas.
- d) Does it matter what part of the rope a person holds? Provide evidence to support your answer.

e) How does the “Sum of Forces” help you?

Trial: (Set your trial to match the example)	Predict which way the cart will move	What <u>Actually</u> Happened	Sum of the Forces
 <p>Large Blue Small Red</p>			
 <p>Small Blue Large Red</p>			
 <p>Large Blue Small Red</p>			
 <p>Small Blue Small Red</p>			
 <p>Small Blue Medium Red</p>			
Create your own trials. Draw the trial using stick figures and label each figure small, medium, large.			