

1. **Newton's First Law Activity One: Magic Trick** (<https://www.youtube.com/watch?v=I-srvuPwF4M>)

Directions:

Center an index card over the top of a glass, & place the coin in the middle of the index card (on top might be a good place). Flick the card from the side. Try it several times.

Describe what happens in three complete sentences

Use Newton's first law of motion to explain why the coin falls into the cup if you remove the card quickly.

Explain why pulling on the card slowly will not work even though the coin has inertia. (Hint: Friction is a force.)

Newton's First Law Activity Two: Currency Exchange (<https://www.youtube.com/watch?v=T-LcWcX9Xck>)

Directions:

- Stack five of the washers, one on top of the other, so that you form a tower of washers.
- Aim the remaining washer at the bottom of the stack of washers and give it a good hard flick with your finger so that it heads straight for the bottom washer on a direct collision course.

Use Newton's first law to describe what happens in three complete sentences

2. **Activity Three: Catching Washers**

Directions:

- Place three washers on your arm. Do your best to arrange them in a straight line.
- As quickly as you can, move your hand forward. Try to catch the washers before they fall on the ground.

Use Newton's first law to describe what happens in three complete sentences

Challenge: *How many washers can you balance on your arm and still catch them?*

Tug-of-War Post Activity – Newton's Third Law

Use **ALL** of the words below to explain Newton's Third Law and how it relates to tug-of-war. You **MUST** have at least 10 complete sentences, in paragraph form, using the required words in **context**. Please underline the words in your writing.

All words should be written at the top of your paper so you can cross them out as you use them.

Friction / Force / Balanced / Unbalanced / Motion / Inertia / Reaction

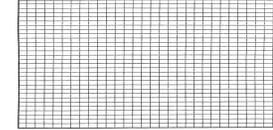
Graphing Newton's 2nd Law of Motion

Part A: Graphing the variables

- The table below show precise measurements from an experiment in which a force is applied to pull a block along a frictionless track.

Experiment 1		
Force (N)	Mass of Block (kg)	Acceleration of the block (m/s ²)
4.0	2.0	2.0
2.0	2.0	1.0
20.0	2.0	10.0
10.0	2.0	5.0

- Use the experiment 1 data to make a graph of the relationship between acceleration and force. Title the graph, "Acceleration vs. Force." Label the graphed line "Experiment 1." Acceleration should be put on the x-axis and force on the y-axis.



- The data below shows measurements from Experiment 2. Using the graph you made in step 2, plot the experiment 2 data. Label this line "experiment 2."

Experiment 2		
Force (N)	Mass of Block (kg)	Acceleration of Block (m/sec ²)
4.0	4.0	1.0
2.0	4.0	0.5
20.0	4.0	5.0
10.0	4.0	2.5

Analysis:

- Look at your graphed line for experiment 1. Explain why it does or does not indicate that there is a relationship between force and acceleration.
- Compare the two lines, "experiment 1" and "experiment 2" on your graph. Identify and explain:
 - Any similarities
 - Any differences
- Using the equation for force, mass, and acceleration, find the missing values in the table below

Experiment 3		
Force (N)	Mass of Block (kg)	Acceleration of Block (m/s ²)
	5	5
	2	10
10		2
50	10	
100		25
1000	40	

- One Newton of force is the same as 1kg x 1 m/s². Explain how this unit of measurement is appropriate for force.

Did you remember to... <input type="checkbox"/> Label and title your graph? <input type="checkbox"/> Write the scale on graph? <input type="checkbox"/> Label your lines in graph? <input type="checkbox"/> Answer the questions? <input type="checkbox"/> Complete #3 chart?
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