



E-lab Post-Lesson
Newton's Second Law.....Prove it!

The following sentences are all examples of Newton's Second Law that states, "The acceleration of an object as produced by a net force is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass of the object."

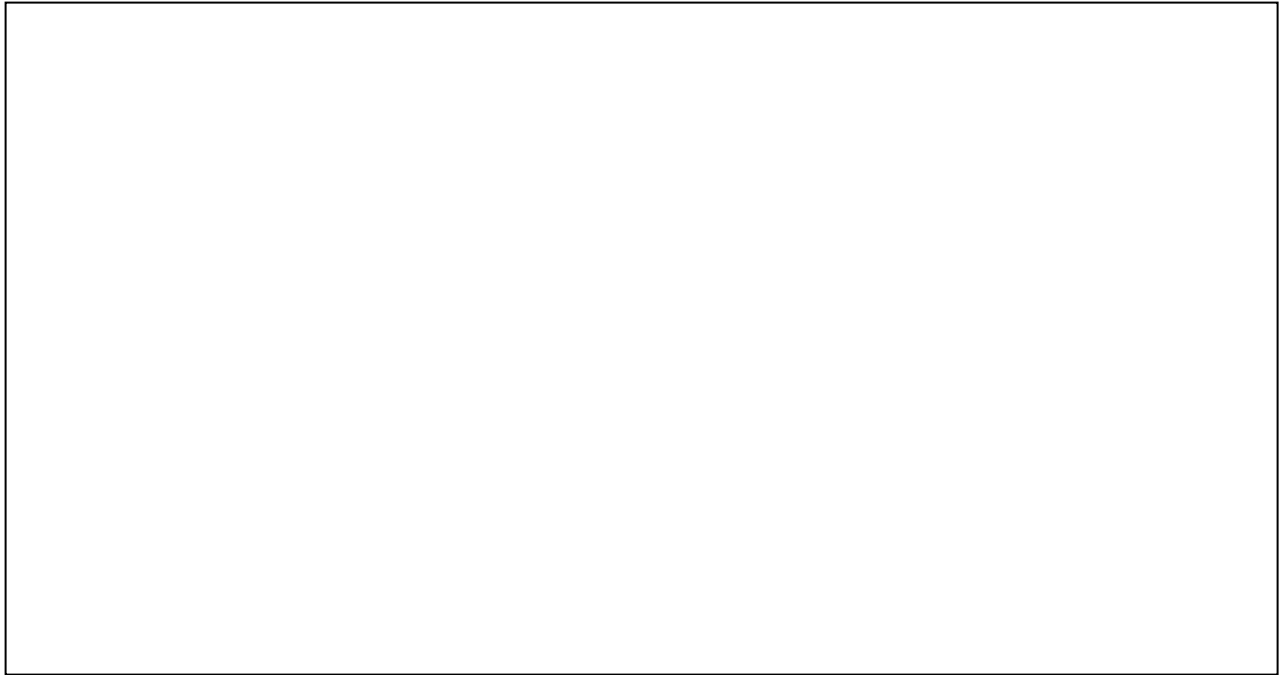
- A baseball player applies a large force to a baseball, causing it to accelerate to high velocity. If the ball had more mass, that same force would not accelerate the ball to such a high velocity.
- An elephant has much more mass than a mouse. It would be much harder to push an elephant across the floor than it would a mouse, and much harder to stop the elephant once it is moving.
- Sara drops a bowling ball and a paper wad, and they both hit the ground at the same time.

For this activity, imagine that you have a friend who does not believe in Newton's Second Law and asks you to prove it. Design an experiment that will show your friend that acceleration is directly proportional to force, and inversely proportional to mass. Since you will not be actually conducting the experiment, you can use any materials in your experiment that will demonstrate the law.

Materials you will use: _____

Procedure you will follow: _____

Draw a diagram of your experiment below:



Conclusion:

How did your experiment demonstrate Newton's Second Law of Motion? Use the words force, mass, and acceleration in your explanation.

Your friend finally agrees that *part* of Newton's Second Law is true, but he is still slightly confused. He believes that Force = mass x acceleration, but he says that the force of gravity must vary dependent upon the object. This is why a feather and a bowling ball do not fall at the same rate. How would you correct your friend's belief?
