



## E-Labs Newton's Second Law Post E-lab Lesson Plan (45-50 minutes)

### I. Introduction

The material contained within this lesson plan is meant to be used as a final assessment of knowledge gained during the pre-lab and e-lab on Newton's Second Law.

### II. Objective:

Students will use their new knowledge of Newton's Second Law to design an experiment proving the relationship between force, mass, and acceleration.

### III. Key Vocabulary:

- Acceleration- a change in velocity. You can accelerate by speeding up, slowing down, or changing direction.
- Air resistance- the force of air exerted on a falling object. The air pushes up as gravity pulls down. It is dependent upon the shape and surface area of the object.
- Force- a push or pull exerted on an object; they can be balanced or unbalanced.
- Gravity – an attraction force between all masses proportional to the mass of the objects and the distance between them.
- Mass- the measure of the amount of matter in an object
- Newton – the force needed to give a mass of one kilogram an acceleration of one meter per second per second.

### IV. Materials:

- "Newton's Second Law of Motion...Prove it!" Worksheet

### V. Lesson Sequence:

1. Review with students the information learned in the e-lab. Have students refer to their lab journals, and ask them to discuss what new knowledge they gained over the course of the pre-lab and e-lab lessons.
2. Give each student a "Newton's Second Law of Motion...Prove it!" worksheet and read over the directions with them. Partner students up and allow them to work together to design an experiment that would demonstrate the relationship between force, mass, and acceleration. They should focus on showing that acceleration is directly proportional to force, and inversely proportional to mass. It does not have to be an experiment that they actually have the materials for because they will not be conducting the demonstration.
3. Have students share their experiments with the rest of the class, and discuss how it demonstrates Newton's Second Law.