

## I. FORCE 1

You will be testing how well your shoe sticks to surfaces. You will test everyone's shoe on at least two surfaces of your choice. Follow the directions below. Record the data below in the table.

1. Attach the Spring Force Scale (SFS) to a shoe and pull horizontally across the floor. Pull slowly because you will record the number on the scale right as the shoe begins to move.
2. Repeat for every shoe on two surfaces.

TABLE I: Record results from friction experiment here.

Sneaker	Force (Surface 1)	Force (Surface 2)

Write down any thoughts or observations you've had about this experiment. Why can't you pull the sneaker without pulling easily?

## II. FORCE 2

In this activity you will get to play with magnets. Explore.

1. Examine which objects in the classroom or pod area that are affected by magnets. Record which objects are and are not affected in the table below.
2. From your experience with magnets, answer the question below the table.
3. Attach a magnet to a piece of string. Hold it close to an immovable object that is attracted to it and answer the second question below the table.

TABLE II: Record what objects are magnetic and which are not.

Magnetic Objects	Non-Magnetic Objects

Does a magnet push or pull?

How strong is the magnet when it is close to an object? Far away?

What other thoughts, observations and questions do you have about magnetism?

### III. FORCE 3

1. Drop 2 items that have been given to you and see if you can tell which one hits the floor first. Repeat 3 times using different combinations of the objects given to you.
2. Next, measure the mass of 3 of the objects dropped. Divide this number by a 1000 and record in a table. (This will give you the mass in kilograms (kg) instead of grams (g))
3. Now, we need to measure its weight using the SFS. Hang the cup on the SFS via the string. Record the number from the SFS. Place the first object in the cup. Record the number on the SFS. Subtract the first number from the second and record this as the weight of the object. Repeat for each object.
4. Divide the weight of the object by the mass. Record this number for each object.

Object	Mass (kg)	Weight of Cup (N)	Weight of Cup + Object (N)	Weight of Object (N)	?????

What is responsible for the objects falling?

What do you think the number means in the "?????" column?

What does the unit "N" stand for? If you don't know, try to find out in a book.