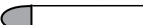


Materials at a Glance

Experiment 1	Experiment 3	Experiment 4	Experiment 5	Experiment 6
2 tennis balls other objects such as: apple orange rubber ball cotton ball or feather	large marshmallow tennis ball objects such as: rubber ball lemon or lime rock banana pliers	toy car stiff cardboard or board (approximately .3 meter wide x 1 meter long [1 foot x 3 feet]) several marshmallows	2 marbles 3 playing cards shallow jar top vinegar baking soda measuring spoons Suggested dominoes blocks electric car electric train marshmallow tongue depressor steel ball other objects chosen by the student	1 small glass marble 1 large glass marble
Experiment 2		Optional pennies tape		
clock or stopwatch				


Experiment 7	Experiment 8	Experiment 9	Experiment 10	Experiment 11
stopwatch or clock an area to run in items for marking the beginning and ending of the running distance	4 plastic or Styrofoam cups with the mouth larger than the base 2 long poles (dowels work well or any two long sticks that are the same thickness from end to end) tape a cylinder, 10-13 cm long (4-5 inches) [any cylindrical object, such as a pencil, a dowel, a cylindrical block, or a cylindrical drinking glass that is not tapered; a paper towel tube may be used if it is filled with sand and the ends taped] chalk	3-5 large lemons knife 3-5 copper pennies older than 1982 3-5 galvanized (zinc coated) nails LED (recommended: 20mA 2 pin LED bulb, any color)* 4-6 pairs alligator clips [duct tape can be substituted for alligator clips] plastic coated copper wire, .6-1.2 m (2-4 feet) wire clippers small Phillips screwdriver	2-3 rubber balloons string or thread, at least 2 meters (6 feet) cut in half scissors different materials to rub the balloon on, such as: cotton clothing silk clothing wool clothing wooden surface plaster wall metal surface leather surface	lemon battery supplies (see <i>Lemon Energy</i> experiment) suggested test materials: Styrofoam plastic block cotton ball nickel coin metal paperclip plastic paperclip glass of water table salt, 15 ml (1 Tbsp.)
				Experiment 12
				two bar magnets with the poles labeled "N" and "S"

* A browser search can be used to look for an electronic parts store in your area. Or you can search on "20mA LED bulb 2 pin" to find an online supplier. An LED with flexible pins may be easier to use.

It should look something like this: 

Materials: Quantities Needed for All Experiments

Equipment	Materials	Foods
alligator clips, 4-6 pairs [duct tape can be substituted for alligator clips] ball, rubber balls, tennis, 2 clock or stopwatch cylinder, 10-13 cm long (4-5 inches) [such as a pencil, a dowel, a cylindrical block, or a cylindrical drinking glass that is not tapered; a paper towel tube may be used if it is filled with sand and the ends taped] jar top, shallow knife magnets, bar, 2, with the poles labeled "N" and "S" marble, glass, small marble, glass, large marbles, 2 measuring spoons pennies, 3-5 copper, older than 1982 playing cards, 3 pliers poles, 2 long (dowels or any two long sticks that are the same thickness from end to end) scissors screwdriver, small Phillips toy car wire clippers Optional pennies Suggested ball, steel blocks car, electric coin, nickel dominoes train, electric	balloons, 2-3 rubber cardboard, stiff, or board (approx .3 meter wide x 1 meter long [1 foot x 3 feet]) chalk cotton balls cups, 4 plastic or Styrofoam with the mouth larger than the base feather items for marking the beginning and ending of a running distance LED (recommended: 20mA 2 pin LED bulb, any color)* materials, misc., to rub a balloon on, such as: cotton clothing silk clothing wool clothing wooden surface plaster wall metal surface leather surface nails, 3-5 galvanized (zinc coated) objects, misc. rock string or thread, at least 2 meters (6 feet) cut in half tape wire, copper, plastic coated, .6-1.2 m (2-4 feet) or more Suggested Test Materials: paperclip, metal paperclip, plastic Styrofoam, 1 piece table salt, 15 ml (1 Tbsp.) tongue depressor	apple baking soda banana lemon, 6-10 large lemon or lime marshmallow, large, several orange vinegar <div style="background-color: #e0e0e0; padding: 5px; text-align: center;">Other</div> an area to run in

* A browser search can be used to look for an electronic parts store in your area. Or you can search on "20mA LED bulb 2 pin" to find an online supplier. An LED with flexible pins may be easier to use. It should look something like this: 

Contents



Experiment 1	FALLING OBJECTS	1
Experiment 2	MEASURING TIME	6
Experiment 3	GET TO WORK!	9
Experiment 4	MOVING ENERGY IN A TOY CAR	14
Experiment 5	PLAYING WITH PHYSICS	19
Experiment 6	ROLLING MARBLES	24
Experiment 7	SPEED IT UP!	29
Experiment 8	KEEP THE TRAIN ON ITS TRACKS!	32
Experiment 9	LEMON ENERGY	35
Experiment 10	STICKY BALLOONS	40
Experiment 11	MOVING ELECTRONS	45
Experiment 12	MAGNET POLES	50