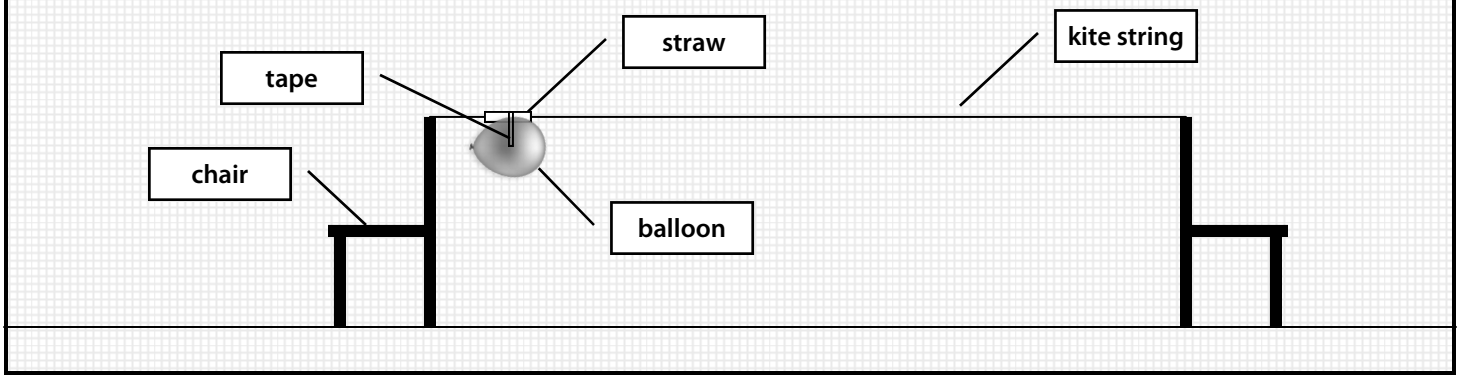
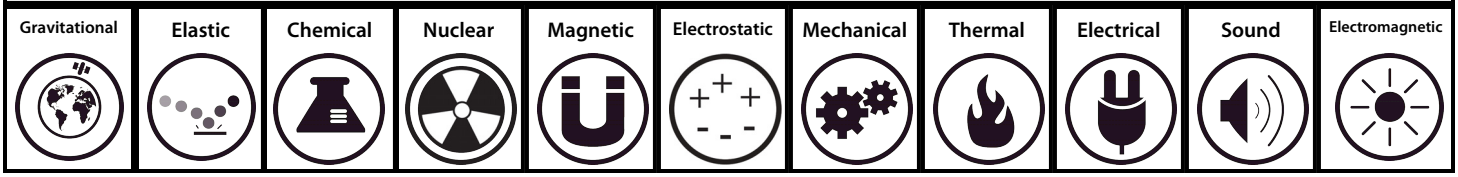
Name:	**Period:**

Materials: balloons, kite string, scissors, chairs, straws, stopwatch, meter stick, tape, goggles

Setup:



Forms of Energy : Highlight all of the energy forms you observe throughout this lab.



Lab Prep

1. Work in a large space such as a gym or multipurpose room.
2. Obtain a length of kite string about 10 m long. Pass the string through a drinking straw.
3. Tie each end of the string to chairs positioned at opposite sides of the room. Make sure the string is level and taut. Slide the straw to one end of the string.
4. Now inflate the balloon, but do not tie it. Use a strip of tape to attach the inflated balloon to the straw. Make sure that the nozzle points in the opposite direction of the intended path. Secure the balloon so that it hangs below the string.

Make Observations

1. Release the balloon and observe its behavior. Use the stopwatch to time how long the balloon rocket travels. Measure the distance traveled in meters. Record both values in the table below.
2. Using the math tools, calculate average speed. This value can be used to represent average velocity, as average velocity is the average speed with direction. Record the value in the table below.
3. Obtain the mass of the balloon/straw system. Discuss the order of operations and use the math tools to determine the kinetic energy of the balloon. Record the values below.

Mechanical Kinetic Energy

$$KE = \frac{1}{2}mv^2$$

KE = kinetic energy (in joules)
m = mass (in kilograms)
v = velocity (in meters/seconds)

Distance (m)	Time (s)	Average Speed (m/s)	Mass of ballon/straw (kg)	Kinetic Energy (j)

4. If we assume no energy loss through the transformation of elastic potential energy to kinetic energy, how much elastic potential energy was stored in the stretched rubber of the balloon? Explain.

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5. Identify factors that influenced the potential energy and kinetic energy in your investigation. Explain using the data you collected.

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6. Design an investigation that tests the influence of one of the factors you have identified.