

Name: _____












Period: _____

Station: Bouncing Ball

Objective: To determine the forms of energy impacting a bouncing ball.

Materials: assortment of different balls, meter stick, balance

Forms of Energy

Gravitational 	Elastic 	Chemical 	Nuclear 	Magnetic 	Electrostatic 	Mechanical 	Thermal 	Electrical 	Sound 	Electromagnetic 
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Instructions:

1. Determine the mass of each ball in kilograms. Record your data in the table below. 1000 grams = 1 kilogram
2. Hold the meter stick vertically on the floor or table so the 0 m mark is on the hard surface and the 1 m mark is at the top.
3. Hold one of the balls at the top of the meter stick so the bottom of the ball is next to the 1 m mark.
4. Drop each ball and note how high it bounces up after the first and second bounces. Record your data in the table below.
100 centimeters = 1 meter

Ball	Mass (kg)	Drop Height (m)	Rebound Height First Bounce (m)	Rebound Height Second Bounce (m)
A		1 m		
B		1 m		
C		1 m		

In the *Forms of Energy* section above, highlight all of the forms of energy you observed at this station. Explain why you selected each:

Describe the benefits and risks of the different energy forms you highlighted.

Answer the following questions about this station.

1. Based on the data collected, describe the changes you noticed between the first and second bounce heights for each ball.

2. Predict how the height of a third bounce would compare to the first and second bounces.

3. Use the term *potential energy* to explain why you think the second bounce can never be higher than the first.

4. Recommend some factors that might affect the height of the first bounce.

5. Based on the data collected, which ball do you think contains the most potential energy? Explain.

Compose 3 questions, based upon your observations, that could be answered through further inquiry:

1. _____

2. _____

3. _____

Name:

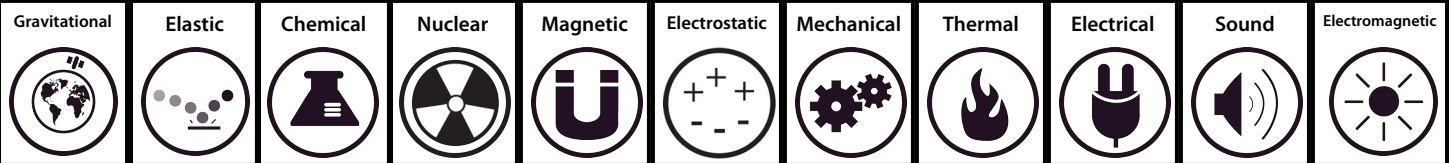
Period:

Station: Reaction

Objective: To determine the forms of energy within a reaction.

Materials: baking soda, vinegar, graduated cylinder, balloon, spoon, bottle, safety goggles

Forms of Energy



Instructions:

1. Put on safety goggles.
2. Pour 1 spoonful of baking soda into the uninflated balloon.
3. Fill the bottle with 50 mL of vinegar.
4. Slip the balloon over the bottle opening.
5. Invert the balloon, allowing the baking soda to mix with the vinegar.
6. Describe the changes you see in the balloon.

7. Describe the changes you see in the bottle.

In the *Forms of Energy* section above, highlight all of the forms of energy you observed at this station. Explain why you selected each:

Describe the benefits and risks of the different energy forms you highlighted.

Answer the following questions about this station.

1. Based upon your observations, how could you use this experiment to prove to someone that the baking soda and vinegar contain potential energy?

2. What might you do to determine the identity of the gas that filled the balloon?

Compose 3 questions, based upon your observations, that could be answered through further inquiry:

1. _____

2. _____

3. _____

Name: _____

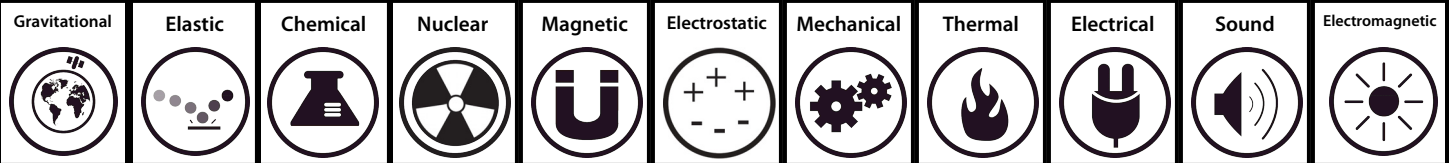
Period: _____

Station: Balloon

Objective: To determine the forms of energy on a balloon.

Materials: inflated balloon, pieces of fabric, gelatin powder, paper scraps

Forms of Energy



Instructions:

1. Inflate and knot the opening of the balloon.
2. Gently rub the surface of the inflated balloon with one of the fabrics for about 1 minute.

Which fabric did you use? _____

3. When done, place the fabric to the side and place the balloon near the paper scraps.

What do you observe? _____

4. Remove the paper scraps and place the balloon near the gelatin powder.

What do you observe? _____

In the *Forms of Energy* section above, highlight all of the forms of energy you observed at this station. Explain why you selected each:

Describe the benefits and risks of the different energy forms you highlighted.

Answer the following questions about this station.

1. Describe how you think the length of time you rub the balloon will affect the strength of its effects on the paper or gelatin.

2. Based on your observations, how do you think the type of material used to rub the balloon affects the strength of its effects on the paper or gelatin?

3. How do you think the length of time you rub the balloon will impact the distance at which it can affect the paper or gelatin?

Compose 3 questions, based upon your observations, that could be answered through further inquiry:

1. _____

2. _____

3. _____

Name:

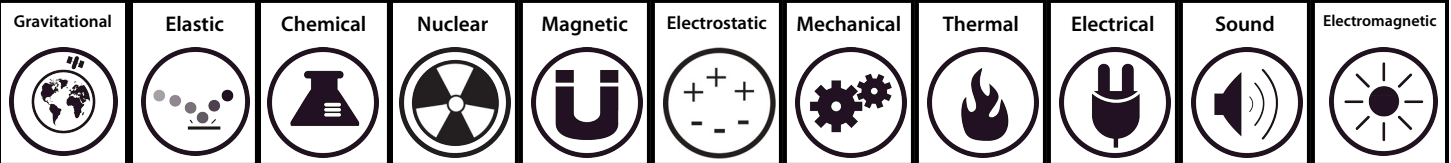
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Station: Magnets

Objective: To determine the forms of energy associated with magnets.

Materials: assortment of magnets, paper, penny, quarter, metal paperclip

Forms of Energy



Instructions:

1. Experiment with only the magnets provided at the station by placing them together in different arrangements. Note all your observations:

2. In the table below, predict whether you think each material will be attracted or stick to a magnet or not, then provide an explanation for your prediction. After you have made your predictions for all the materials, test each one and document your observations.

Material	Prediction	Explanation for Prediction	Observation
Paper			
Penny			
Quarter			
Metal Paperclip			

In the *Forms of Energy* section above, highlight all of the forms of energy you observed at this station. Explain why you selected each:

Describe the benefits and risks of the different energy forms you highlighted.

Answer the following questions about this station.

1. How did your predictions about each material compare with your observations?

2. If there were any differences, what explanations could you create to describe your observations?

3. Based on your observations, explain how picking up the paperclip with a magnet is different than picking it up with a piece of tape.

4. What experiences or observations about magnets could you use to show someone that magnets contain potential energy?

Compose 3 questions, based upon your observations, that could be answered through further inquiry:

1. _____

2. _____

3. _____

Name:

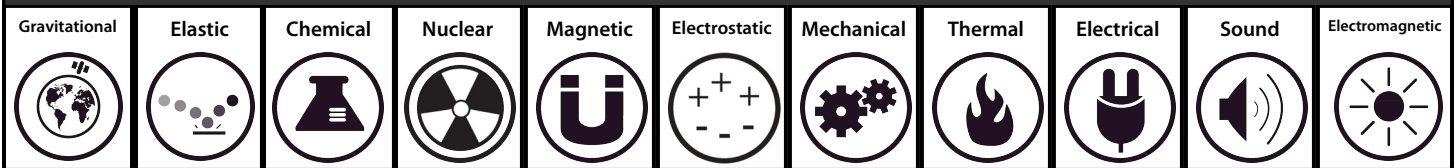
Period:

Station: Voice

Objective: To determine the forms of energy associated with your voice.

Materials: computer with audio software, microphone (internal or external)

Forms of Energy



Instructions:

1. Press the record button within the audio software on the computer.
2. Make a constant sound into the microphone at a low volume for around 5—10 seconds
3. Pause the recording and draw the displayed image below:

4. Start the recording and make the same constant sound into the microphone, but at a higher volume. Draw the image.

5. Make a constant sound and move the microphone closer and further away from your mouth. Draw the image, and mark the areas where the microphone was closer and further from your mouth.

6. Talk into the microphone and draw the approximate displayed image.

In the *Forms of Energy* section above, highlight all of the forms of energy you observed at this station. Explain why you selected each:

Describe the benefits and risks of the different energy forms you highlighted.

Answer the following questions about this station.

1. Describe the effect of increasing the volume of your voice on the image displayed on the computer.

2. Which sound, the soft or loud, requires more energy from you to produce? Explain how this relates to your answer to question #1.

Compose 3 questions, based upon your observations, that could be answered through further inquiry:

1. _____

2. _____

3. _____

Name:

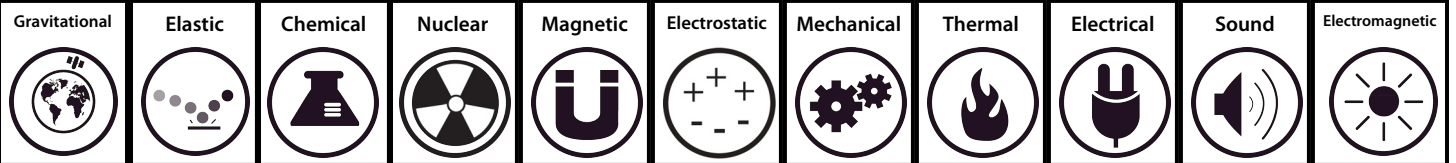
Period:

Station: Wind-up Toy

Objective: To determine the forms of energy associated with a wind-up toy.

Materials: assortment of wind-up toys

Forms of Energy



Instructions:

1. Wind up each toy.
2. In the table below, describe how each toy is wound, including the direction of the winding action.
3. Then, observe and describe the resulting action of each, including the direction of the motion.

Wind-up Toy	Description of Winding Action	Description of Resulting Motion

In the *Forms of Energy* section above, highlight all of the forms of energy you observed at this station. Explain why you selected each:

Describe the benefits and risks of the different energy forms you highlighted.

Answer the following questions about this station.

1. Describe any relationships you observed between the amount of winding and the strength of the resulting action for each toy.

2. List and describe some factors that could affect how much a wind-up toy moves after it is wound and released.

Compose 3 questions, based upon your observations, that could be answered through further inquiry:

1. _____

2. _____

3. _____
