Rube Goldberg

Name _____ Date _____

Take the Long Way

Activity 1. Researching Types and Forms of Energy

Energy transformations are all around you. For example, when you turn a light switch on, electrical energy is transformed into heat and light energy. In this engineering challenge, you will build a machine that uses a chain of energy transfers to accomplish a set task.

While you work on your machine's design, keep records by writing down your ideas, drawing your design, or taking pictures. Engineers document their work as they design solutions.

Use the Internet or library resources to learn more about energy transfers and Rube Goldberg devices. Then answer the following questions.

1. What is the difference between kinetic energy and potential energy?

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2. What are three examples of energy transfers?

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3. What is a Rube Goldberg device?

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4. What types of energy transfers do you think will be useful in your machine's design?

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Activity 2. Designing and Building a Machine that Uses Energy Changes

Your teacher will tell you what materials you can use. Think about what you must build. Then begin exploring how to build with your materials.

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Answer the questions below to help you think about your design.

1. What task will your machine accomplish?

2. What five energy transfers will occur in order to complete your task?

3. What materials do you plan to use to construct your machine? Why?

4. Draw a detailed diagram of your machine design in the space below—use additional paper if necessary. Be sure to use labels to point out the five energy transfers and what materials you will use for each part of your design. Explain how you will put your materials together.

Activity 3. Testing the Machine and Communicating Results

Now you will test your machine's ability to accomplish a task. Before you test it, be sure to record what you finally built by drawing or taking a picture of your design. Review your notes, too. If they're good, someone else should be able to follow them to build a matching machine.

After testing your machine, answer the questions that follow.

1. Was your machine able to accomplish its task? Why or why not?

2. What materials or construction methods were most successful?

3. What materials or construction methods were least successful?

4. If you were to construct another machine, how would you change your design? In your answer, consider how you might change the materials or construction methods you used.