Ms. H’s Conceptual Physics Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_

**Create Your Own Musical Instrument!**

**Background:**

Humans have been making and playing musical instruments for thousands of years. New instruments are invented, and existing instruments are modified to produce different sounds. Probably many cultures have used a hollow log as a simple drum. Many instruments are based on vibrating strings. One category of instrument, horns, depends on the vibrating lips of the player to create sound. Other instruments use vibrating reeds. The many flutelike instruments create sound by causing a column of air to vibrate. In this project, you will design, build, and test your own musical instrument. At the end of the project, you will demonstrate your instrument in a class presentation.

**Project Rules:**

* You must be able to demonstrate how to change the loudness and pitch of the sound produced by your instrument.
* Your instrument must be made of safe materials. Cover any sharp edges with tape.
* Loud sounds can damage hearing. Do not play your instrument too near other students’ ears.
* You may not use electricity in your instrument in any way.
* You must demonstrate and play a simple tune (or rhythm) on your instrument in a class presentation.

**Suggested Materials:**

You may use almost anything to build your musical instrument, such as different sizes of rubberbands, cardboard boxes, different lengths of cardboard tubes or plastic pipes, string, woodencraft sticks or tongue depressors, drinking straws, and bottles. You may use other materials ofyour own choosing that you bring from home, as long as you discuss this with your teacher first.Practically anything can be incorporated into a musical instrument.

**Project Hints:**

* Think about whether you will want to play your instrument by blowing into it, strumming it, striking it, or by some other method.
* Be creative! Don’t limit yourself to the materials suggested. Don’t just copy an existing instrument. Part of the assessment of your project will be based on originality.
* As you decide on the design of your instrument, remember that you will need to play something on it. Your instrument must not only make sounds, but it must make different sounds.

**Planning Your Musical Instrument:**

The following tasks will help you start the design phase of this project. Complete these in your composition book.

1. Brainstorm all the ways you can think of that musical instruments make and modify sound. You might want to begin with instruments that are familiar to you, either because you or someone you know plays them, or because music you like is played on them. Then think of instruments you may not know as much about. As you brainstorm, you may find it helpful to classify instruments into categories, such as instruments with a mouthpiece and instruments in which strings make the sound. Finally, try to think of ways to make and modify sound that may not be used in a conventional instrument.
2. Draw a diagram of your proposed instrument. Be sure to label its parts, and the materials you will use.
3. How will you play your instrument? Exactly how will your instrument make sounds? What will vibrate to create sound waves? How will your instrument make sounds of different pitch and volume?
4. Make detailed notes on the construction of your instrument. Will you need to use other materials for certain parts of your instrument? How will the parts fit together? Will you need glue or special tools to make your instrument?

**Scoring Rubric:**

In evaluating how well you complete the project, I will judge your work by these criteria:

**To receive a score of 4:**

The instrument is well made and creative. The instrument is neatly done. An obvious amount of time was spent planning your project. The instrument produces the intended sound. The instrument meets the requirements of loudness and pitch. You can demonstrate a simple tune or rhythm with your instrument.

**To receive a score of 3:**

The instrument is well made and creative. Some elements were done in a hurry. The instrument functions but not as well as it could. The instrument meets the requirements of loudness and pitch. You can demonstrate a simple tune or rhythm with your instrument.

**To receive a score of 2:**

The instrument is untidy and rushed. It functions, but does not function very well. The instrument cannot meet many of the requirements of loudness, pitch, and tune.

**To receive a score below a 2:**

The majority of the required elements are not met.