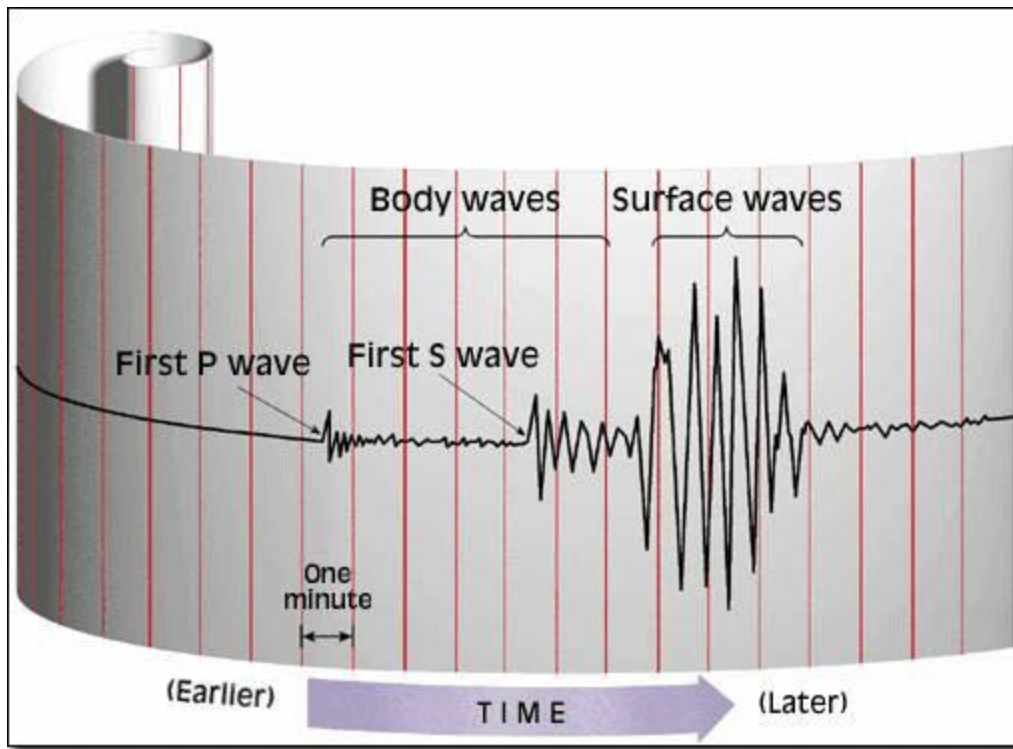


# The Design Process: Seismograph



**Name:** \_\_\_\_\_

**Section:** A or B

**Date:** \_\_\_\_\_



According to USGS.gov the most damaging earthquake to originate in Indiana occurred on September 27, 1909 near Vincennes and Terre Haute. This quake caused severe structural damage to buildings and homes. This quake could be felt over 30,000 square miles. There have been quakes felt in Indiana in recent times as well. August 23, 2011 was a recent 5.8 magnitude quake that started in Virginia and was felt in Indiana, according to the Indiana Geologic Survey (igs.indiana.edu). This is explained by the age of the rocks

in the eastern and Midwestern United States. The Indiana Geologic Survey notes that older rocks are cooler and capable to generating energy over larger geographical distances versus the warmer rocks seen on the West coast. These warmer rocks do not pass their energy on over a large area. Thanks to the technology of a seismograph we have a warning system and a way to record the severity of an earthquake. You are going to have the opportunity to create a seismograph for Oak Farm.

**Essential Question:** *How can we design and construct a device that records the details of an earthquake, such as size and duration?*

**Task:** To design and construct a device that will be able to record seismic activity.

**Evaluation:** Evaluation will be based up:

1. Ability to create a successful device that records seismic activity (including size and duration).
2. Ability to perform it's task (recording seismic activity)

**Design Constraints:**

1. The device be created in class and stay at Oak Farm School.

**Materials:** You may use only recycled materials. You may NOT purchase any materials for your device. Penalties may be enforced if violating this directive.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## DESIGN ACTIVITY: SEISMOGRAPH

What is the goal? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Who is the user or client? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What is the problem? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What are the constraints? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What materials will you use? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

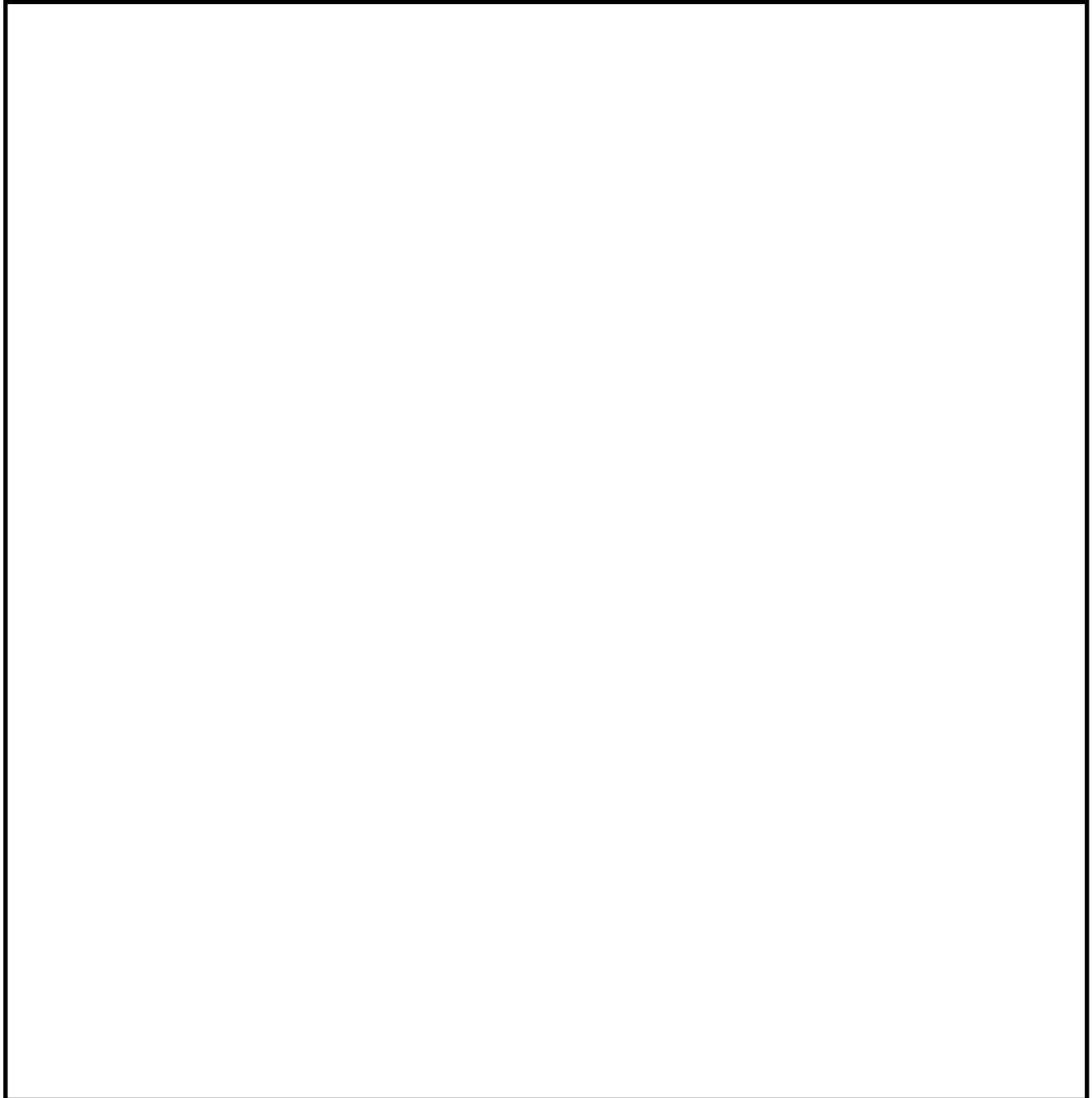
\_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

## SEISMOGRAPH DESIGN

**Step 1:** Develop your own plan. Draw a sketch of your design and label its features. Be detailed with your sketch and labeling.



Materials Needed: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**STEP 2: Peer-Reviewed Design** Share your plan with at least 2 classmates. Discuss your design and changes to make. Note these changes to the Step 1 design. Draw your new plan once you have met with 2 other peers– be detailed and include measurements.

**Step 3:** Construct a prototype of the device based on your team's design.

**Step 4:** Test your prototype. How well did it work? \_\_\_\_\_

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**Step 5: Reflection/Review** Review and reflect on your test results and design. What issues do you need to address? What changes should you make to address these issues? **\*\*Notes should be included with this section for credit.**

**Step 6: Reflect** and decide upon a redesigned device. Draw a detailed sketch and note the changes to your design.

How does this design differ from your first prototype? \_\_\_\_\_

\_\_\_\_\_

**Step 7: Reconstruct** your device based upon your redesign.

**Step 8: Test** your redesign. How well did it work? Did you record information with this device?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

## Wrap-Up

1. Did you succeed in creating a successful device that recorded seismic activity? If not, why did you think it failed? \_\_\_\_\_

\_\_\_\_\_

2. What did the initial prototype record? \_\_\_\_\_

What did the final design record? \_\_\_\_\_

3. How did you revise your original design? \_\_\_\_\_

\_\_\_\_\_

What additional materials did you use for your redesign (if any) and why did you use them? \_\_\_\_\_

\_\_\_\_\_

4. If you could have had access to materials that were different from those used, what would your team have requested? Why? \_\_\_\_\_

\_\_\_\_\_

5. What designs or methods did you see others try that you thought worked well?

\_\_\_\_\_

6. Did you find it easier to work alone or with the group? Explain.

\_\_\_\_\_

\_\_\_\_\_