Earthquake Data Analysis

Name: Jennica Paterniti
Contact Information: jpaterniti@dsdmail.net

Course Name: 7th Grade Integrated Science
Core Curriculum Standard Fulfilled: II. Students will understand the relationship between properties of matter and Earth's structure.
Core Curriculum Objective Fulfilled: 2. Analyze how density affects Earth's structure.

Intended Learning Outcomes (ILOs) Fulfilled:
4. Communicate Effectively Using Science Language and Reasoning
6. Demonstrate Understanding of the Nature of Science

Time Needed To Complete Inquiry: 45 minutes

Inquiry: This activity is an example of guided inquiry. What can be inferred about the interior structure of the Earth from seismic data?

Prior Knowledge Needed: Students should have completed the clay ball activity "Size, Shape and Location – Can You Tell?" beforehand. They will also need a basic knowledge of seismic waves.

Introduction: Discuss the basic function of a seismograph. Explain that is it a piece of technology that measures vibrations in the Earth and records them on a chart. The greater the reading on the seismograph, the stronger the vibrations measured. This technology helps us to further study the interior of the Earth. Students will apply this information to a specific occurrence in the activity.

Materials / Resources Needed for the Investigation: student worksheets

Procedure of Investigation: Students will analyze the earthquake scenarios and draw conclusions about the basic interior structure of the Earth.

- Break students into groups of four.
- Explain to students that this is science, and we use data to make inferences. Not everyone's model will be the same, and your model will change as you get new information.

- In their groups of four, students will come to a consensus of a model of Earth's interior structure based on the evidence at hand.
- Each group will be presenting their model with evidence that helped shape their drawing to the class
- As a class, the merits of each model presented will be discussed in its ability to use the data at hand. This is an important time to use formative assessment in assessing student understanding.

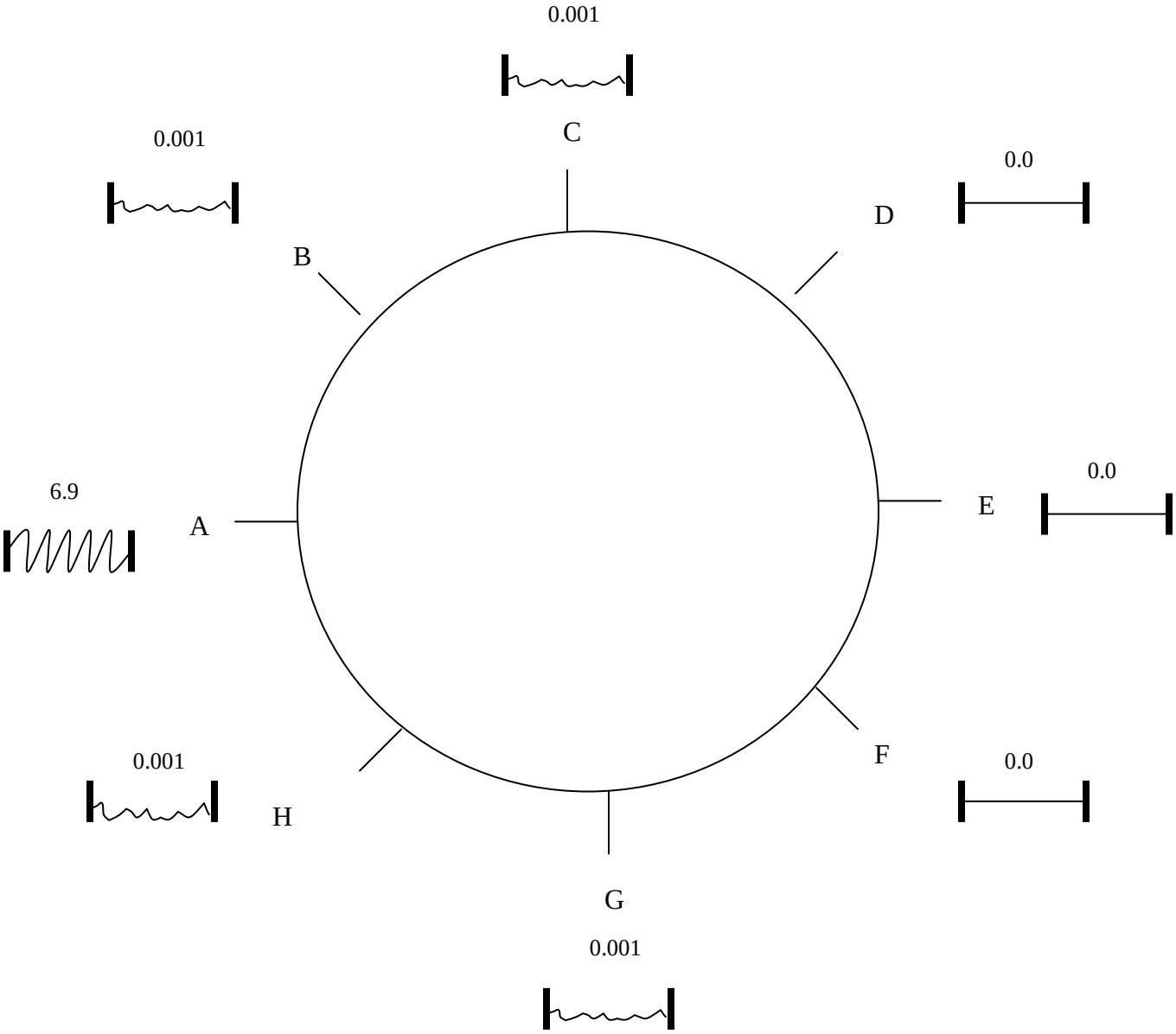
Data Collection: No collection. Students will use the information given to them.

Data Analysis: Students will use the information to answer the question and draw their new model of Earth based on the new information.

Assessment: Formative assessment will be used as student groups present their revised model of Earth's interior structure. A classroom consensus should be drawn of the Earth having a solid core.

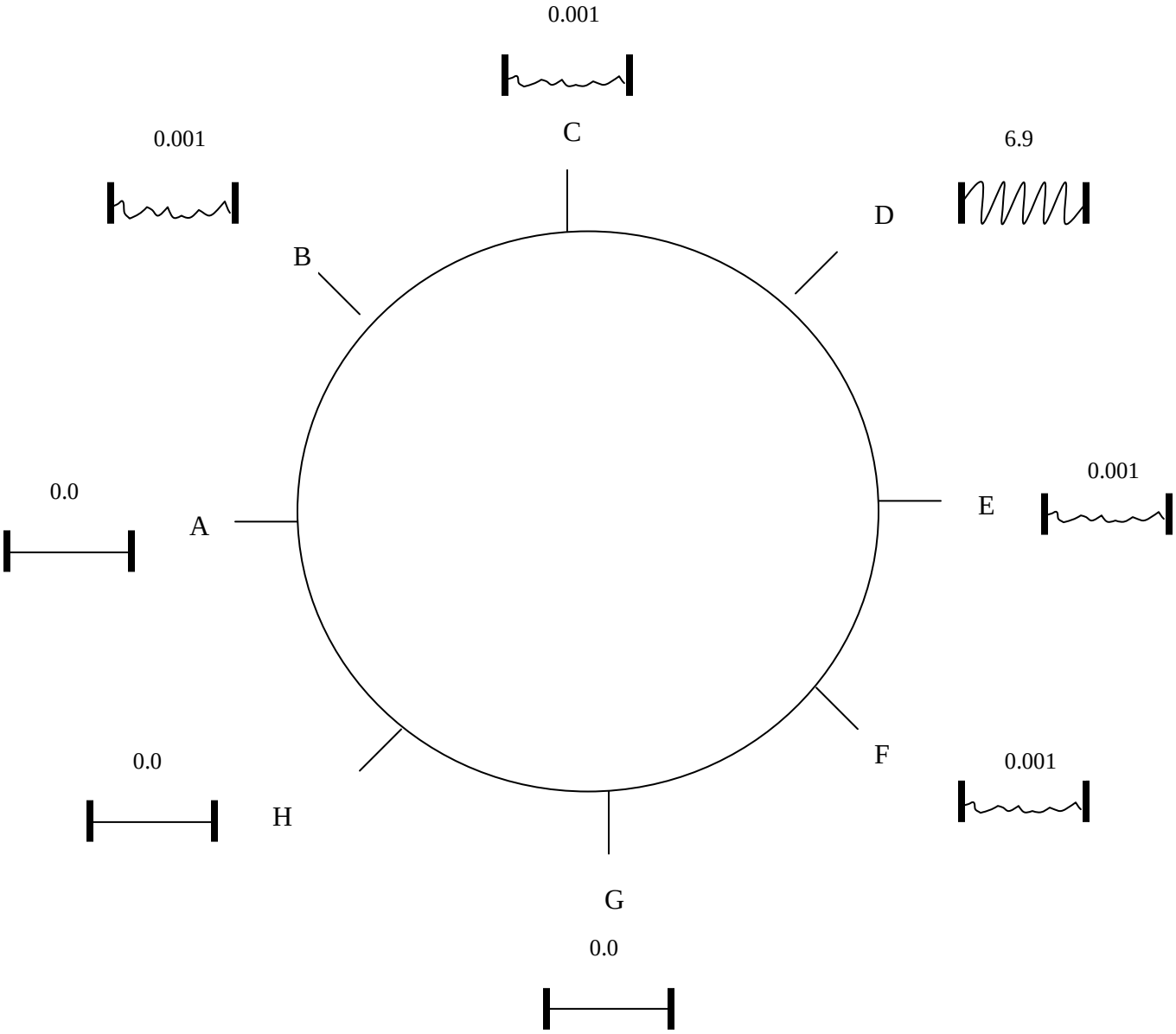
Student Sheet – Scenario #1

An earthquake strikes at point A on Earth. Seismographs at other points on Earth pick up the following readings.



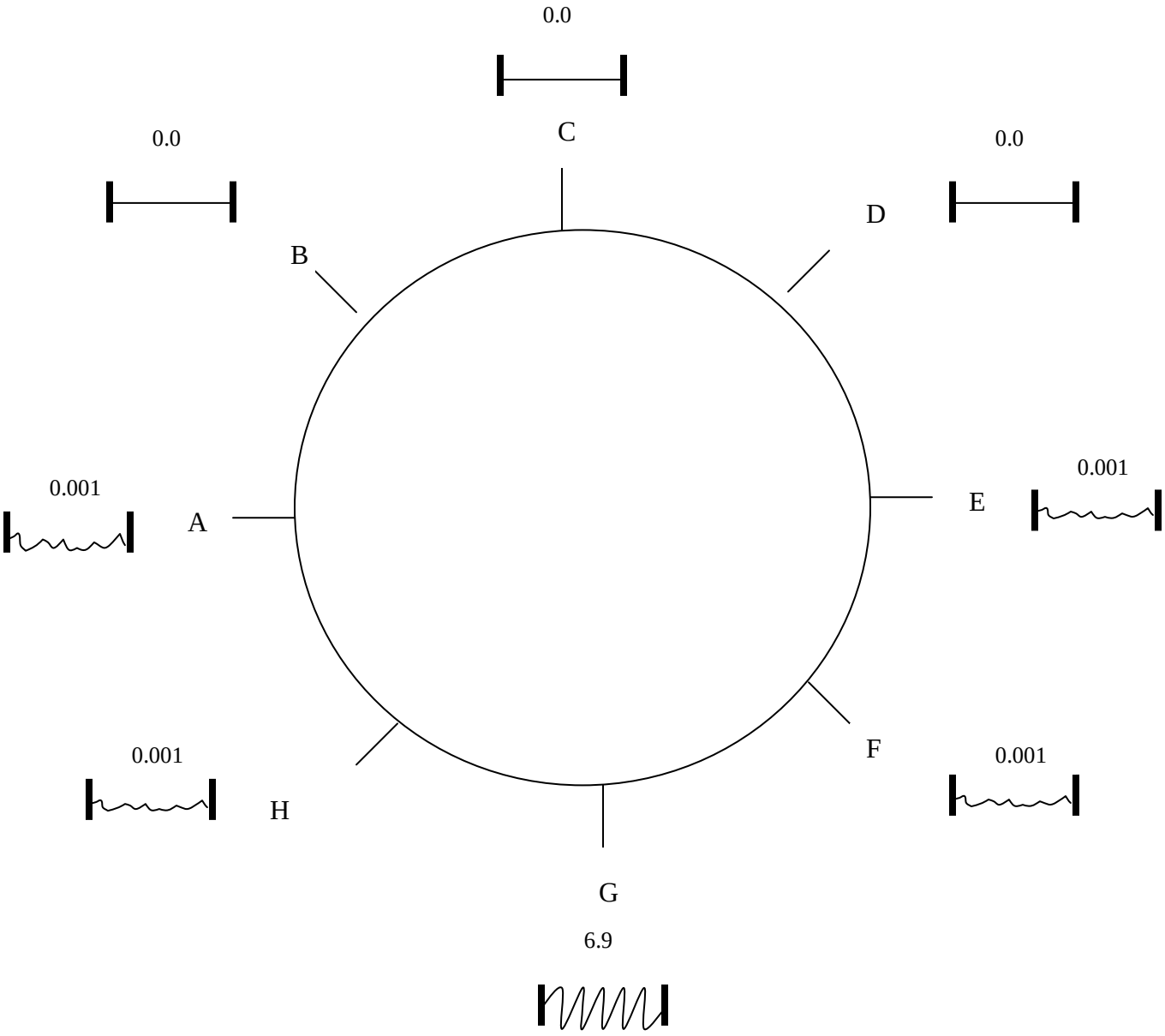
Student Sheet – Scenario #2

An earthquake strikes at point D on Earth. Seismographs at other points on Earth pick up the following readings.



Student Sheet – Scenario #3

An earthquake strikes at point G on Earth. Seismographs at other points on Earth pick up the following readings.



Questions:

1. After analyzing the three seismic scenarios with others in your group, what can you infer about the interior structure of the Earth? Give evidence to support your conclusion.

2. Using the ideas from previous models of the Earth's interior that you developed earlier along with this new information, draw a revised model of Earth's interior structure. Give evidence to support your drawing.