Names of Lab Partners: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class Section: \_\_\_\_\_\_\_

**Student Investigation Sheet: A Matter of Measurement**

Students will create a unit of measure to model the distances between objects in the classroom and planets in the solar system.

**Safety Precautions:** There are no safety precautions for this lab.

**Objectives:**

• Convert between metric and non-metric units.

• Model the distances between objects in the solar system

**Materials per group:**

• Several sheets of graph paper (2 per group member)

• Meter stick (metric units)

• Data: Distances from the Sun and Earth

• 9 blocks, balls, or other objects to represent the Sun and the eight planets (optional)

**Key Question:** What is the question you want to answer?

**Directions:** Write the question for the investigation. The question should be specific and investigable.

**Key Components**

• Specific (one general thought, does not combine two or more questions)

• Is able to be investigated

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**Hypothesis:** What do you predict will be the result of the investigation?

Directions: Develop a claim about what you think is going to happen.

**Key Components**

• Expresses a cause-and-effect relationship

• Is testable

• Incorporates prior knowledge

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**Plan:** How will you investigate the question?

**Directions:** Describe the plan that you will use to study your question and analyze your hypothesis.

**Key Components**

• Plan is easily repeatable by others

• Plan describes the use of materials

• Plan is in a logical order

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**Data** What evidence was gathered during the investigation?

**Directions:** Record all of the evidence that has been collected. Use graphic organizers, tables, and graphs when appropriate.

**Key Components**

• Data (from an investigation and/or other sources, such as observations, reading material, archived date, etc.)

• Appropriate (data applies directly to the question)

• Sufficient (uses enough data to completely answer the question and determine a finding on the hypothesis)

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**Conclusion** What did you learn from this investigation?

**Directions:** Develop a conclusion for your investigation. The conclusion should contain clear thoughts and proper vocabulary. This section focuses on the answer to your question. It should prove or refute the hypothesis by using logical reasoning to link the hypothesis to the data.

**Key Components**

• Use precise and accurate language

• Use scientific vocabulary

• Provide clear logical thoughts

• Use evidence and reasoning to support or refute the hypothesis

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**Analysis and Conclusions**

1. Explain how the astronomical unit (AU) compares to the classroom unit (CU). Why is the classroom unit a useful concept for mapping distances?

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1. What are the limitations of using CUs to measure distances in the classroom?

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1. Explain how you converted your measurements into classroom units (CU).

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