Name _____

# Earth Science

## End of Year Cornerstone Assessment

The Cornerstone Assessments were developed with support through the VDOE Mathematics and Science Partnership Grant Program NCLB Title II, Part B program by high school teachers as a part of the Old Dominion University Learning Enhanced through the Nature of Science (LENS) project.

2012 – 2013

**This assessment consists of two parts.**

**DIRECTIONS to provide to read to students:**
Today you will be taking the Earth Science Cornerstone Assessment to find out your skills in scientific investigation, data analysis and interpretation, and scientific reasoning. Read each question carefully and provide your *best* answer or response.

Record your answers directly on the spaces provided in the assessment. Be sure your work and responses are legible.

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## Earth Science End of Year Cornerstone Assessment: Part A. Scientific Investigation

*Directions:* Read the paragraph below and then respond to the questions.

Your grandma loves fresh tomatoes. She asked you to investigate which type of soil will produce the tallest tomato plants in her garden. Her best friend recommended sandy loam but your grandma thinks that topsoil will work the best. The soil in her garden is primarily clay so you decide to test that as well.

1a. Identify the **independent variable in the above scenario**? _____

1b. Why is this considered the independent variable?

_____

_____

2a. Identify the **dependent variable in the above scenario**? _____

2b. Why is this considered the dependent variable?

_____

_____

3a. What is your **hypothesis**?

_____

_____

3b. Why did you choose this answer?

_____

_____

Available Materials:

| | | | |
|---|---|---|---|
| Fan | Topsoil | Water | Ruler |
| Pots | Tomato Plant seeds | Sandy Loam | Stirring Rod |
| Clay | Light Source | Thermometer | Q-tips |

4. Identify the **materials** you would use in your experiment.

_____

_____

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5a. List the variables you need to hold **constant** in your experiment? _____

_____

5b. Explain why they should be held **constant.**

_____

_____

6. List the **steps** you would take to conduct your experiment.

_____

_____

_____

_____

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_____

7. Set up a data table for this experiment. Include labels for each row and column (you do not need to include data).

Name _____

**Earth Science Mid-term Cornerstone Assessment: Part B. Data Analysis and Interpretation and Scientific Reasoning**

*Directions:* Read the paragraph below and review the data table. Then, answer the questions that follow.

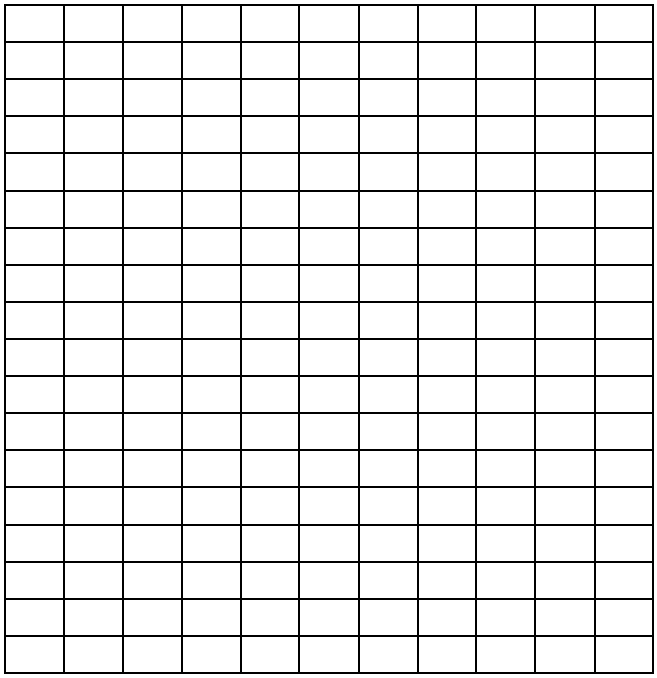
You planted your tomato seeds in the different types of soil and measured the height every two weeks. Here is the data you collected.

| | **Height of Tomato Plants (in centimeters)** | | | | |
|---|---|---|---|---|---|
| | Initial Height | 2 weeks | 4 weeks | 6 weeks | 8 weeks |
| Topsoil | 0 | 6 | 12 | 14 | 18 |
| Sandy Loam | 0 | 7 | 14 | 16 | 21 |
| Clay | 0 | 2 | 3 | 5 | 8 |

1. Based on the data, predict the height of each plant after 10 weeks.

| | 10 weeks |
|---|---|
| Topsoil | |
| Sandy Loam | |
| Clay | |

2. Create a graph to display the data provided for this experiment.



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3. Which soil promoted the greatest rate of tomato plant growth? _____
4. For the soil that showed the greatest rate of growth, what is the difference in growth between week 2 and 4 and week 6 and 8? _____
5. Based on your experimental data, write a conclusion about the type of soil and the rate of growth in tomato plants?

_____

_____

_____

_____