

Earth Science

Midyear 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.

Earth Science Midyear Cornerstone Assessment: Part A. Scientific Investigation

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

The Class of 2016 has decided to buy the school a statue of your mascot as a commemorative gift. Your sponsor has reminded the officers to choose a statue material that is resistant to chemical weathering by acid rain. She has asked you to design an experiment to test the resistance of different types of rocks to the effects of acid rain. She would like you to investigate the following types of rock: Limestone, Marble, Granite.

1a. What is the **independent variable in your investigation**? _____

1b. Why did you choose this answer?

2a. What is the **dependent variable in your investigation**? _____

2b. Why did you choose this answer?

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

3b. Why did you choose this answer?

Available Materials:

Sample of limestone	jars with lids	metric ruler	h
Sample of granite	weak acid solution	graduated cylinder	e
Sample of marble	thermometer	balance	a

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

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

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

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

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

Earth Science Midyear 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.

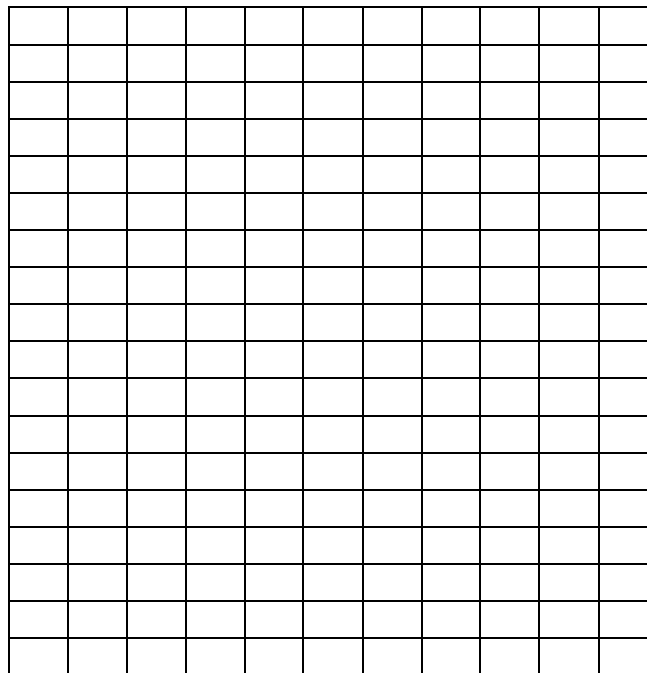
The officers of the Class of 2016 were investigating the resistance of different rock types to the effects of chemical weathering by acid rain. Here is the data they collected.

	Mass of Rock Sample (grams)			
	Initial Mass	10 minutes of shaking	20 minutes of shaking	30 minutes of shaking
Granite	50	50	50	50
Marble	50	49	48	47
Limestone	50	45	40	35

1. Based on the data, predict the mass of each sample after 40 minutes of shaking.

	40 minutes of shaking
Granite	
Marble	
Limestone	

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



3. Which material has the greatest rate of change? _____

Name _____

4. Based on your graph, draw a conclusion about the resistance of different types of rock to the effect of chemical weathering by acid rain?
