

Unit  
3Handout  
\_\_\_\_\_*Igneous Fudge Lab***Purpose:**

The purpose of this lab is to observe the relationship between how long a substance has to cool (e.g. magma or lava) and the size of the crystals

**Problem:**

How does the cooling rate of a hot liquid affect the size of the crystals that grow from it?

1. What is the independent variable? \_\_\_\_\_
2. What is the dependent variable? \_\_\_\_\_

**Research:**

This lab is directly related to our studies of igneous rocks. What do we already know about the crystal size of igneous rocks? How does each form?

---



---



---



---

**Hypothesis:**

We can create a hypothesis for this lab. Remember, a hypothesis generally follows this format: *If (independent variable), then (dependent variable)*. Remember, the independent variable is what we change. The dependent variable is the result of the independent variable.

1. What will we change in this lab? \_\_\_\_\_
2. What will be affected by what we change in this lab?

\_\_\_\_\_

*Note: the control for this lab will be using the same amount of cooling time, the same amount of liquid, and the same petri dishes.*

With this information in mind, write your hypothesis. Remember, do not use personal pronouns!

If \_\_\_\_\_, then

\_\_\_\_\_

**Procedure:**

This lab will require us to prepare a substance that will be heated and then cooled at different rates. To do this, we will cool the substances at three different temperatures. Write a procedure for this lab. The initial part is done for you.

1. Mix a solution of 78mL room temperature water, 50mL cocoa powder, 250mL sugar, 5mL vanilla, and 0.1 mL table salt. Stir until the mixture is uniform in appearance. Pour half the mixture into a 250mL beaker.

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

**Data and Observations:**

After allowing the mixture to cool for 24 hours, observe the hardened mixture. Draw a picture of each substance. Then, fill in the information for each mixture.

Freezer Mixture	Countertop Mixture	Incubator Mixture

Hints for the table below:

\* For cooling time, use general terms (ex: long, short, etc.)

\* For crystal size, use scientific terms (ex: coarse, fine, etc.)

\* For general describe, just describe what you see!

Location	Cooling Time	Crystal Size	General Description
Freezer			
Counter Top			
Incubator			