

Name: _____ Date: _____ Period: _____

Mining for Chocolate Chips

Directions: You must use only mining tools (toothpicks) to extract the ore (chocolate) from the land (cookie)—not your hands! Turn in this assignment at the end of class.



****Do not eat your two cookies until instructed to do so!****

Part 1: Estimations

	Cookie #1	Cookie #2
Estimated amount of your cookie that is not chocolate (%)		
Estimated amount of your cookie that is chocolate (%)		

Part 2: Mining for chocolate chips

1) For cookie #1, break up the cookie as much as you want with the toothpicks in order to extract as much chocolate as possible.

Use a *coffee filter* and one of the scales to take the following measurements. **Note:** the *coffee filter* weighs 1 gram. Be sure to subtract the weight of the coffee filter from the measurement you see on the scale.

	Cookie #1
A) Measured amount of chocolate (grams)	
B) Measured amount of remaining cookie (grams)	
C) Calculate: Total mass of chocolate and cookie = part A + part B	
D) Calculate: Percentage of chocolate = (mass of chocolate/ total mass) x 100	
E) Calculate: Percentage of cookie = (mass of cookie/ total mass) x 100	

2) For cookie #2, remove as much chocolate as possible, but damage the cookie as little as possible. Make few to no crumbs.

Use a *coffee filter* and one of the scales to take the following measurements.

	Cookie #2
A) Measured amount of chocolate (grams)	
B) Measured amount of remaining cookie (grams)	
C) Calculate: Total mass of chocolate and cookie	
D) Calculate: Percentage of chocolate	
E) Calculate: Percentage of cookie	

Part 3: Reflection on Chocolate Chip Mining

	Cookie #1	Cookie #2
Level of difficulty of chocolate removal (1 easy to 5 hard)		
Amount of chocolate left in the cookie (1 a little to 5 a lot)		
Calculate: Value of the chocolate collected. \$10 for every gram collected.		

Part 4: Discussion Questions

Please answer each question in the space provided and in complete sentences.

1. Which cookie produced the most chocolate chips? Which cookie produced the least chocolate chips?
2. Which method produced the most damage to the cookie? Which method produced the least damage to the cookie?
3. Describe the difference between the two ways you mined for chocolate.
4. How much more chocolate did you extract from cookie #1 than from cookie #2?
5. After a mine is completed, the land must be as close to its original state as possible (known as reclamation). Which method (cookie #1 or cookie #2) demonstrates this concept? How?
6. Can you think of any potential problem that may occur when a portion of land is mined?

Part 5: Enjoy 😊

You may now eat your cookies