Name: Date:

**Cookie Mining Lab**

 The purpose of this lab is to simulate the economics of mining. Your group will represent a mining company, and will “mine” a chocolate chip cookie for chocolate chip “ore.” Your group will be responsible for keeping track of company expenses while trying to make as much money as possible.

 “*Ore*” is rock that contains valuable minerals (such as gold, iron, and uranium) that can be extracted and sold for profit. In this simulation, the chocolate chips are the ore. The worthless rock that surrounds the ore must be separated from the ore. This worthless rock is called *gangue* (pronounced gang).

**Instructions:**

1. Your mining company (you and your partner) is responsible for keeping track of all mining costs (cost of cookies, equipment rental, mining and reclamation time, and reclamation costs) and profits.

2. Each company is expected to mine 2 cookies ($5.00 each).
3. Following the purchase of a cookie (land area), the miner places the cookie on the graph paper and traces the outline of the cookie. The miner then counts each square and partial square that falls inside the outline (partial squares count as full squares).
4. Renting Mining Equipment:
	1. Toothpick $2.00
	2. Straw $4.00
	3. Paper Clip $6.00
	4. If any equipment is returned broken, the mining company will be fined double the price of the equipment

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| **No miner may use his or her fingers to hold the cookie. The only items that can touch the cookie are the mining tools and the paper the cookie is sitting on.** |

1. Mining and Reclamation time costs: $2.00/minute
2. Intact (pure) chocolate chips sell for $10/chip. Partial (impure) chocolate chips sell for $2/chip
3. When mining is completed, count the intact and partial chocolate chips
4. After the cookie has been mined, the remaining rock (gangue) must be placed back in the circled area on the graph paper. This can only be done using the mining tools. No fingers or hands may touch the cookie.
5. Count the number of squares covered by the gangue. If the gangue covers more squares than the original cookie, a reclamation cost of $1.00 per extra square (full or partial) will be charged.

**Mining Data Sheet**

1. Company name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Price of land area (cookies): \_\_\_\_\_\_\_\_ X $5.00 = $\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Size of mining areas (cookies): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ squares
4. Mining Equipment rental
	1. Toothpicks: \_\_\_\_\_\_ X $2.00 = $\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Straw \_\_\_\_\_\_ X $4.00 = $\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Paper Clip \_\_\_\_\_\_ X $6.00 = $\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. Broken equipment charge = $\_\_\_\_\_\_\_\_\_\_\_\_\_

 **TOTAL EQUIPMENT COSTS = $\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Mining and Reclamation time costs: \_\_\_\_\_\_\_ X $2.00/minute = $\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **TOTAL COST OF MINING = $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

1. Income from ore sales = \_\_\_\_\_\_\_\_ # intact chips X $10 = $\_\_\_\_\_\_\_\_\_\_\_\_\_
 +\_\_\_\_\_\_\_\_ # partial chips X $2 = $\_\_\_\_\_\_\_\_\_\_\_\_\_ **TOTAL INCOME FROM ORE SALES = $\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. Profit: Total income – cost of mining

 **$\_\_\_\_\_\_\_\_\_\_ – $\_\_\_\_\_\_\_\_\_\_ = $\_\_\_\_\_\_\_\_\_\_**

1. Reclamation costs: \_\_\_\_\_\_\_\_\_ extra squares X $1.00/square = $\_\_\_\_\_\_\_\_\_\_\_

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| **TOTAL PROFIT** = Mining Profit – Reclamation costs = $\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Analysis**

1. What was your mining strategy? What real-world mining type was this similar to?
2. In the real world, why is land reclamation so expensive?
3. What changes to your mining technique would have resulted in more profit?