Names: _____ Period: _____ Date: _____

Mining Coal Cookies

1. What is the difference between renewable energy sources and nonrenewable energy?

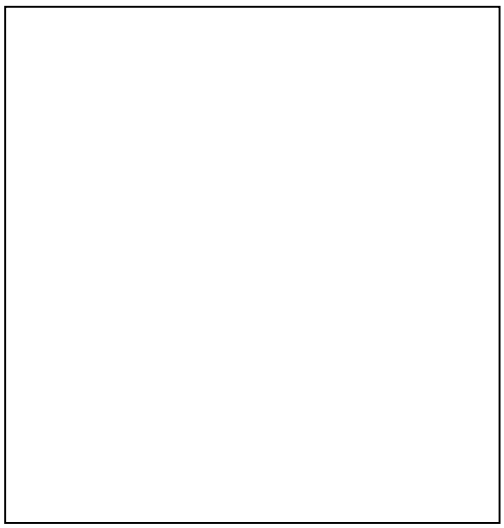
2. How long do we think our current supplies of coal will last?

3. What are some alternative sources of energy to fossil fuels?

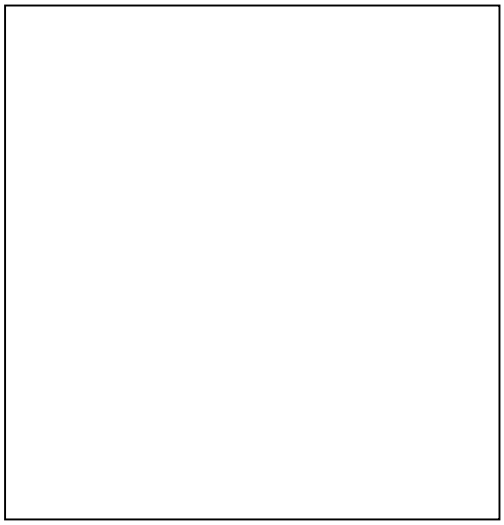
Procedure:

- You have been given a paper plate, a chocolate chip cookie, a paper cup and a paper clip. You should perform all mining operations on top of the paper plate to contain the mining wastes.
- Estimate the expected coal ore deposits (chips) that will be mined from the earth (cookie) and draw that estimate on the Estimation Chart.

Estimation Chart



Results Chart



- Do not use your hands but rather try to perform all operations using the paper clip. Try to separate as much of the earth material from the chocolate chips ('coal') as possible. Put all 'coal' in the paper cup.
- Once you have mined all the 'coal' from 'the earth', pour the extracted 'coal' onto the Results Chart, draw a line and then compare the amount recovered to your estimation.
- Clean up your mining site by using your digestive systems to bioremediate the mining wastes and extracted ore deposits.

Questions

4. What is left of your cookie? How does this reflect the environmental impacts associated with real mining operations?

5. Based on your experience cookie mining, how can you explain why in actual coal mining situations some deposits of coal are more expensive to obtain?

6. Was there a difference between your estimated and results charts? Why?

7. Why is it difficult to predict exactly how long the fossil fuels in earth will last?

8. List three ways to reduce the environmental impacts of actual coal mining.

9. What is the balance between how much coal resources are technically available and the increasing environmental and economic costs associated with obtaining and using all of this coal?