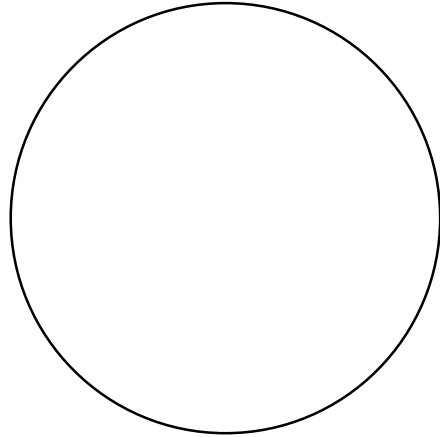


The Great Muffin Mine

Class Lesson Plan

Topographic Map:

1. Draw relief contours of your muffin (contour interval 1 cm).
2. Mark the approximate locations of your drill areas.



Core Drilling: Using your straws, core into the muffin, and construct a strop chart for each drill: (scale 0.5 cm = 1 ft coal). Each block represents 0.5 cm of core.

#1

#2

#3

#4

Drill Holes

Mining Plan: Develop a strategy for removing the coal from the property.

Mining Permit:

The _____ company has been granted a permit to mine the _____ are of the Muffin Estates for a period of 5 minutes to commence at owner's requested time.

Restrictions: The surface of the muffin can only be removed if the coal is at or near the surface (< 1 cm below).

You cannot cause property damage to the homeowner.

Deep mining can only be done on layers thicker than 1 cm.

As the owner of one of the mines on the Muffin Estates you will be faced with the costs of buying equipment, operating your mine, and reclamation.

1. Your company must buy its own equipment (no sharing). You may purchase as much as you think you need.
2. Mining and environmental clean-up must be done with the equipment only (no fingers allowed). Paper clips may be straightened.
3. If equipment breaks, it must be replaced.
4. If you finish mining all the "coal" from you mine before time is called you will only pay for the minutes you spent mining.

A. Submitting Permit:

Mining Permit:

The _____ company has been granted a permit to mine the _____ area of the Muffin Estates for a period of 5 minutes to commence at owner's requested time.

B. Mining the Coal:

Mine Purchase:
 Muffin __1__ (quantity) @ \$20.00 ea = _____

Drill Cost:
 Holes _____ (quantity) @ \$1.00 ea = _____

Equipment Costs:
 Toothpicks _____ (quantity) @ \$ 5.00 ea = _____
 Paperclips _____ (quantity) @ \$10.00 ea = _____

Operating Cost:
 Minutes _____ (quantity) @ \$ 5.00/min = _____

Reclamation Cost
 Moving Equip _____ (quantity) @ \$10.00 = _____
 Mass in grams _____ (quantity) @ \$ 1.00/g = _____

TOTAL COSTS _____

C. Determining Tonnage:

Mass of "coal" (in grams) mined _____

D. Quality:

The "Coal Inspector" is making rounds.... call her over to inspect your coal.

Quality of Coal: _____

You must now determine the value you will place on your "coal".

1. Determine the Cost per Gram:

TOTAL COSTS _____ / (divided by) the number of grams you mined _____ = Cost/g

2. Determine the asking price per gram (remember you are trying to make a profit but remain competitive enough to win the bid)

Amt for profit per gram _____ + Cost per gram _____ = Asking price for Coal

3. To Determine your Total Profit:

Asking Price per gram _____ X Total no. of grams _____ = Total Value of Coal

Total Value of Coal _____ - Total Costs _____ = TOTAL PROFIT _____

Class Results

Mining Method	Coal removed (g)	Overburden (g)	Total Costs (\$\$)

Application: Answer the following based on the class discussion.

1. What determines the type of mining that is performed on any given tract of land?
2. What mining technique removes the most overburden creating the highest potential reclamation costs. How is this minimized?
3. Which mining technique most efficiently removes the coal? Explain your choice.
4. Why do you think coal companies in the south are lobbying aggressively for mountaintop removal?