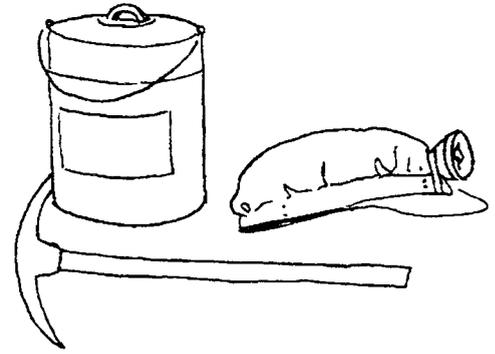


COAL MINING

Post-Visit Activity

Activity	Mining Coal
Setting	Classroom
Duration	One hour
Subject Areas	Reading, Math
Skills	Following directions, Addition, Subtraction, Multiplication
Grade Level	4-5



Objective:

Students will be able to:

1. simulate mining activities by mining a chocolate chip cookie
2. become aware of some of the problems of mining, cost factors, etc.

WV-IGOs:

Language Arts - 4.9, 4.10, 4.35,
4.85, 4.86, 5.11
Math - 4.17, 4.18, 4.54, 5.14, 5.26
Social Studies - 4.14

VOCABULARY

profit loss reclamation

MATERIALS

1. chocolate chip cookies
2. graph paper
3. paper towels
4. Resource Page — Mining Coal Certificate
5. paper clips, flat toothpicks, round toothpicks
6. watch or clock
7. Resource Page — Mining Coal Worksheet
8. Resource Page — Mining Scrip
9. Resource Page — Mining Coal Rules

BACKGROUND

Coal mining was a difficult job that required careful extraction of coal from the earth using special tools. Coal operators also did not always know if a mine would be profitable.

PROCEDURES

1. Give each student a paper towel, piece of graph paper, Mining Coal Worksheet, and \$20.00 dollars (photocopied mining scrip.)
2. Explain to the students that the object of this activity is to remove the chocolate chips from the cookie, restore the cookie as close as possible to original condition/size, and make a profit. Review the rules of the activity with the students.
3. Allow each student to buy his/her own cookie (mining property) and mining tools. Cookies and tools cannot be shared. Record the cost of mining property and tools as expenses on the Mining Coal Worksheet.

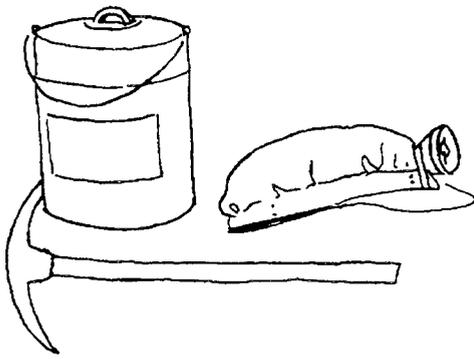
Cookies

Chip's Ahoy cookies = \$5.00 each
Chips Deluxe cookies = \$7.00 each
Other chocolate chip cookies = \$3.00 each

Tools

flat toothpick = \$2.00 each
round toothpick = \$4.00 each
paper clips = \$6.00 each





PROCEDURES *Continued*

4. Before students start to mine their chips, have them trace the outline of the cookie on the graph paper. Then count the number of squares covered by the cookie (half squares count as a whole square). Record the total number of squares on the Mining Coal Worksheet.
5. Students will begin mining at the same time. Keep track of how many minutes it takes the students to complete this step (5 minutes maximum allowed for this step.) The students are to raise their hands when they are through removing all the chips and have restored the land (cookie) over the area traced on the graph paper. Multiply the number of minutes by the cost of mining and record the total as expenses on the Mining Coal Worksheet:

Mining costs = \$1.00 per minute

6. Students need to count the number of squares left open or uncovered on the graph paper. Multiply the number of squares with the cost of reclamation and record the total as expenses on the Mining Coal Worksheet:

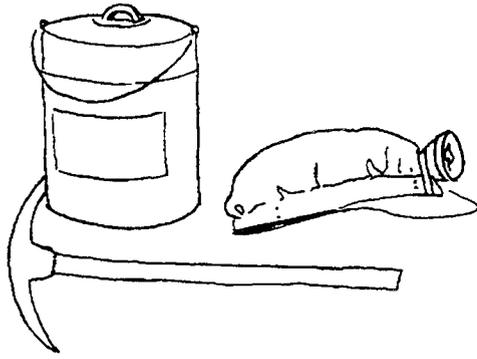
Reclamation costs = \$1.00 per uncovered square

7. Pay students for each chip mined (several broken chips can be counted as one chip.) Record the profits made as income on the Mining Coal Worksheet.

Chips are valued at \$2.00 per chip

8. Complete the Mining Coal Worksheet. Did the students make a profit? Were they able to reclaim all the property altered during mining operations?
9. Allow students to eat the cookies





EVALUATION

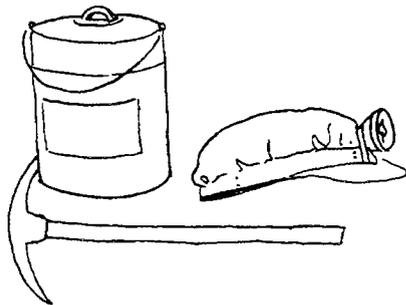
Present certificates for: Most Profitable Miner, Reclamation Award, and Neatest Miner

EXTENSION

Invite a local coal operator to the classroom to discuss mining operations and costs of mining.

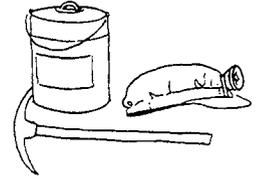


TEACHER NOTES



COAL MINING

Resource Page — Mining Coal Rules

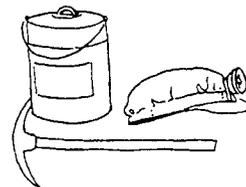


- Rule 1** | Students cannot use their fingers to hold the cookie. The only things that can touch the cookie are the mining tools and the paper under the cookie.
- Rule 2** | Students must all start at the same time; early starters will be charged a fine of \$2.00.
- Rule 3** | Students will be allowed up to five minutes to mine the chips from their cookie. Students must keep up with the number of minutes it takes them to finish mining.
- Rule 4** | Students can purchase as many mining tools as he/she desires, and the tools can be of different types.
- Rule 5** | If the mining tools break, they are no longer usable, and a new tool must be purchased.
- Rule 6** | Each student that makes money at the end of the game wins.
- Rule 7** | All students win at the end of the game because they get to eat the remains of their cookies!



COAL MINING

Mining Coal Worksheet



Mining data

Number of squares covered = _____
Number of squares left uncovered after mining = _____

Expenses

Cost of cookie = \$ _____

Chip's Ahoy cookies = \$5.00 each
Chips Deluxe cookies = \$7.00 each
Other chocolate chip cookies = \$3.00 each

Cost of tools = \$ _____

flat toothpick _____ x \$2.00 = \$ _____
round toothpick _____ x \$4.00 = \$ _____
paper clips _____ x \$6.00 = \$ _____
Total cost of tools = \$ _____

Mining costs = \$ _____
Reclamation costs = \$ _____

\$1.00 x _____ minutes = \$ _____
\$1.00 x _____ uncovered squares = \$ _____

Income

Profit from sale of chips = \$ _____ \$2.00 x _____ chips = \$ _____

Net Profit or Loss

Mining Scrip you started with \$ 20.00
Income from chips sold + \$ _____
Total = \$ _____

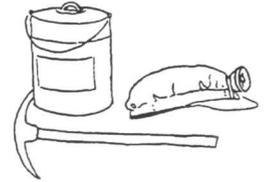
Total of all mining expenses - \$ _____

Profit or Loss (+ or -) = \$ _____



COAL MINING

Resource Page — Mining Scrip



New River Gorge

1 dollar



1 dollar

Mining Company

New River Gorge

1 dollar



1 dollar

Mining Company

New River Gorge

1 dollar



1 dollar

Mining Company

New River Gorge

1 dollar



1 dollar

Mining Company

New River Gorge

2 dollars



2 dollars

Mining Company

New River Gorge

2 dollars



2 dollars

Mining Company

New River Gorge

5 dollars



5 dollars

Mining Company

New River Gorge

5 dollars



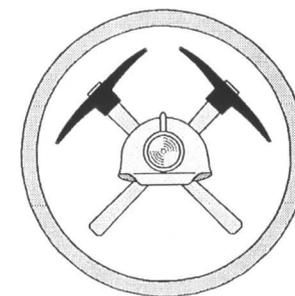
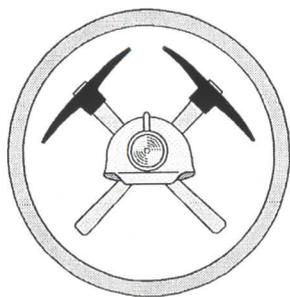
5 dollars

Mining Company



New River Gorge Mining Company

Awards



(Students' Name)

For displaying excellent mining skills.

Mine Foreman (Teacher)

Date