Title: **Birdseed Mining Activity**
Level: **K-12**
Day/Time:

Objective:

Mining is a complex process in which relatively small amounts of valuable (gold) or useful (coal) minerals or metals are extracted from very large masses of rock. This activity will illustrate how this "needle in a haystack" process works. Students will be able to experience "hands-on" the difficulty that miners face in locating valuable mineral deposits. They will also learn a simple lesson in economics--a less valuable commodity may be more profitable because it is more abundant. Students will be shown the importance of clean, environmentally conscious mining, and will learn that all mining operations must pay for reclamation work.

Materials:

Wild Bird Food - any commercial birdseed mix with sunflower seeds and at least 2 other seed varieties.
Shallow pans (inexpensive plastic paint pans work well).
Small beads (approximately 2mm) blue, gold and silver.
Medium beads (approximately 4-6mm) white color.

Activity:

1. Divide students into groups of 4 to 6.

2. Pour approximately 1 pound of birdseed in each pan.

3. Add 2 gold beads, 4 silver beads and 8 blue beads, and 3 white beads to each pan - mix into birdseed.

4. The beads and seeds represent the following:

    Gold beads = Gold
    Silver beads = Silver
    Blue beads = Coal
    Sunflower seeds = Copper
    All other seeds = Waste
    White beads = Reclamation (These beads will be assigned a COST rather than a VALUE because reclamation must be done at all mining operations regardless of how much profit was made. See #7.)

5. Students search through the seed mixture and separate out or "mine" beads, sunflower seeds and other grain products, making piles of each. Allow 5 to 10 minutes for the mining activity. (NOTE: The instructor should hint to the students that they should mine NEATLY, not mixing waste seeds with their beads, sunflower seeds and not scattering seeds all over the area. Instructor can have the option of examining the work of each group, or assigning a helper to monitor each group to see how cleanly the "mining" is being done. Instructor or helper may assign an arbitrary "fine" to cover costs for "environmental damage" at the messy tables.

6. Assign a value for each type of bead or seed. Example follows:

> Gold bead = Gold = $5.00 each
> Silver bead = Silver = $4.00 each
> Blue bead = Coal = $3.00 each
> Sunflower seeds = Copper = $2.00 each
> All other seeds = Waste = $0.00
> White beads = Reclamation = $100.00 each

7. Have the students count up the number of gold, silver, and blue beads, sunflower seeds from their piles and multiply the number of each by their values given in #6. Document all information on the "Birdseed Mining Spreadsheet." Students should also note the amount of any environmental damage fines on the spreadsheet. Students should count the number of white beads in their pile and multiply by the reclamation factor. This number should be recorded on the reclamation cost line on the spreadsheet.

8. Have each group total up the dollar value of their "mining" operation, subtracting the environmental damage fines and reclamation costs. Have each group share their success with the others. Prizes may be awarded to the best table of "miners."

Birdseed Spreadsheet - K-3

Gold bead = GOLD:

Number of beads _____ x _(price)__ = _(value)__

Silver bead = SILVER:

Number of beads _____ x _(price)__ = _(value)__

Blue beads = COAL:

Number of beads _____ x_(price)__ = _(value)__

Sunflower seeds = COPPER:

Number of Sunflower seeds _____ x _(price)__ = _(value)__

TOTAL Value of all Products = _____

SUBTRACT cost of Environmental Damage fines = _____

SUBTOTAL = _____

Number of WHITE beads _____ x $100.00 = _____

SUBTRACT reclamation cost from SUBTOTAL = _____

GRAND TOTAL = _____

Birdseed Spreadsheet - Grades 4-12

GOLD BEAD: Each gold bead = 10 oz. of gold ($280/oz).

Number of beads _____ x 10 oz. = _____x_(price)__ = _(value)__

SILVER BEAD: Each silver bead = 10 oz. of silver ($5.70/oz).

Number of beads _____ x 10 oz. = _____ x _(price)__ = _(value)__

BLUE BEAD: Each blue bead = 100 lbs. of coal (or 2,000 lbs. of coal = 1 ton = $23.00/ton).

Number of beads _____ x 100 lbs. = _____ x _(price)__ = _(value)__

SUNFLOWER SEEDS: Each Sunflower seed = 100 lbs. of copper (or 2,000 lbs. of copper = 1 ton $0.75/ton).

Number of Sunflower seeds _____ x 100 lbs. = _____ x _(price)__ = _(value)__

TOTAL Product Value = _____

SUBTRACT cost of Environmental Damage fines = _____

SUBTOTAL = _____

Number of WHITE beads _____ x $100.00 = _____

SUBTRACT reclamation cost from SUBTOTAL = _____

GRAND TOTAL = _____

Note:

Teacher or students may want to look up the actual stock prices for that day, for gold, silver, and copper in the newspaper or on the Internet.

Adapted from materials provided by Women In Mining