

Lesson Preparation – Mining for Minerals (<1 hour active time)

Materials (for 24 students) :

Rice Krispie Cereal (6 cups)

Butter (3 Tbsp)

Marshmallows (10 oz)

Four Unique Mix-ins to act as Minerals (Froot Loops, Raisins, M&M, Gummy Bears)

Large, Sturdy Toothpick (1 or 2 per student)

Plate or Paper Towel (1 per student)

Ziplock Baggies (1 per student)

Sharpie

Mining for Minerals Worksheet

Before Lesson:

1. In large saucepan melt butter over low heat. Add marshmallows and stir until completely melted. Remove from heat.
2. Add Rice Krispie cereal and 'minerals'. Stir until well coated.
3. Using buttered spatula or wax paper evenly press mixture into 13 x 9 x 2-inch pan coated with cooking spray. Cool. Cut into 2-inch squares.

Lesson Plan – Mining for Minerals Planet (50 min)

Opening (10 Min)

Have a student read the title and intro paragraph on the worksheet aloud.

Ask students what they think minerals might be like. Do they know of any minerals they see all the time? *Minerals are a lot like rocks, except they are made up of only one thing. Some very common minerals are diamond and graphite.*

Have the students think about how they might find the minerals in a rock. Have them share their ideas with the class.

Talk about the process of mining and what we might use it for. *Generally we mine to separate the desirable minerals from the undesirable ones so that we can make things like diamond rings and pencils.*

Instruction (5 min)

Tell the students that today they are going to play the role of the miner, and they are going to help find all of the minerals in these very special rocks. Emphasize that they cannot eat any of the 'rock' until the lesson is over and they have their teacher/parent's permission.

Show them the toothpick that they will use to dig out the minerals. Tell them that their goal is to find as many minerals in their rock as they can and to count them once they are dug out. They must keep their rocks and minerals inside the plate or paper towel at all times.

Point out the places on the worksheet for them to write down the types of minerals they find, and where to write down how many they found. You may want to 'give away' one of the minerals so that they can practice writing it down.

Mining (20 min)

Hand out one rice krispie treat, plate, and toothpick per student.

Let them dig away! Provide guidance on the identification and counting of the minerals and encourage students to fill in their worksheet.

Data Reporting (10 minutes)

Get the classes attention and have them write down a final number for each mineral.

Gather the numbers from each student to get an overall count for each mineral. Report this number back to the class. Was their top mineral the same as the class's top mineral?

Closing (5 min)

Gather students and have them respond to some questions.

What might have made the counts of minerals wrong? *Ease of identification, separation into pieces, difficulty separating from the rest of the 'rock' may all be factors. Sometime these sorts of challenges make it hard for scientists to answer questions.*

What other sorts of things do you think we could tell about the rock based on what minerals it's made from? *You can tell lots of things, like where the rock is from, how old it is, if there was water or ice nearby ect..*

Ask the students how they think minerals are mixed together to form rocks. *The real answer here is heat and pressure, but students will likely have some creative responses that you will have to field.*

Finish by allowing students to ask any remaining questions, and encourage discussion about what other kinds of things they would like to learn about rocks and minerals.