

DAY 5 EXPERIMENT

Mining Cereal

Materials

- ❑ Heavy duty zippered baggies, 1 per child
- ❑ Cereal with high iron content, such as Total, 1 c. per child
- ❑ Styrofoam or paper bowls, 1 per child
- ❑ Spoons (heavy duty plastic or metal), 1 per child
- ❑ Paper towels, 1 per child
- ❑ Coffee cups with lids holding 1 c. warm water, 2 per child (one for mixing and one for rinsing)
- ❑ Neodymium magnets (remain at the table), 1 per child
- ❑ Clear tape, 3–4 in. per child
- ❑ White paper or cardstock, one 2x4-in. piece per child

Pre-prep

Put one serving of cereal into a heavy duty zippered baggie for each child. Cut the white paper or cardstock into 2x4-inch strips.

Class Time Directions and Dialogue

Today, we're learning how God makes everything on purpose—from a blade of grass, to the stars in the sky, to fish in the sea, to *you*! God made everything *on purpose for a purpose*.

In Australia, there is a precious gemstone that's found in the outback town of Coober Pedy. Do you remember what that stone is? [Take answers](#). Yes, an opal! Opals are used in abrasive soaps, fertilizers, cosmetics, medicines, and beautiful jewelry. Most of the world's opals are mined in Australia, especially in Coober Pedy.

Did you know it doesn't take opals millions of years to form, as you may have heard? It takes the right conditions, which would have happened during the later stages of the flood of Noah's day. In fact, laboratories can "grow" them within weeks using the right ingredients! And, here's a fun fact: miners discovered a plesiosaur (sea creature) whose bones had turned to opal!

But Coober Pedy isn't the only place to mine for gems and ore. People mine all over the world.

Does anybody know what *ore* is? And I don't mean the kind you use with a rowboat! [Take answers](#). Ores are rocks that have metals or minerals in them.



God used the worldwide flood of Noah's day to provide all kinds of treasures under the surface of the earth that we need and can use, like metals and minerals. Did you know that our bodies need metals and minerals? *Pause.* Take iron, for instance. Our bodies don't make iron on their own, so we need to eat iron-rich foods to get what our bodies need. Some vegetables, such as broccoli, kale, spinach, and potatoes, naturally have iron in them. Other types of processed food have iron added to them during the manufacturing process.

Today, we're going to get a chance to do some "mining" like the folks in Coober Pedy—except we'll be mining cereal and finding some iron!

1. Look at your bag of cereal. If there's a lot of air in it, open a corner of the seal, press out the air, and then seal it again.
2. Use the back of a spoon to crush the cereal into a fine powder. It works best if you push on the scoop part of the spoon rather than the handle. *If using plastic spoons, be sure to warn that the handle may break if the mates push too hard on the handle.*
3. Transfer your powdered cereal into your bowl and add one cup of warm water to it. Gently stir the water and cereal with your spoon for one minute.

Now take a short break and do the Fabulous Fingerprints experiment or something else in this guide for a few minutes. The longer the cereal sits the better. Then pick up with the next step.

4. **Start stirring the cereal mixture with a magnet.** Warn the kids not to put magnets together as they won't come

apart. Be sure your magnet touches the bottom of the bowl and goes all through the cereal mixture. Keep stirring with the magnet for about one minute.

5. Take the magnet out of the cereal mixture and dip it into your remaining cup of water to rinse off the cereal. Very gently pat the magnet with your paper towel to remove the water. Don't wipe it or the iron may be removed, too. *It will be hard to see the iron because there's not a lot of it in cereal and the pieces are really tiny.*
6. Take the piece of tape and hold it very securely on the table with the sticky side up. Push your magnet onto the tape and lift it off carefully over and over until you have "cleaned" all the areas of the magnet that were in the cereal. Once finished, stick the tape to the white paper. Do you see any dark specs? If you do, those specs are iron. Congratulations, you just mined cereal!

Tip Corner

- Make sure to use neodymium magnets as they are extra strong. You can buy them online through suppliers like Amazon.
- The magnets can be reused for each rotation.
- Be sure to choose a cereal that has high iron content.
- If you have a second group of students coming to science, extra helpers may be needed to reset the tables. This goes for any day.
- A science word that was introduced today is *ore*.