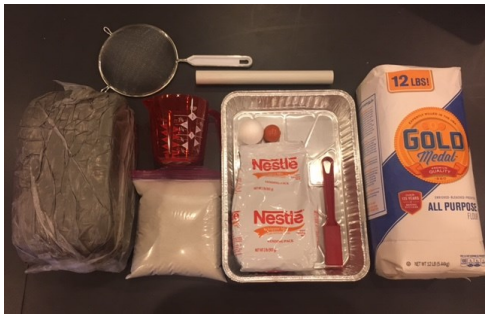
Meteorite Crater Pits

What is the difference between a meteoroid, meteor and meteorite?

MATERIALS



- Aluminum Pan
- Measuring Cup
- Sifter
- Sand
- Flour
- Cocoa
- Magnetic Balls
- Magnetic Wand
- Styrofoam Balls
- Clay

Do the Experiment!

1. First you're going to make a meteorite. Meteorites have some unique features that you will create.
2. Select a Styrofoam ball. Look at the picture of the meteorites on the back of this sheet. Cut your ball so that it looks like a meteorite that has survived the intense friction of the atmosphere.
3. Cover your meteorite with a small amount of clay. Now press your thumb onto the surface of the meteorite. One of the unique characteristics of meteorites are these thumb like impressions.
4. Now it's time to make some craters. On Earth, craters are where you would find meteorites because most craters are formed by large meteoroids crashing on the surface.
5. First, you have to make a crater pit. Grab an aluminum pan and put a small layer of sand at the bottom. Next, measure out two cups of flour. Sift the flour evenly over the sand. Finally, measure one cup of cocoa. Sift the cocoa evenly over the flour. All these materials represent different layers of the earth.
6. Now it's time to make craters. Drop a magnetic ball into the pit. This is your meteorite. Don't pull the ball out with your fingers—that will mess up the crater. Instead, use a magnetic wand. If you have a ruler, you can measure the depth of the crater. You can also measure the length of the ejecta—how far away flour landed from the edge of the crater. Every now and again, smooth out the surface and add more cocoa.

DID YOU KNOW...

Between Mars and Jupiter lies a densely packed mass of broken rock and metal known as the **Asteroid Belt**. There are different opinions on how the asteroid belt was formed—some scientists think a couple of small planets might have crashed into each other during the formation of the solar system, while others think the strong gravitational pull of Jupiter pulled it apart. Millions upon millions of asteroids, of various sizes, circle about in the belt. Every now and again two asteroids will hit one another causing pieces to be knocked out of the belt. These pieces flying through the solar system are called **meteoroids.** Every object in the solar system has a gravitational pull. Meteoroids can be drawn towards planets, moons or the sun. If a meteoroid is drawn into a planet with an atmosphere, the speed and angle of the meteoroid will create intense friction causing the meteoroid to burst into flame. The flash of light a person sees from the Earth is called a **meteor**. If any part of the meteor survives and lands on the Earth it is called a **meteorite.** If you're lucky you can find meteorites on the ground. Meteorites are either made form rock, iron or a mixture of both. A good place to look is near a **crater.** Craters are large holes found on the surface of the Earth. The Earth has been hit numerous times by meteorites, some very large and some very small. It is possible that a large impact by either a meteorite or a comet is what caused the dinosaurs to go extinct. Although the Earth has been hit numerous times, the geologic activity of the Earth has erased most of the craters. Look at the moon. Why do you think the moon has so many craters?

CHALLENGE

1. *What is the difference between a meteoroid, meteor and meteorite?*
2. *What do you think causes a meteor to burn?*
3. *What do craters tell us about the history of our planet?*

STEAM Challenge: Every single day 6,000 tons of space debris hits the earth. A ton is 2000 pounds. How many pounds of space debris hits the earth every day? What if 7324 tons hit each day? How many pounds would that be?