

Impact Cratering

Impact craters are caused when an impactor collides with a planet. A crater's size and features depend on the mass, velocity, and incoming angle of the impactor. Impact craters provide insights into the age and geology of a planet's surface.

In this activity, you and your child will create impact craters like the ones on Mercury. Use different impactors and drop them at different speeds and angles to find out if the different variables form different size/shaped craters.

What You Need:

- A large pan or box such as a dish pan, aluminum baking pan, or copy paper box lid, (larger pans allow children to drop more impactors before having to re-smooth or resurface)
- Enough sand, sugar, rice, or oatmeal to fill the pan about 4 inches
- Enough flour to make a 1" to 2" deep layer
- Enough powdered cocoa to cover the surface by about an 1/8 of an inch
- A sifter
- A large trash bag or piece of cloth or plastic to place under the crater box
- Several objects that can be used as impactors, such as large and small marbles, golf balls, rocks, bouncy balls, and ball bearings. Use your imagination!
- Ruler
- Paper and pencil
- Images of craters on Mercury
 - http://www.nasa.gov/images/content/208907main_phone_crater.jpg
 - <http://btc.montana.edu/ceres/MESSENGER/instruments/mla.html>
 - <http://www.astro.washington.edu/courses/labs/clearinghouse/labs/Craters/crater.html>
- Safety glasses

What to Do:

- Fill a pan 4 inches deep with sand, sugar, rice, or oatmeal
- Add a 1 to 2 inch layer of flour
- With the sifter, sprinkle a thin layer of powdered cocoa on top of the flour
- Provide several impactors and a ruler
- Have your child drop one impactor at a time into the pan.
- Change the types of impactors and the heights from which the impactor is dropped.
- Discuss the differences in the size and depth of the craters the different impactors make.

Parent Prompts:

What did your child observe?

How did the weight of objects affect the size and depth of the crater you created?

How did the size of the object affect the size and depth of the crater?

How did dropping or throwing the impactors from different heights affect the size and depth of the craters they formed?

