

Creating Craters

The surface of the Moon isn't smooth—it's covered in craters! Craters form when meteorites (rocks from space) crash into the surface of a moon or a planet. The impacts of these space rocks leave holes in the ground and tell scientists about the history of the moon or planet. In this activity, observe patterns like a scientist and learn how craters are formed.

Materials

1 wide tupperware bin

2-4 cups white flour*

½ cup cocoa powder* in a shake jar

At least 5 "impact objects" of different sizes and density
(Roundish objects, like marbles, ping pong balls, bouncy balls, or pebbles work best)

**If you want to avoid food products, you can use white sand covered in a layer of darker colored sand. Two contrasting sand colors work best.*



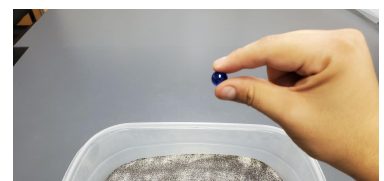
Directions

1. **Fill** your bin with flour about 3 inches deep.
Shake the bin gently back and forth until the flour is about level.
2. **Sprinkle** a thin layer of cocoa powder over the flour like in the picture.
This represents the surface of the Moon.



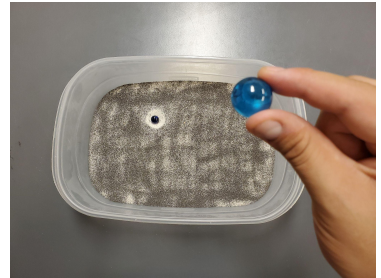
3. **Collect** the 5 or more "impact objects" to be the meteorites, rocks from space that will strike the Moon surface.

Think: What do you think will happen when the object hits the powder?

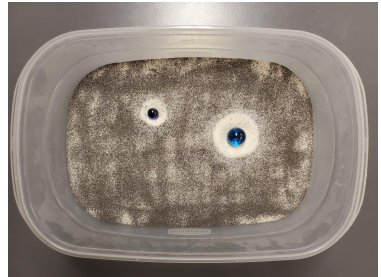


4. **Hold** the impact object about 2 feet above the bin and **drop** it into the flour bin.
What happened?

5. **Select** a different, heavier impact object and again **hold** it 2 feet above the bin before **dropping** it into the flour bin. Now you have two impact sites.



6. **Compare** crater size from both marbles. What similarities or differences do you notice between the two craters?
Which marble made a bigger crater? Why do you think it did?



7. **Continue dropping** more objects like pebbles or bouncy balls into the flour bin. Try creating different craters by dropping your object at different heights, speeds, or even directions. What shapes can you make? Craters can be layered on top of each other. Scientists can tell if a crater is older or newer by comparing the two. The craters on the bottom are older and the newer craters would be on top.



8. **Carefully remove** your impact objects from the flour bin, trying not to disturb the craters. The flour bin should look like the surface of the Moon.



9. **Challenge:** Use the photo below to answer the questions, using crater A or crater B.

- a. What do you think formed these craters?
- b. Which crater was made by a big meteorite? A smaller one?
- c. Which craters might be older? Newer?
- d. Do your flour bin craters look like the ones in the photo?
How are they similar? Different?

