CURIOSITY AT HOME

CRATER CREATORS

The surface of the moon is scarred with craters of different sizes and shapes. The following activity can help demonstrate the impact asteroids and meteoroids have on our moon and other planetary bodies.

MATERIALS

- Old newspapers or cardboard (optional)
- Pan or pie tin
- About 2 cups flour
- Cocoa powder or cinnamon (about 1/4 cup)
- 4 rocks of various sizes, not to exceed 4 cm (1½ in) in diameter
- Meter- or yardstick
- Paper or science notebook
- Something to write with

PROCEDURE

- If you are trying this activity indoors, place newspapers or cardboard on the floor of the work area.
- Fill a pan 5 cm (2 inches) deep with flour. Level the flour so it forms a smooth surface.
- Sprinkle the surface of the flour with a layer of cocoa or cinnamon. Add just enough to cover the flour.
- Measure the diameters of the 4 rocks and record your measurements in your science notebook.
- Have a helper hold the meter- or yardstick inside the edge of the pan.
- Drop the smallest rock into the pan from 30 cm (12 in) high. Measure the diameter of the crater it creates. Record your observations in your science notebook. Repeat these steps with progressively larger rocks. Record the diameter of the craters and your observations for each in in your science notebook.
- Level the flour so it forms a smooth surface and re-sprinkle it with cocoa or cinnamon.
- Have a helper hold the meter- or yardstick inside the edge of the pan.
- In the same order used previously, drop the rocks again from 60 cm (24 in).
- Record the diameter of the craters, as well as any other observations you make.
- What effects do the different sized rocks and dropping distances have on the resulting craters?

CURIOSITY AT HOME

CRATER CREATORS

EXPLORE MORE

- Continue from 90 cm (36 in) if desired.
- Try increasing the speed of the impact by gently tossing the rock
- Try tossing the rocks from different angles.
- What happens when craters overlap?
- What seems to have the greatest effect on the size of a crater: the height, speed, size, or angle of the rock?

WHAT'S HAPPENING?

Asteroids, meteoroids, meteors, and meteorites—what's the difference? Asteroids are large rocky bodies that orbit the sun. Meteoroids are smaller rocky pieces that have broken off larger bodies like asteroids or comets. Occasionally, these rocky bodies get caught in the gravity of a moon or planet and burn up in the atmosphere, creating a streak of light known as a meteor. Pieces that don't fully burn up in the atmosphere, collide with the surface, creating an explosive transfer of energy. This high-energy collision leaves behind an impact crater. Any pieces left behind after the collision is called a meteorite.

CURIOSITY AT HOME

CRATER CREATORS

K–2 GRADE EXPLORATION

- Look at a picture of the moon. How are your craters like the ones on the moon? How are they different?
- Volcanoes can have craters in their centers. Draw a picture of a volcano, or make one out of the flour. In what ways do volcanic craters look different than impact craters?
- Do you think volcanic craters come from meteoroid impacts, or do you think something else causes them?

@pacsci

Show us how you're being curious! Share your results with us.

PACIFIC SCIENCE CENTER

CURIOSITY AT HOME

CRATER CREATORS

3–5 GRADE EXPLORATION

- Think about the moon. How does the surface of this landscape compare to the moon? To the Earth?
- What does the Earth have that the moon doesn't have that protects it from most asteroids and meteoroids? Is this protection perfect, or do some meteoroids successfully hit the Earth's surface?
- Look at pictures of impact craters on the Moon and the Earth. Do impact craters on the Earth and the Moon look similar or different?
- What forces on Earth might wear down a crater over time? How could you model these forces in your pan of flour?

CURIOSITY AT HOME

CRATER CREATORS

6–8 GRADE EXPLORATION

- Look at pictures of craters on the Moon and the Earth. Why do you think their craters look different? Can you model this in your pan of flour?
- Compare images of the near and far sides of the moon. What could have happened to make the near side of the moon relatively smoother than the far side?
- Do you expect meteorites to have a fairly similar chemical composition to rocks from Earth, or do you think they'd likely be different?
- What do you think we could learn by looking at a meteorite?