

# 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?



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### 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.



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### 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?



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