



Moon Craters

Have you ever wondered how the moon got its craters? Throw mini “asteroids” at moon dough--a substance that mimics the dusty surface of the moon--to investigate lunar geology and crater formation.

TEKS:

SCI 5.8: The student is expected to identify and compare the physical characteristics of the sun, earth, and moon.

SCI 6.11 A: The student is expected to describe the physical properties, locations, and movements of the sun, planets, moons, meteors, asteroids, and comets.

SCI 6.11 B: The student is expected to understand that gravity is the force that governs the motion of our solar system.

Materials:

- Aluminum pan or baking dish
- “Asteroids” -- small rocks, ping pong balls, bouncy balls, etc.
- 4 cups flour (Tip: this can be made gluten-free by using corn flour)
- Gallon-sized storage bag or airtight container
- Measuring cup
- Mixing bowl
- Spoon
- ½ cup vegetable, canola, or baby oil

How To:

1. In a mixing bowl, combine 4 cups of flour with ½ cup of oil. Use a spoon (or your hands!) to mix well. The flour should stick together when you squeeze it. If needed, add a bit more oil.
2. Pour the moon dough into the aluminum pan or baking dish and smooth the surface.
3. Throw mini “asteroids” at the moon dough and gently remove. Experiment using different throwing angles and force for each object you throw. Notice the various shapes that each “asteroid” creates on the surface of the moon dough.

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4. Store moon dough in an airtight bag or container to re-use again and again!

STEM Explanation:

A crater is a bowl-shaped, hollowed-out area, produced by the impact of a space rock, volcanic activity, or an explosion. Most of the craters on the moon are impact craters, or ones produced by the collision of an asteroid or meteoroid with the moon's surface, causing the rocky layer of the moon to compress. Immediately after impact, pulverized rock and shattered material shoot upward and fall back down around the rim of the newly-formed crater. The moon's craters range in size from microscopic indentations to gigantic dome-shaped valleys over 180 miles in diameter!

Although the moon is a smaller target for asteroids and meteoroids than the earth, the moon is much more susceptible to being hit by space objects. We can see thousands of craters on the moon, but we only know of about 128 on the earth. This is primarily due to three things: atmosphere, erosion, and plate tectonics. The earth has an atmosphere that protects us from getting hit by space rocks, while the moon lacks this atmospheric protection. Additionally, with virtually no atmosphere, the moon also has no wind, weather, or plants to help erode, or wear down, evidence of impact craters. In fact, the footprints of astronauts that walked on the moon in 1969 are still there today! Finally, because of plate tectonics, the surface of the earth is constantly changing, erasing evidence of past impact craters. The moon does not have the same plate movement, so craters stay around for billions of years!

Career Connection:

Planetary scientists study planets, moons, and planetary systems to discover the processes that form them. They explore objects ranging in size from micrometeoroids to gas giants, aiming to determine what they are made of, how they are made, and their history.

Resources:

<http://www.icanteachmychild.com/simple-science-experiment-for-kids-why-are-there-craters-on-the-moon/>
<https://spaceplace.nasa.gov/craters/en/>
<https://afewshortcuts.com/how-to-make-moon-dough/>
<https://www.nationalgeographic.org/encyclopedia/crater/>

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