



## SCULPTING LUNAR GEOLOGY

### BIG IDEA:

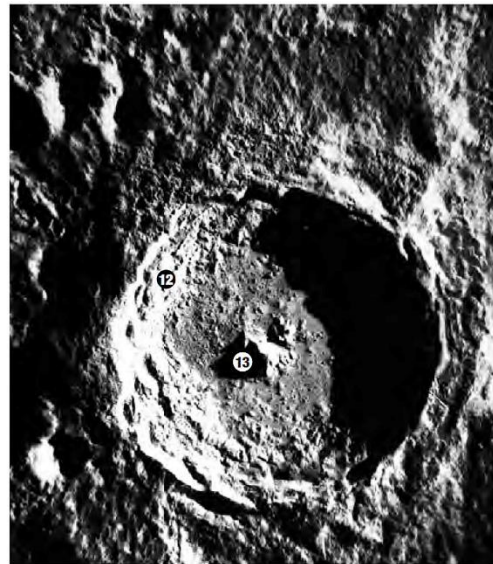
- The Moon has many different kinds of landforms. Some, like mountains, ridges, and volcanic craters, are similar to landforms on Earth. Others, like impact craters, are much more common on the Moon.
- The Moon's landforms are important to consider in planning the locations of missions to the Moon.

### AUDIENCE:

- Families
- Students, 3<sup>rd</sup> grade and older

### WHAT YOU NEED:

- 2–3 plastic or aluminum trays (8" x 12" size works well)
- Modeling clay or playdough (enough to make a thick layer in each tray)\*
- [Lunar Landform Fact Sheet](#) (2 pages)
- [Lunar Surface Photos](#) (8 pages)
- Toothpicks
- (Optional) Aerial photos of Earth landforms such as mountains, hills, and volcanoes



\*See the Tips and Tricks section below for a recipe to make your own reusable dough.

### SET-UP:

- Watch the [Activity Demonstration](#) video to familiarize yourself with the activity.
- Cover the bottom of each tray with a thick layer of dough. Have extra clay or dough available for participants to add during the activity.

### WHAT TO DO:

1. Ask participants to look at the lunar surface photos and landform fact sheet. Encourage them to make observations about the features they notice in the photos.
  - What features do you see in this photo? What do you think they are?
  - Do they remind you of anything you've seen (or seen pictures of) here on Earth?



- (If using Earth photos) Do any of these Earth landforms look like the ones on the Moon?
2. Explain that humans have been to the Moon before and are planning to go again as part of the Artemis mission. Ask participants to think about the role the Moon's landforms might play in planning those missions.
    - Why do you think the Moon's landscape is important when you're planning a mission to the Moon?
    - If you were picking a location for astronauts to land and live on the Moon, what features would you look for? Why?
    - Which of these photos would you choose as a landing site? Why did you choose that one?
  3. Invite participants to use the trays and modeling clay to make a model of the photo they chose for their landing site (or another photo, if they prefer). Encourage older participants to think about accurate scale; for example, if a crater takes up one quarter of the photo, it should take up one quarter of their tray.
    - Which parts of the landscape in the photo do you think are the tallest? Which are the shortest or flattest? How can you tell?
    - What other features or landforms do you see in the photo that you could add to your model?
  4. Invite participants to use toothpicks to mark important locations for a lunar research mission, such as landing site, habitat location, and areas for research and exploration.
    - Where on your model would be the best place to build a base for the astronauts to live and work in? Why do you think that?
    - Which Moon features do you think the astronauts should explore or research? Why?

### TIPS & TRICKS:

- If you want to make your own dough for this model, [this recipe](#) makes a dough that is long lasting, not sticky, and doesn't dry out unless left out for several days.
- *If you are using this activity as part of an out-of-school-time program:*
  - Provide a variety of materials (flour, cornstarch, cocoa powder, sand, clay, gravel, etc.) and let students create their own mixture for their Moon surface.
  - As a more in-depth activity for 5<sup>th</sup> grade and up, incorporate measurement and actual Moon elevation data to create accurately scaled models. See the [source activity](#) for a lesson plan and elevation data.
- See the Mission2Mars [Additional Resources](#) document for related videos, printable resources, and other activities.



### **CLEAN-UP:**

- Store the dough in an airtight container between uses.

### **WHAT TO KNOW:**

- The Earth and the Moon are basically the same age and have experienced many of the same things – volcanoes and lava flows, formation of mountains, and impacts by meteorites. One big difference between them is that the Earth has both an atmosphere (air) and liquid water. Air and water constantly change the Earth's surface, wearing away surface features like craters, and creating new ones like canyons. Because the Moon has no atmosphere or running water, its surface still shows craters from impacts that happened millions of years ago!
- The [Artemis program](#) is NASA's Moon exploration program. Astronauts will land on the Moon and stay there for extended periods of time, exploring the Moon's surface, looking for water and other useful resources, and testing new technologies for living and working in space. Then NASA will use what we learn on the Moon to plan for sending the first astronauts to Mars.

**SOURCE:** NASA, [Sculpting Lunar Geology](#)