

Making Craters Activity
AFTERNOON SESSIONS ONLY
Astronomy Day International Year of Astronomy 2009
McDonald Observatory

INTRODUCTION

There are craters of varying size on many moons in our Solar System. In this brief activity, your students will experiment to discover how craters are formed, and identify impact crater features such as the rim of mountains along the edge, and the streaks or rays that fan out from the impact site.

OBJECTIVE

Measure the diameter of the crater basin, and the length of the crater rays made from dropping meteoroids (rocks) of different size from a height of 1 meter. Determine if the size of the rock affects the size of the crater and length of crater rays.

WHAT YOU NEED

For the class:

1 or more brooms and dustpans to clean up spills. As long as you follow these instructions carefully, and your students don't **throw** the rocks into the flour or drop them a great distance, you shouldn't have much of a mess.

For your class, you may choose to have only one station from which you drop rocks and form craters as a demonstration for the class. Or, you may choose to have more than one station for student groups of 2-4. Whatever you decide, each station should be equipped with the following: (See picture of materials on website)

1. Old bed sheet, or lots of newspaper on floor. If you can cover an area 1.5-2 square meters or more in size, you should be able to fold up the sheet when you are done and minimize the mess.

2. A shallow basin, to be filled with about 4 cm of flour.

Examples: a dishpan, a heavy aluminum roasting pan, cardboard box, or a large plastic tub. The side-walls of your basin should be between 13-15 cm.

3. One container of instant chocolate milk mix. Real cocoa works, but you'll have to use a sifter because it tends to clump and over-darken the flour too quickly.

4. Sufficient flour to fill your basin 4-5 cm deep.

Teacher-Making Craters activity- Adapted from LHS GEMS "Moons of Jupiter "

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5. Three rocks: small, medium, and large.
Diameters should be about 1 cm, 2 cm, and 4 cm.
6. One spoon, to scoop out rocks.
7. One pencil
8. "Making craters" activity sheet
9. Meter stick for measuring diameter of crater and length of crater rays.

MAKING THE CRATERS

1. Sprinkle a medium/light coating of instant chocolate milk mix on the surface of the flour to create a contrast that will help make changes more visible.
2. Have one student hold the meter stick next to the basin, while another student holds the rock at the 1-meter height. Tell the students that they are to drop, NOT THROW, their rock into the flour.
3. After the meteoroid is dropped, students observe what happens to the flour, and measure the diameter of the crater basin, and the length of the crater rays. Students repeat this procedure until they've conducted two trials for each sized rock.