Craters

NC Standard Course of Study Objectives:

3.04 Use appropriate tools to make observations of the moon.

Essential Question: How are craters on the moon formed?

Time: one 45-minute period

Information to give to students either in the engaging section or exploring section.

Craters are formed when **asteroids** and **meteors** hit any celestial body. Craters vary in size depending on the speed and size of the object with which it collides. Craters formed on the moon are not changed by the elements such as wind and rain as they are on Earth. On Earth, there is an atmosphere that causes the meteors to create friction when they enter our atmosphere. This causes the meteors to heat up hot enough to create a glow that we call shooting stars. Large meteors do land on Earth (they are called **meteorites** when they land) and create **impact craters**.

Materials:

Per Group:
- pie pan
- flour
- instant chocolate milk powder mix
- marbles
- ruler

Per student:
- science notebook

Engage: Show students pictures of the moon with craters visible. Ask students how the craters were formed. Discuss student's predictions.

Explore: Give each group a pie pan that has flour mix spread in it about one inch deep. Sprinkle a light coating of instant chocolate milk mix on the surface of the flour to create a contrast that will help make changes more visible. Tell students that they will be making a model of the moon's

surface using the marbles. Ask students how they can make craters in the flour mixture. Discuss options until someone suggests dropping them in the pan. Tell students that they will be dropping and not throwing the marbles in the pan. Allow students opportunity to drop the marbles in the flour. Do not smooth the flour after each turn. This will show how the moon has so many craters.

Explain: Discuss student's findings. Have them measure the different diameter sizes of the craters and record information in a data table like the one below with height of drop and size of crater.

Craters	Crater Diameter	Drop Height
Crater 1		
Crater 2		
Crater 3		
Crater 4		

Elaborate: Use different sized balls to see the different sizes in impact craters. Investigate speed as the students drop a ball that is the same size from different heights. The ball will gain speed as it drops. Ask students to identify changes in the craters. Have students to safely throw marble into pie pan and discuss the changes in crater size.

Evaluate: Use the data table in science notebook with measurements to assess students' understanding. Have students find and label crater from a picture of the moon.