

**WORKSHEET**  
Science on Saturday

**Return to Apollo: Geologic Evolution of a New Moon**

**Video Links:**

[Return to Apollo: Geologic Evolution of a New Moon](#)

**Presenters:**

Lars Borg – LLNL Scientist

Tom Shefler – Science Teacher – Granada High School

**Student Lecture Notes:**

1. What event caused Earth to acquire a Moon?
  - a. The Moon formed somewhere else in the Solar System and was captured by Earth's gravity.
  - b. A Mars-sized body struck the Earth, spewing out debris which would form the Moon
  - c. The Earth spun so fast the material that formed the Moon was flung outward by centrifugal forces.
  - d. The Earth is in fact a giant space chicken and the Moon is its egg.
  
2. What part of Earth's surface resembles the surface of the Moon soon after it formed?
  - a. Saltwater ocean
  - b. Desert sand dunes
  - c. A lava lake in Hawai'i
  - d. A Starbucks across the street from another Starbucks
  
3. What was the first material to solidify in the Moon? \_\_\_\_\_
  
4. After the various layers solidified, what drove the mixing of different materials inside the mantle of the moon?
  
5. True or False: We landed one or more Apollo missions on the far side of the Moon. \_\_\_\_\_
  
6. Two isotopes of the same element have the same number of \_\_\_\_\_ but a different number of \_\_\_\_\_
  
7. How many half-lives must have elapsed if you are left with 1/8 of the unstable radioactive particles you started with?
  
8. Why is radioactive samarium useful for measuring the age of the Moon whereas radioactive carbon is not?
  - a. Samarium has a MUCH longer half-life.
  - b. The Moon has more samarium than Carbon.
  - c. The radiation from samarium is much easier to detect with a Geiger counter.
  - d. The verdant compressed curds of milk of which the Moon is composed used up all the carbon.
  
9. Which turned out to be wrong?
  - a. The accepted model of how the Moon solidified.
  - b. The initial determinations of the ages of Moon rocks
  
10. What is the current best estimate for the age of the Moon? \_\_\_\_\_