

Quest Through the Archives

Directions: After reading the article “[How Earth got its moon](http://www.sciencenews.org),” use the archives at www.sciencenews.org to answer these questions:

1. Isotopic analysis is one tool for comparing the origin of different materials. Isotopes of elements are also used in radioactive dating to determine the age of materials and artifacts. Search for another article, in addition to “How Earth got its moon,” that discusses how researchers use isotopes to help determine when Earth’s moon formed. What isotopes did the article mention were used for dating purposes?
2. The Apollo missions provided samples of moon material that helped researchers form hypotheses about the moon’s origin. Search for an article about the return of the Apollo 11 mission. What information about the moon was determined from collected materials?
3. Search for another article that discusses the moon’s composition and explain it.

Responses to Quest Through the Archives

- 1. Isotopic analysis is one tool for comparing the origin of different materials. Isotopes of elements are also used in radioactive dating to determine the age of materials and artifacts. Search for another article, in addition to “How Earth got its moon,” that discusses how researchers use isotopes to help determine when Earth’s moon formed. What isotopes did the article mention were used for dating purposes?** Possible student response: “[The moon is still old](#),” published 1/11/2017, says that researchers examined the isotopic composition of hafnium as well amounts of lead, uranium and lutetium contained in the mineral zircon found in samples that Apollo 14 astronauts brought back from the moon.
- 2. The Apollo missions provided samples of moon material that helped researchers form hypotheses about the moon’s origin. Search for an article about the return of the Apollo 11 mission. What information about the moon was determined from collected materials?** Possible student response: “[Apollo returns: the work begins](#),” published 8/2/1969, discusses scientists’ agreement that the rocks were igneous and probably formed from the heat of meteor impacts or possibly by volcanic activity. Dissimilar to the concentration of titanium found in Earth, large amounts of titanium were observed from moon rock. Glasslike beads were abundant and suggested that meteorite impacts disturbed silicon-rich deposits on the moon’s surface.
- 3. Search for another article that discusses the moon’s composition and explain it.** Possible student response: “[Iron-loving elements tell stories of Earth’s history](#),” published 7/27/2016, discusses the idea that rare elements such as gold, platinum and iridium are attracted to Earth’s iron core. Studying these iron-loving, or siderophile, elements may help scientists determine how the Earth’s core formed.