SECTION: MOONS

1. satellite
2. eclipse
3. C
4. The current theory for the origin of the moon is that a large, Mars-sized body collided with Earth during Earth's formation. The collision ejected part of Earth's mantle into orbit around Earth. This material became the moon.
5. Sample answer: During a lunar eclipse, Earth comes between the sun and the moon, and Earth's shadow falls on the moon. During a solar eclipse, the moon comes between Earth and the sun, and the moon's shadow falls on Earth.
6. Lunar phases result from the moon's changing position relative to Earth and the sun. As the moon orbits Earth, the amount of sunlight on the side of the moon that faces Earth changes.
7. Answers may vary. Sample answer: Dating the lunar rock will determine the age of the moon. Then, scientists can compare the amount of cratering on the moon's surface with the amount of cratering on Mercury's surface to estimate the age of Mercury.
8. Sample answer: Charon's period of revolution is about the same as Pluto's period of rotation. So, Charon remains in a fixed position in Pluto's sky. The moon's period of revolution is not the same as Earth's period of rotation, so the moon moves across Earth's sky.
9. a solar eclipse
10. The moon is between Earth and the sun. The moon is casting a shadow on Earth. As viewed from Earth, the sun would be obscured by the moon.
11. Sketches should illustrate a lunar eclipse.

SECTION: SMALL BODIES IN THE SOLAR SYSTEM

1. Sample answer: A comet is a small body of ice, rock, and dust that forms a tail when it passes close to the sun. An asteroid is a small, rocky body that does not have much ice and does not form a tail.
2. Sample answer. A meteor is a streak of light that results when a meteoroid burns up in Earth's atmosphere. A meteorite is a meteoroid that reaches Earth's surface without burning up completely.
3. B
4. Sample answer; Comets, asteroids, and meteoroids represent the leftover building blocks of the solar system. Studying these bodies will help scientists learn about the composition of the solar system.
5. A comet's ion tail is blown away from the sun by the solar wind, but its dust tail is not. So, a comet's two tails may point in different directions.
6. Answers may vary. Sample answer: A cosmic impact can change the global climate, causing plants and animals not suited to the new climate to die.
7. Sample answer: Meteoroids are similar to asteroids but are much smaller.
8. The asteroid belt is located between Mars and Jupiter.
9. The Torino scale is a system that enables scientists to rate the hazard level of an object moving toward Earth.
10. Answers may vary. Answers should include that most objects burn up in Earth's atmosphere before striking Earth's surface. The moon does not have an atmosphere to slow objects down. In addition, erosion and plate tectonics cause the surface features of Earth to change.
11. 71.5 km (55 km× 0.30 = 16.5 km; 55 km + 16.5 km = 71.5 km)
12. Sample answer: yes; Tracking asteroids and comets that have Earth-crossing orbits is important because doing so could help people prepare for a possible disaster.
13. Answers may vary. Sample answer: Because large impacts occur every few thousand years, it is somewhat likely that scientists will discover a red-category object in the next 500 years.

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