

## Moons and Their Features Answer Key

1. Scientists have detected magnetic field interactions and surface cracks suggesting liquid water under Europa's ice. This is important because it could provide conditions suitable for life.
2. Titan's atmosphere is thick and nitrogen-rich, with methane clouds and rain. This creates rivers and lakes of liquid methane and ethane on its surface.
3. Io's volcanic activity is caused by tidal heating from the strong gravitational pull of Jupiter and its neighboring moons.
4. Galileo Galilei discovered the four largest moons of Jupiter in 1610. This challenged the idea that everything orbits Earth and supported the heliocentric model.
5. A retrograde orbit means the moon orbits in the opposite direction of its planet's rotation. Triton, Neptune's largest moon, has this feature.
6. Most Moon craters formed from asteroid and meteorite impacts. They reveal a long history of bombardment in the early Solar System.
7. Enceladus has geysers that release water vapor, ice, and organic molecules. This suggests the presence of a subsurface ocean.
8. Callisto's surface is heavily cratered and shows little geological activity, unlike Europa's smooth, ice-covered, active surface.
9. Phobos is slowly spiraling toward Mars and will either crash into the planet or break apart into a ring in tens of millions of years.
10. The Apollo missions aimed to land humans on the Moon and return them safely to Earth. They collected lunar rock samples, installed scientific instruments, and advanced space exploration technology.