

Name _____

Hunting for Alien Life: Are We Alone in the Universe?

Open-Ended Response Answer Key

1. Answers may vary but could include descriptions of advanced telescopes, sample-collecting tools, and devices to analyze the planet's atmosphere and surface. Signs of extraterrestrial life might include the presence of organic molecules, evidence of past water, or unusual chemical signatures.
2. Challenges in searching for life on other celestial bodies in our solar system include extreme conditions, radiation, and the need for specialized equipment. For Mars, the challenges include the thin atmosphere and harsh surface conditions, while for Europa, it's the thick ice covering the ocean.
3. Possible explanations for the lack of definitive evidence of extraterrestrial life include the vastness of the universe, the limited reach of our current technology, and the possibility that life may exist in forms we don't yet recognize. To continue the search, scientists can develop more advanced instruments and explore a wider range of celestial bodies.
4. Precautions for exploring Europa's subsurface ocean might include ensuring the spacecraft is sterilized to prevent contamination, designing specialized drills to penetrate the ice, and equipping the astronaut with protective suits against radiation and extreme cold. Discoveries could include signs of microbial life or unique chemical compositions in the subsurface ocean.

