

Name _____

A Quest Beyond Earth

Short Answer Key

1. The transit method involves observing a star and looking for tiny dips in its brightness when an exoplanet passes in front of it. By measuring these dimming events, astronomers can determine the exoplanet's size, orbit, and other characteristics.
2. The radial velocity method involves detecting a star's wobble caused by the gravitational pull of an orbiting exoplanet. By measuring the star's slight back-and-forth motion, astronomers can deduce the presence, size, and orbital parameters of the exoplanet.
3. The habitable zone is crucial because it represents the region around a star where conditions may be suitable for liquid water to exist on an exoplanet's surface. Liquid water is a fundamental ingredient for life as we know it, making these planets more promising candidates for hosting life.
4. Biosignatures are detectable signs or markers in the atmosphere or surface of an exoplanet that suggest the presence of life. They are significant because they provide indirect evidence of potential extraterrestrial life forms, such as microbial organisms, by indicating the presence of specific gases or compounds associated with life.
5. The James Webb Space Telescope (JWST) holds promise for advancing our understanding of exoplanets and their atmospheres. Its advanced instruments will allow astronomers to analyze exoplanet atmospheres in detail, search for biosignatures, and explore their compositions, potentially bringing us closer to discovering extraterrestrial life.

