

Name _____

Can a Telescope Reveal Distant Galaxies and Nebulae?

Open-Ended Response Answer Key

1. In a suburban area with moderate light pollution, you can maximize your stargazing experience by choosing to observe bright planets like Jupiter and Saturn, which are less affected by light pollution. Additionally, you can focus on open star clusters like the Pleiades and double stars that remain visible even under light-polluted skies. Investing in light pollution filters for your telescope can help improve contrast and visibility. To reduce light pollution, you can also advocate for responsible outdoor lighting in your community and use shields on your own outdoor lights.
2. The Orion Nebula (M42) is a stunning example of a nebula visible to the naked eye. It appears as a bright patch in Orion's sword, with intricate, wispy structures. It is a stellar nursery where massive, young stars are being born. This nebula has been a target of scientific study and astrophotography, revealing details of star formation processes within its clouds.
3. Light pollution significantly affects the ability to observe distant galaxies and nebulae by washing out the faint light emitted by these objects. To combat light pollution, individuals can use shields on outdoor lights to direct light downward and reduce glare. Communities can implement outdoor lighting ordinances to limit excessive lighting and promote responsible lighting practices. Preserving dark-sky areas and promoting public awareness about light pollution's impacts are essential steps in mitigating its effects.
4. When advising a friend on selecting an appropriate telescope for observing distant galaxies and nebulae, consider factors like aperture size, portability, and budget constraints. A telescope with a larger aperture (e.g., 8 inches or more) is preferable for better light-gathering ability. Portability ensures ease of transportation to darker locations. For budget-conscious beginners, there are good-quality Dobsonian telescopes available at reasonable prices. Additionally, suggest investing in a star chart or a planetarium app to help locate celestial objects in the night sky.

