Name _____

The Brilliant Beings Called Stars

Open-Ended Response Answer Key

1. Small stars like our Sun eventually expand into red giants, shedding their outer layers to become white dwarfs. In contrast, large stars (supergiants) can end in spectacular supernova explosions, leaving behind remnants like neutron stars or black holes. Small stars have less dramatic endings compared to the explosive finales of large stars.
2. To determine the sizes and lifecycle stages of the blue supergiant and red dwarf, an astronomer would consider their temperatures and colors. The blue supergiant is hot and massive, indicating a relatively young and short-lived star. The red dwarf is cooler and smaller, suggesting it is a long-lived star in a later stage of its lifecycle.
3. Stars play a crucial role in producing elements through stellar nucleosynthesis. Elements heavier than helium, like carbon, oxygen, and iron, are created in the cores of massive stars during their lifetimes and released into space during supernova explosions. These elements are then incorporated into planets, and even life forms, contributing to the diversity of the universe.
4. The constellation Orion, prominent in Greek mythology, represents a hunter. It was used by ancient sailors for navigation and has been a source of inspiration for numerous stories and legends. Orion's Belt, a trio of stars, is one of its most recognizable features and has held cultural significance across different civilizations.