

Describe essential ideas about the composition and structure of the universe and the Earth's place in it.

- **Compare various planets' characteristics.**
- **Describe basic star types and identify the sun as a star type.**
- **Describe and differentiate comets, asteroids, and meteors**
- **Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe.**
- **Illustrate how the positions of the stars and constellations change in relation to the Earth during an evening and from month to month.**
- **Identify equipment and instruments that explore the universe.**
- **Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy.**
- **Identify and articulate space program efforts to investigate possibilities of living in space and on other planets.**

Explain essential ideas about the composition and structure of the universe.

- **Compare the basic structures of the universe (e.g., galaxy types, nova, black holes, and neutron stars).**
- **Describe the structure and life-cycle of stars using the Hertzsprung-Russell diagram.**
- **Describe the nuclear processes involved in energy production in a star.**
- **Explain the "red-shift" and Hubble's use of it to determine stellar distance and movement.**
- **Compare absolute versus apparent star magnitude and their relation to stellar distance.**
- **Explain the impact of the Copernican and Newtonian thinking on our view of the universe.**
- **Identify and analyze the findings of several space instruments in regard to the extent and composition of the solar system and universe.**