

Name: _____ Date: _____

Cosmic Clues: Deciphering the Vast Universe for Seniors

Examine the mechanics of Hubble's Law and galactic structures to understand how astrophysicists map the history of our solar neighborhood and beyond.

1. Which specific phenomenon provides evidence that the universe is expanding, as observed by Edwin Hubble in the 1920s?

- A. Gravitational lensing
- B. Redshift of distant galaxies
- C. Blue-shift of the Andromeda galaxy
- D. Stellar parallax

2. The Sombrero Galaxy (M104) is characterized by a prominent dust lane and a massive central bulge, categorizing it as which type of galaxy?

- A. Elliptical
- B. Irregular
- C. Spiral
- D. Quasar

3. True or False: The 'Great Attractor' is a massive gravitational anomaly in intergalactic space that is pulling the Milky Way toward it.

- A. True
- B. False

4. What is the primary difference between a Spiral galaxy and an Elliptical galaxy regarding star formation?

- A. Ellipticals have more active star-forming regions.
- B. Spirals contain mostly old, low-mass stars.
- C. Spirals have abundant gas and dust for new stars.
- D. There is no difference in star formation rates.

5. The Boötes Void is a massive, nearly empty region of space that contains very few galaxies. What is the technical term for these regions in the cosmic web?

- A. Black holes
- B. Voids
- C. Filaments
- D. Nebulae

6. True or False: In about 4.5 billion years, the Milky Way is predicted to collide and merge with the Andromeda Galaxy.

- A. True

Name: _____ Date: _____

B. False

7. Which of the following describes the 'Centaurus A' galaxy, known for its intense radio emissions and central black hole activity?

- A. A tranquil dwarf galaxy
- B. An active galactic nucleus (AGN)
- C. A reflection nebula
- D. A planetary system

8. What is the name of the 'standard candle' or type of pulsating star used to measure the distance to other galaxies?

- A. Red Giant
- B. White Dwarf
- C. Cepheid Variable
- D. Neutron Star

9. True or False: Dark matter can be seen directly through optical telescopes because it emits high-energy visible light.

- A. True
- B. False

10. Which component makes up approximately 68% of the universe and is responsible for its accelerated expansion?

- A. Baryonic matter
- B. Dark matter
- C. Dark energy
- D. Cosmic dust