
Exercise G3: Redshift and the Expansion of the Universe

Student name: _____ Class: _____ Date: _____

Check the box with the correct answer.

Question 1: The Andromeda galaxy is the most distant celestial object that can be seen with the unaided eye. About how far away from the Milky Way is the Andromeda galaxy? Hint: Point at the center of the galaxy with your cursor.

- a. 9.2 million light years
- b. 2.9 million light years
- c. 9.2 billion light years
- d. 2.9 billion light years

Question 2: Use Hubble's Law to calculate the recessional velocity of the Virgo cluster of galaxies. How fast are these galaxies receding away from us?

- a. 1200 km/sec
- b. 2400 km/sec
- c. 120 km/sec
- d. 240 km/sec

Question 3: Using the formula $z=v/c$, what is the redshift of the Virgo cluster of galaxies?

- a. 0.04
- b. 0.004
- c. 0.0004
- d. 0.4

Question 4: What is the calculated recessional velocity of the Abell cluster of galaxies?

- a. 24,000 km/sec
- b. 2,400 km/sec
- c. 4,200 km/sec
- d. 42,000 km/sec

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Question 5: For the Abell cluster of galaxies, $z = 0.14$ and for the Virgo cluster $z = 0.004$. From this limited sample, what can we say about the relationship between distance and redshift?

- a. Smaller redshift values correspond to greater distance.
- b. Larger redshift values correspond to less distance.
- c. Larger redshift values correspond to greater distance.
- d. There is no relationship between redshift and distance.

Question 6: Using the diagram for reference, what type of galaxy is NGC1317?

- a. E5
- b. SBa
- c. S0
- d. Sa