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. How far away from the Milky Way is the Andromeda Galaxy located? ***Hint:*** *Press the Info button in the selection label.*

- ☐ **a.** 9.2 million light years
- ☐ **b.** 2.5 million light years
- ☐ **c.** 9.2 billion light years
- ☐ **d.** 2.5 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.** 1240 km/sec
- ☐ **b.** 2480 km/sec
- ☐ **c.** 124 km/sec
- ☐ **d.** 1.24 km/sec

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

- ☐ **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

Question 5: For the Abell cluster of galaxies z = 0.14, and for the Virgo cluster z = 0.004. What can be said about the relationship between distance and redshift from this small sample of redshifts?

- ☐ **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.