Answer Key: Valley Forge Invitational 2011 School_____ Schl #____

1. Name: _____ Hubble Class: _____
2. Name: _____ Classify the DSO: _____
3. . Name: _____ Classify the DSO: _____
4. Name: _____ Classify the DSO: _____
5. Name: _____ Classify the DSO: _____
6. Name: _____ Classify the DSO: _____

7. _____

8,. _____

9. _____

10. _____

11. _____

12_____

13. _____

15. _____

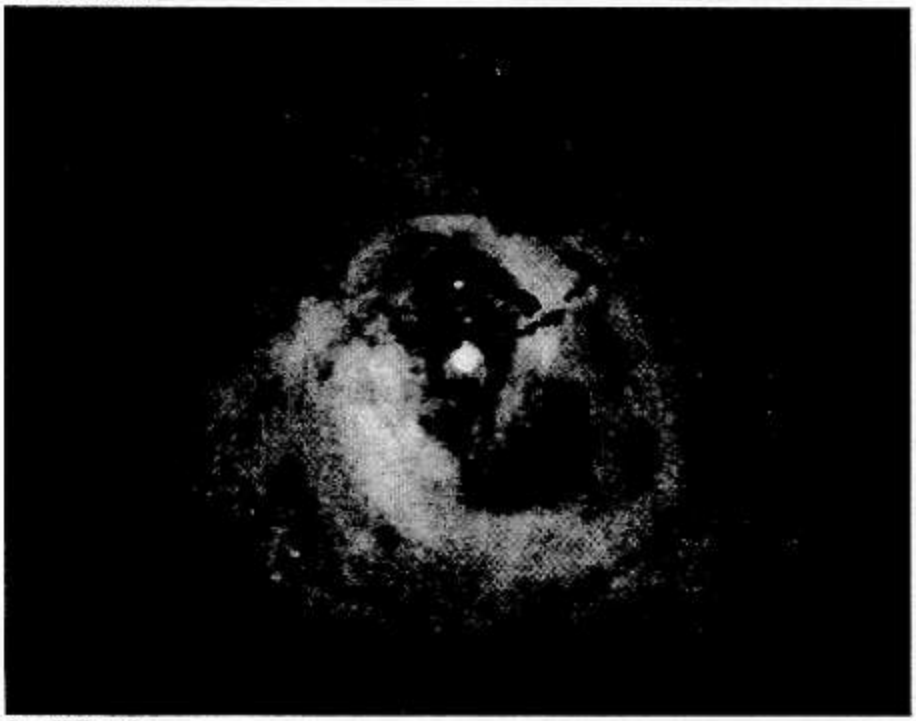
16. _____

17. First method _____ 2nd Method _____
EC Why are these values probably different?

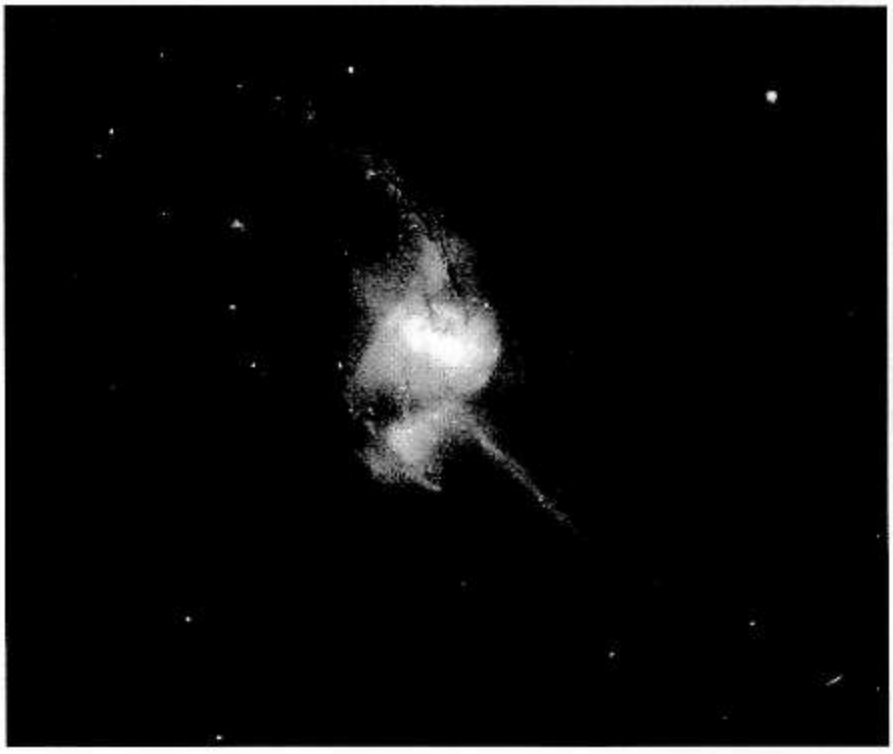
Valley Forge Invitational ---Astronomy 2011 School
Name:_____ # ___

Identify and classify the following DSOs.

1. What is



2. What is

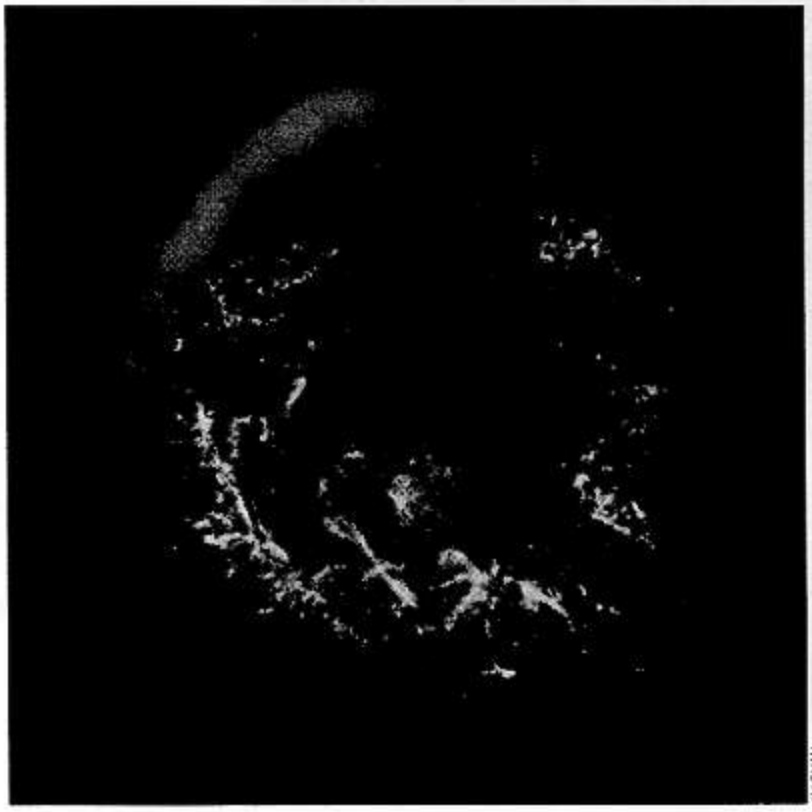


3. What is

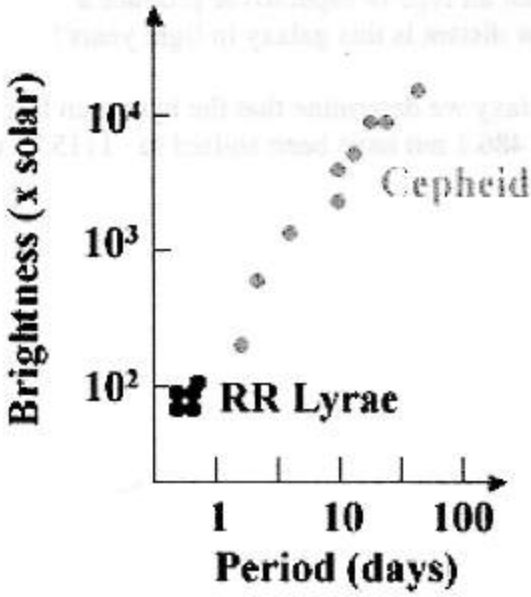
4. What is

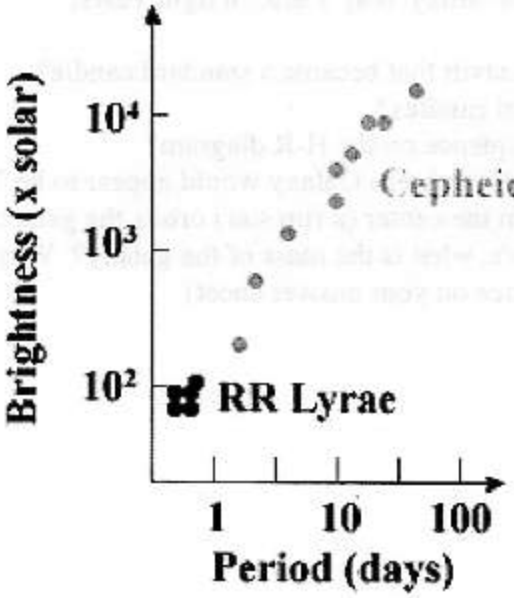
5. What is

6. What is



7. After a failure to find very many massive astronomical halo objects (MACHOs), the search for dark matter goes on. Current dark matter research is attempting to find
8. Which zone of a typical spiral galaxy is dominated by older yellow stars?
9. What is the typical thickness of the Milky Way's disc in light years
10. What is the approximate diameter of the Milky Way's disc in light years?
11. What does the M stand for in M-100?
12. What was the discovery of Henrietta Leavitt that became a standard candle?
13. In what galaxy did she find her standard candles?
14. What begins as a star joins the main sequence on the H-R diagram?
15. The mass of stars and nebula within the Sombrero Galaxy would appear to be 7 x 10^{41} kg If a star 30,000 light years from the center (a rim star) orbits the galactic center at a tangential velocity of 270 m/s, what is the mass of the galaxy? Why do the numbers differ? (Write a full sentence on your answer sheet)





16. A Cepheid variable star is found in M-100. Its period is close to 52 days. Compute the distance to M-100 in light years.
17. A Type Ia supernova occurs in a distant galaxy. Focusing the light from the galaxy onto a photometer in the Hubble Space Telescope we determine that the flux is 2.0 2x 10^{-16} W/m^2. Knowing that all type Ia supernovae produce a luminosity of about 1.0 x 10^{10} L$\odot$ how distant is this galaxy in light years?

Observing the light spectrum from this galaxy we determine that the hydrogen line at a wavelength of 656.3 nm and the line at 486.1 nm have been shifted to 1115.71 nm and 826.37 nm respectively.
What is the redshift value?

What is the galaxy's velocity?

What is its distance in light years if the Hubble's Law constant is 70 km/s/Mpc.