Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_\_ Ast: \_\_\_\_\_

**Stars & Galaxies Study Guide**

1. ***Vocabulary: Know the definitions of the following words.***
	1. ASTRONOMICAL UNIT (A.U.)
	2. LIGHT YEAR
	3. STAR
	4. NUCLEAR FUSION
	5. NEBULA
	6. APPARENT MAGNITUDE
	7. MAIN SEQUENCE STAR
	8. SUNSPOTS
	9. GALAXY
2. Proxima Centauri (the nearest star to our Sun) is about 4.3 light years away from Earth. Explain what this means.
3. Why are nebulae (plural for “nebula”) important celestial (space) regions?
4. What is the cause of nuclear fusion? Where does it occur in stars such as our Sun?
5. What occurs during nuclear fusion?
6. What is the result of nuclear fusion?
7. How are stars classified? How does this relate to the color of a star?
8. How do scientists measure the brightness of objects in the sky?
9. What characterizes a main-sequence star? (*What makes them different from Red Giants or Supergiants?*)
10. What determines how long a star remains a main-sequence star?
11. Describe the life cycle of a low-mass star.
12. Describe the life cycle of a high mass star.
13. About how long do scientists expect that our Sun will remain on the main sequence? How far through its lifespan do they think it is?
14. How did Galileo discover that our Sun rotates?
15. Describe the Sun’s location and motion in relation to the Milky Way.
16. What type of galaxy do we most likely live in?
17. What are some other “types” of galaxies?
18. Relate the following concepts: Galaxy, Galaxy Cluster, Nebula, Solar System, Star, Star Cluster, Universe
19. Scientists observe that all galaxies are moving away from one another. What does this lead them to conclude?

***For the following questions, refer to the H-R diagram shown to the right.***

1. What information is shown on an H-R diagram?
2. Where is our Sun in comparison to other stars on the H-R diagram?
3. Which letters on the HR diagram to the right correspond to the following types of stars?
* \_\_\_\_ Supergiants (*fuse heavier elements than carbon*)
* \_\_\_\_ Red Giants (*fuse helium to carbon*)
* \_\_\_\_ Main Sequence (*fuse hydrogen to helium*)
* \_\_\_\_ White Dwarf (*fuse heavier elements than carbon*)

***The “spectral class” categories are listed as letters along the bottom of the graph.***

1. Which spectral class identifies the hottest stars? What color are they?
2. Which spectral class identifies the coolest stars? What color are they?
3. Which spectral class is our Sun? What color is it?
4. Main-sequence stars are represented as a diagonal line on an H-R diagram. What does this indicate about the relationship between the temperature and brightness of main-sequence stars?
5. Based on the H-R Diagram shown, compare a Class-B main-sequence star to a Class-K main-sequence star.