

1. What variables does the HR Diagram compare?
Luminosity and temperature
2. Describe why it is possible to relate the temperature of a star to its luminosity, or brightness.
Stars that are hotter should be brighter than stars that are cooler.
3. Why is measuring the luminosity of stars difficult?
The distance of stars relative to earth makes it difficult to measure brightness since a bright star that is more distant might appear to be as bright as a more dim star closer to earth.
4. What star serves as a standard of comparison against which the luminosity of other stars is measured?
The sun.
5. Sketch and label the HR Diagram. Make sure to label the axes, the main sequence, white dwarves, giants, and super giants.
*Students should sketch the HR Diagram, from the website:
<http://www.smv.org/jims/l6a.htm>*
6. What do the letters at the bottom axis of the HR Diagram represent?
The class of star that corresponds to the color we observe from earth.
7. What are the four important things to note about the HR Diagram?
Most of the stars in the solar neighborhood fall on a well defined "Main Sequence"; there are very few "red giants"; there are very few "blue supergiants"; and there are a few faints stars near the bottom left of the diagram, which are white dwarfs.
8. Are blue stars hotter or cooler than red stars?
Cooler.
9. If a star has a luminosity of ten thousand (10,000), how many times brighter is it than the sun?
10,000 times.
10. How does the brightness of white dwarfs relate to that of the sun?
White dwarfs are less bright than the sun.
11. Describe the general trend between temperature and luminosity that the Main Sequence shows.
A hotter star should be brighter than a cooler star.

12. Why do giants differ from stars in the Main Sequence?
Although they are cool [red], they are very luminous, and therefore bright. In the Main Sequence, stars that are cool are not as luminous.
13. How do white dwarf stars differ from stars in the Main Sequence?
White dwarf stars are very hot [blue], but dim because they are so small.
14. Describe stars A, B, C, and D in terms of their brightness and temperature.
Star A is red and therefore, cool. Its luminosity is 1/1000 of that of the sun; therefore, it is dim. Star B is a hot, blue star and very luminous. Both A and B are on the Main Sequence. Star C is also a hot, blue star. However, it is very dim and therefore off the Main Sequence. Star D is a cool, red star but very luminous; it is also off the Main Sequence.
15. The sun is a Main Sequence star. The HR Diagram tells us the luminosity of the sun. Using this information and the HR Diagram, determine what the sun's class might be as a star.
The sun is a G star.