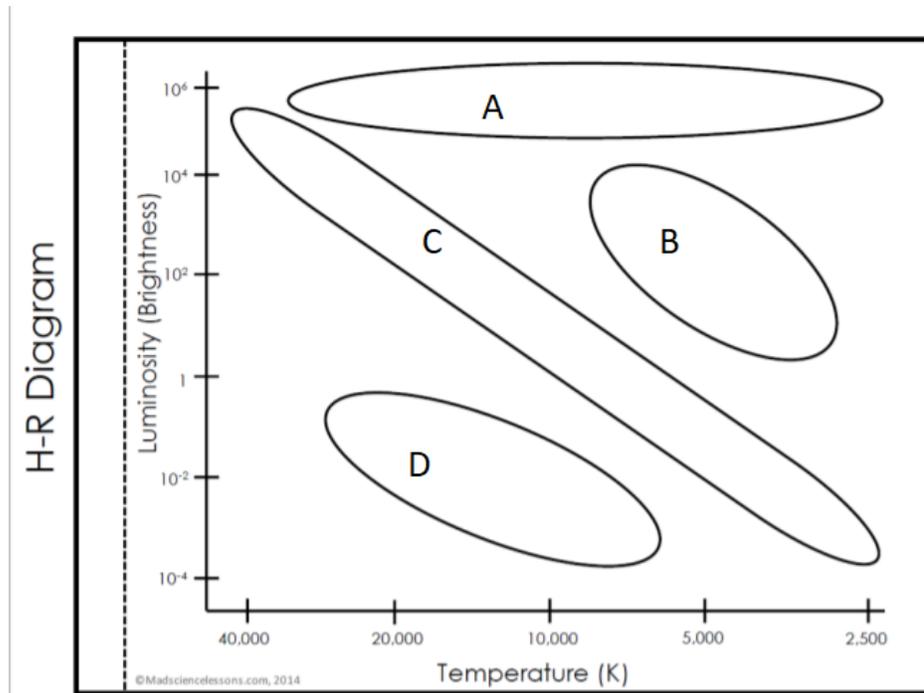


# h-r diagrams introduction

## Activity 1 – It's Organized How?

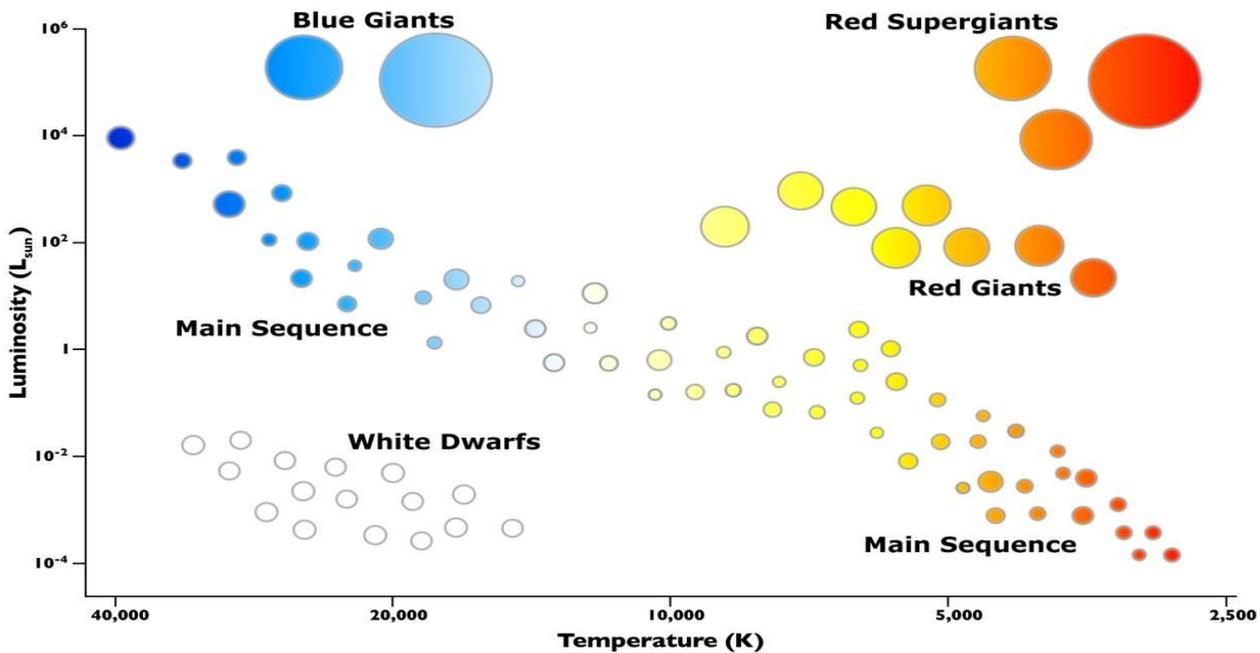
Directions – observe the basic diagram below and answer the questions that follow to learn how an HR diagram is organized.



1. What is measured on the x-axis?
2. What do you notice that is different about the numbers on the x-axis?
3. What is measured on the y-axis?
4. What is another word for luminosity?
5. What do you notice about that is different about the numbers on the y-axis?
6. Use the HR diagram at your table and label the following sections on the diagram (this means correctly fill in the circles in the diagram above with one of the following words).
  - a. White Dwarfs
  - b. Main Sequence
  - c. Red giants
  - d. Super Giants

## Activity 2 – Analyze the H-R Diagram

Observe the completed HR diagram to look for patterns in stars.



1. Our Sun has a temperature of 5800 K and a luminosity of  $1 \times 10^{-1}$ . Use a “★” symbol to plot the location of the Sun and label it “Sun” on your diagram.
2. Follow the guidelines to correctly add color to the H-R diagram above.
  - a. Vertically shade the diagram **red** between 2500K to 5000K – all stars in this area are reddish in color
  - b. Vertically shade the diagram **yellow** between 5000K – 8500K. All stars in his area are yellow-white in color
  - c. Vertically shade the diagram **light blue** between 8500K – 30,000K. All stars in this areas are blue-white in color
  - d. Vertically shade the diagram **purple** between 30,000K – 40,000K+. All stars in this area are violet in color
3. What factor affects the color of a star?
4. What factor affects the luminosity of a star?
5. Is the surface temperature of white dwarf stars higher or lower than red super giants?
6. What is the color of the stars with the highest surface temperature?

7. What is the color of the stars with the lowest surface temperature?
8. List the color of the stars from highest temperatures to lowest temperatures.
9. Most of the stars on the HR Diagram are classified as which type of star?
10. What type of star has a high temperature but a low luminosity?
11. What type of star has a high temperature and a high luminosity?
12. What type of star has a low temperature but a high luminosity?
13. What type of star has a low temperature and a low luminosity?
14. Plot the stars A - E. Once plotted determine their color and type.

Letter	Temperature	Luminosity	Color	Type of Star
<b>A</b>	6,000K	$10^{-1}$		
<b>B</b>	20,000K	$10^6$		
<b>C</b>	20,000K	$10^{-2}$		
<b>D</b>	2,500K	$10^6$		
<b>E</b>	4,000K	$10^2$		

15. In your own words, explain A) how the H-R Diagram is organized and B) what patterns (ccc) you notice by observing the diagram. Make sure to use complete sentences to answer the questions.

A)

B)