Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_

**Chapter 30: Telescopes, Stars & the Universe  
Review Study Guide**

1. Describe a light wave’s frequency. Compare a light wave with a really high frequency to a light wave with a really low frequency. Draw a picture of each.
2. Describe a light wave’s wavelength. Compare a light wave with a really long wavelength to a light wave with a really short wavelength. Draw a picture of both
3. How are frequency and wavelength related? For example, if I have a light wave with a really long wavelength, what should I expect about its frequency?
4. Using numbers 1 (the highest) to 7 (the lowest) rate the forms of light based on their amount of energy, level of danger, frequency, and wavelength. Use this 1 to 7 scale in each of the four columns below. \*\*Use the EM Spectrum in your notes to help you!\*\*

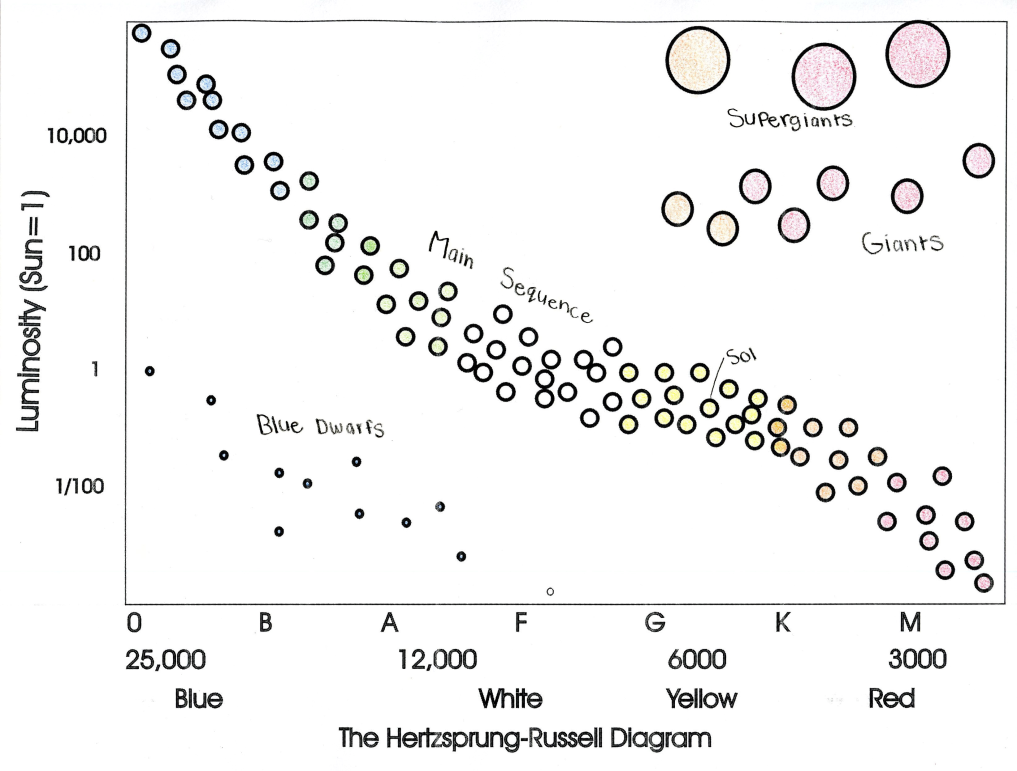
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Energy** | **Level of Danger** | **Frequency** | **Wavelength** |
| X-ray |  |  |  |  |
| Gamma |  |  |  |  |
| Infrared |  |  |  |  |
| Ultraviolet |  |  |  |  |
| Microwave |  |  |  |  |
| Radio |  |  |  |  |
| Visible Light |  |  |  |  |

1. Describe the composition of a young interstellar cloud. What is it made of? (Include the main element(s) also.)
2. Describe nuclear fusion.
   1. What is the beginning element?
   2. What is the last element resulting from fusion in the core of a star?
   3. There are many heavier/larger elements than those that can form in the core of a star – where does fusion occur that forms these larger elements?
3. Make flow charts for the life cycles of high-mass and low-mass stars.

**High Mass Stars**

**Low Mass Stars**

1. Which of the categories above (high mass or low mass) does our Sun fit into?
2. How does this mean that our Sun will die?



1. Using the HR diagram above:
   1. Circle the most luminous stars on the main sequence.
   2. What color are the stars you circled in part a?
   3. Put an ‘X’ next to the area with the least luminous star types on the main sequence.
   4. What color are the stars in the area that you ‘X-ed’?

1. What is the approximate temperature and luminosity of a “F-type” main sequence star?
2. What are the 3 main characteristics that are used to determine the type of star?

1.

2.

3.

1. What is the difference between absolute and apparent magnitude? Why is it important to use both of them when describing stars?
2. According to the Big Bang Theory:   
   1. What was the size of the universe like at the beginning?
   2. About how long ago did that size change?
   3. How did the size change? What happened?
   4. What are the two things that happened as the matter started to cool?
3. What is the evidence that is currently used to explain the occurrence of the Big Bang Theory?
4. One piece of evidence used for the expansion of the universe is “Red Shift”. What is a red shift? How can you determine/notice that a red shift is occurring?
5. Draw two waves to represent how light would normally look and how it would look when it is going through a red shift.