Stellar Evolution Project:
For this assignment, you will create a poster/study chart on the evolution of a stars life cycle. This poster will include a diagram that visually represents each stage of a star's life cycle. You will also have to write a description for each stage of the star's life cycle as well. The poster will be completed on a 11"x17" piece of paper.

Included with the diagram will be a paragraph/description of each stage of the life cycle. This description will be on the diagram and associated with each stage. Do not just list the descriptions on a different page, the back or randomly throughout the poster. This information should describe the important events that take place during this stage of the star's life cycle. I am particularly interested in the length of the stage (approximately), whether fusion is taking place & what elements are being fused if any, and what occurs as the stage ends and transitions into the next stage. If you are unsure of what to include, use the following list of questions to assist in your description of each stage.

Suggestions:

1. You will want to write the descriptions before you begin to put your diagram on the paper. If you start with the diagram first- you will run out of room and not be able to put the information on with proper organization.
2. You will want to get an idea of how much room the paragraphs will take up and plan a rough draft of your poster.
3. You may type the information and then print out small boxes of text to paste onto your diagram. You may use small font (such as 10pt) to make sure you have plenty of room for your information & diagram.
4. I want the information on the same side of the page as the diagram and I want each paragraph to be associated with the image/stage of the star's life cycle. Do not have the info for black holes on the left side of the paper and the diagram/drawing on the right side. They should be next to each other.
5. Make sure your diagram is well labeled so it is easy to tell which paragraph goes with which stage.
6. If you can not find the information in the book- you are welcome to use the internet for additional information/sources.

1. **Nebula**
    a. How long does this stage last?
    b. What elements are present?
    c. Why would the nebula begin to contract/shrink?
    d. As the matter collapses, what does the nebula look like and what does it do?

2. **Protostar**
    a. How long does this stage last?
    b. Describe the protostar
    c. Why does the protostar heat up? (two reasons)
    d. How hot must a protostar get in order to become a star?

3. **Main Sequence Star**
    a. How long does this stage last?
    b. How is the energy generated?
    c. Why is this stage stable?
    d. Which elements are being used up? What type of fusion?
    e. Why does this stage end & what happens?

4. **Giant/Supergiant Star**
    a. How long does this stage last?
    b. Why do main sequence stars become giants or supergiants?
    c. What type of fusion (which elements?)
    d. Where does the energy for fusion come from?
    e. Why is this star expanding?
    f. Why does this stage end & what happens?

5. **Planetary Nebula**
    a. How long does this stage last?
    b. What is a planetary nebula?
    c. Why is there no fusion?

6. **White Dwarf**
    a. How long does this stage last?
    b. Why is there no fusion? What elements exist?
    c. What happens to the giant star as it becomes a white dwarf?
    d. It is still glowing. Why?
    e. How is a black dwarf different and why are there probably no black dwarfs in the universe?

7. **Nova**
    a. How long does this stage last?
    b. What is a nova?
    c. Explain how novas occur.
    d. What type of fusion is occurring in a nova (which elements)?
    e. What happens when this stage is over?

8. **Supernova**
    a. How long does this stage last?
    b. Review what happens to a supergiant that would make its life come to an end.
    c. What produces the energy necessary for fusion of heavier elements to occur.
    d. Which elements are fusing?
    e. Why does this age end? What happens?

9. **Neutron Star**
    a. How long does this stage last?
    b. Explain what it is and what it is made of.
    c. Give an example of how dense it is.
    d. Why is there no fusion?

10. **Black Hole**
    a. How long does this stage last?
    b. Explain what a black hole is.
    c. What is the difference between a black hole & a neutron star?
       Why do some supernovas become black holes vs. neutron stars?
    d. What do they give off?
    e. Where do black holes usually exist?