

**Internet Investigation  
Star Life Cycle**

([http://aspire.cosmic-ray.org/labs/star\\_life/starlife\\_main.html](http://aspire.cosmic-ray.org/labs/star_life/starlife_main.html))

Proceed through the web pages at this site, answering the following questions as you go. The symbol ► tells you that you should be on a new page.

1. What human stages of life correspond to the following stages in the life of a star?  
Protostar \_\_\_\_\_  
Fusion ignition to Main Sequence \_\_\_\_\_  
Red Giant/Supergiant \_\_\_\_\_  
White Dwarf/Black Hole \_\_\_\_\_
2. At your age, if you were a star, what stage would you be in? \_\_\_\_\_
3. What do we call the birthplace of stars? \_\_\_\_\_ What is it made of? \_\_\_\_\_
4. How long ago was our sun formed? \_\_\_\_\_

► **Protostar**

5. What causes the “clumps” in the nebula to form? \_\_\_\_\_ What do these clumps become? \_\_\_\_\_
6. What is equilibrium in a star? \_\_\_\_\_
7. When does equilibrium occur in a protostar? \_\_\_\_\_
8. During star formation does gravity change? \_\_\_\_\_
9. During star formation does pressure change? \_\_\_\_\_ Name two things that cause it to change. \_\_\_\_\_
10. What are the two objects that a protostar could become?  
\_\_\_\_\_

► **Stars**

11. What is a star? \_\_\_\_\_
12. What are the fuels that stars use to create energy through fusion  
During the majority of their lives? \_\_\_\_\_  
Toward the end of their lives? \_\_\_\_\_  
Toward the end of their lives if they are a more massive star? \_\_\_\_\_
13. In what phase do the majority of stars live? \_\_\_\_\_

14. Complete the **Interactive Lab** which shows what happens to different size stars at the beginning of their life cycles.

	Small mass	Low mass	Medium mass	Massive
*Does this star reach Main Sequence?	_____	_____	_____	_____
*How long was it in Main Sequence?	_____	_____	_____	_____

15. Which has a longer life, bigger stars or smaller stars? Explain.

► **Stars**

► **Stars: The beginning of the end.**

16. When a star has burned off all of its \_\_\_\_\_ and started to burn \_\_\_\_\_, this is the beginning of the end. The burning of \_\_\_\_\_ releases a tremendous amount of energy and the outer shell has expanded in an effort to help heat from the star's core escape into space. At this point the star is called a \_\_\_\_\_.

► **Stars: The end of a star** (Use this page and the Interactive Lab at the bottom to answer these questions.)

17. How big is a low mass star? \_\_\_\_\_  
What stages does it go through? \_\_\_\_\_  
How big is it? \_\_\_\_\_  
What does it become in the end? \_\_\_\_\_

18. How big is a medium mass star? \_\_\_\_\_  
What stages does it go through? \_\_\_\_\_  
How big is it? \_\_\_\_\_  
What does it become in the end? \_\_\_\_\_

19. How big is a massive star? \_\_\_\_\_  
What happens to a massive star when it burns carbon very rapidly?  
\_\_\_\_\_  
What stages does a massive star go through? \_\_\_\_\_  
What does a massive star become in the end (two possibilities)?  
\_\_\_\_\_

► **Hertzsprung-Russell Diagram**

20. What is a Hertzsprung-Russell Diagram?

21. What does the vertical axis represent?

22. What does the horizontal axis represent?

Interactive Lab

23. List the temperature, brightness, and type of star for each of the stars in the lab.
  - a. Betelgeuse –
  - b. Alpha Centauri B –
  - c. Our sun –
  - d. Vega –
  - e. Sirius B –
  
24. Where do most stars lie on the HR diagram?

**Galaxies**

([http://www.windows.ucar.edu/tour/link=/kids\\_space/milky\\_way\\_ask.html](http://www.windows.ucar.edu/tour/link=/kids_space/milky_way_ask.html))

1. How far across is our galaxy, the Milky Way?
2. How can one locate the center of our galaxy as we orbit the sun and the sun orbits the galaxy?
3. Is our solar system moving away from the center of our galaxy?
4. How many years does it take the sun to orbit the center of the galaxy?
5. The Milky Way is part of a set of about 30 galaxies known as \_\_\_\_\_, which is part of a supercluster known as \_\_\_\_\_, which is 100,000,000 light years across.
6. What shape is the Milky Way?

**Quasars**

([http://www.windows.ucar.edu/tour/link=/the\\_universe/QSO.html](http://www.windows.ucar.edu/tour/link=/the_universe/QSO.html))

1. Describe quasars.
2. Quasars are most likely \_\_\_\_\_, formed around \_\_\_\_\_.
3. Quasars are so bright because the matter is unimaginably \_\_\_\_\_.

**Go to this website for the next activity**

**<http://btc.montana.edu/ceres/html/Galaxy/galstudentact.html>**