Astronomy Name_____

Star Life Cycle Interactive

Go to: http://aspire.cosmic-ray.org/Labs/StarLife/starlife_main.html

Click on: *Protostars – A Star is Born*

1. What is a nebula?
   a. What gases (and what percent of each) make up nebulas?
   b. What force causes "clumps" to form in nebulas?

2. What is accretion?

3. In star formation, *equilibrium* is a balance (or a "battle") between

   _____ and _____.

4. *Click on the* "Push to start" interactive. Describe the color changes of the collapsing gas:

   1: color is _____; 2: color is _____; 3: _____

   4: _____; 5: _____to _____; 6: _____

5. **Why** does a *brown dwarf* form?

*Click on the next **(>)** arrow at bottom of page.*

Stars

6. How do ALL stars spend the majority of their lives? What are they doing???

Click on Interactive Lab (Beginning of their life cycles)

7. Do the interactive for each star, small, low, medium and massive. Fill in the table below.

Star Mass:	Small	Low	Medium	Massive
Does it reach main sequence?				
How long is it on main sequence?				

8. Describe what happens in your body (enzymes) when it is deprived of oxygen for more than 5 minutes. That is, why do you die?

9. Read the paragraph under the hypotheses. **Why** do smaller stars live longer?

*Click on the next **(>)** arrow at bottom of page.*

10. What is the life goal of all stars? What does THAT mean?

Click on Interactive Lab: Equilibrium Cycle

11. *Fill in the table below as you work through each step. You may use the symbols ↑, ↓, and ⬭ to indicate increase, decrease or stay the same.*

Step	Pressure	Gravity	Temperature
1 Fusion			
2 MS Burning			
3 Fusion Stops			
4 Core Contracts			
5 Equilibrium			

12. *Click on the* Practice Quiz. *Do the quiz and Check your answers!*

Tell me the CORRECT answers for these two questions:

a. When temperature increases, gravity decreases. T or F
b. When the core contracts, gas pressure will increase. T or F

13. Why do larger stars have shorter lives?

14. What are the THREE main "fuels" of stellar fusion?

Star Quiz, Part 1:

15. When the star is out of hydrogen fuel, what will happen to the temperature at the core?

16. If the temperature in the core of the star decreases, what will happen next?

17. If the gas pressure in the star is decreased, then gravity will now be stronger than the gas pressure. This results in an unstable star. What should happen next?

18. The star's core has contracted. That means that density has increased, and the atoms are closer together. If the atoms are closer together, then their atomic collisions should:

19. The atomic collisions have increased, indicating that the temperature has:

20. If the temperature increases to a critical temperature for fusion, then the star will:

*Close Quiz, Part 1, Click on the next **(>)** arrow at bottom of page.*

Stars: The beginning of the end

Interactive Lab: Helium Burning Process *Fill in the table below as you work through each step. You may use the symbols ↑, ↓, and ⬭ to indicate increase, decrease or stay the same.*

Step	Pressure	Gravity	Temperature
1 Fusion			
2 Out of Fuel			
3 He Fusion Stops			
4 Core Contracts			
5 Outer Layer blown off			

Star Quiz (Part 2)

21. Why does the outer shell of the star expand?

22. As the outer shell of the star expands, the surface temperature of the star decreases. Helium burning is much hotter than hydrogen burning. Why would the surface temperature decrease?

Close quiz window.

23. The red giant is the first step in _____.

Click on the next ***(>)*** *arrow at bottom of page.*

24. *Scroll down to* **Interactive Lab: Carbon Burning Process** *Fill in the table below as you work through each step. You may use the symbols , , and to indicate increase, decrease or stay the same.*

Step	Pressure	Gravity	Temperature
1 Nuclear Fusion			
2 Out of Fuel			
3 Fusion Stops			
4 Core Contracts			
5 Supernova			

Scroll down to the **Interactive Lab: End of their life cycles.**

25. For each star mass, write the sequence of events in their lifes. *Hint: Read the top bar as the star moves to its end.*
Small Star:
Low Mass:
Medium Mass:

Click o
Hertzs

26. Scroll down to the **Interactive Lab***, click on the diagram and tell me the correct answers to the stars by filling in the table below.*

	Star A	Star B	Star C	Star D	Star E
Temperature					
Brightness					

The Last Thing To Do!

The next two pages have three interactives (1 on the first page, 2 on the second. Do either of the first two if you feel you need a little more practice with HR diagrams.

Do the last interactive, HR Diagram with 5 stars. There are 14 questions but you will go through them fast. This is a self test of how well you understand stellar evolution & the HR diagram.