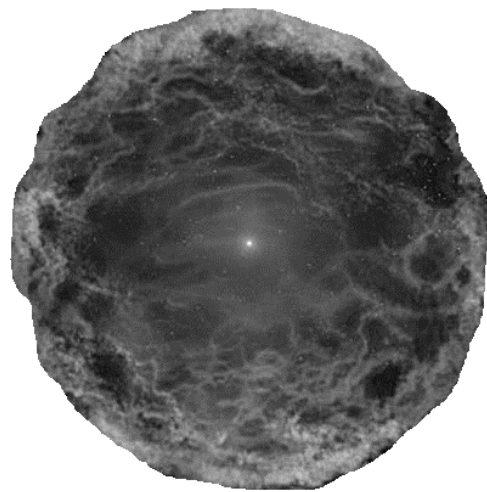
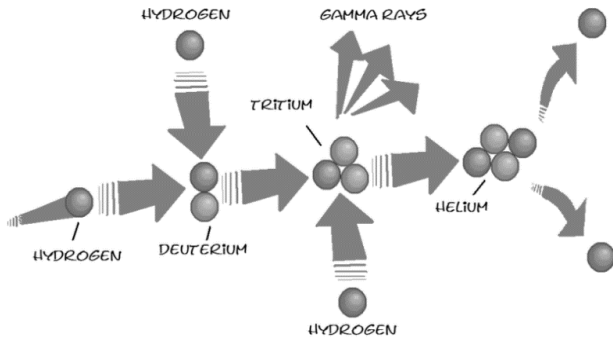


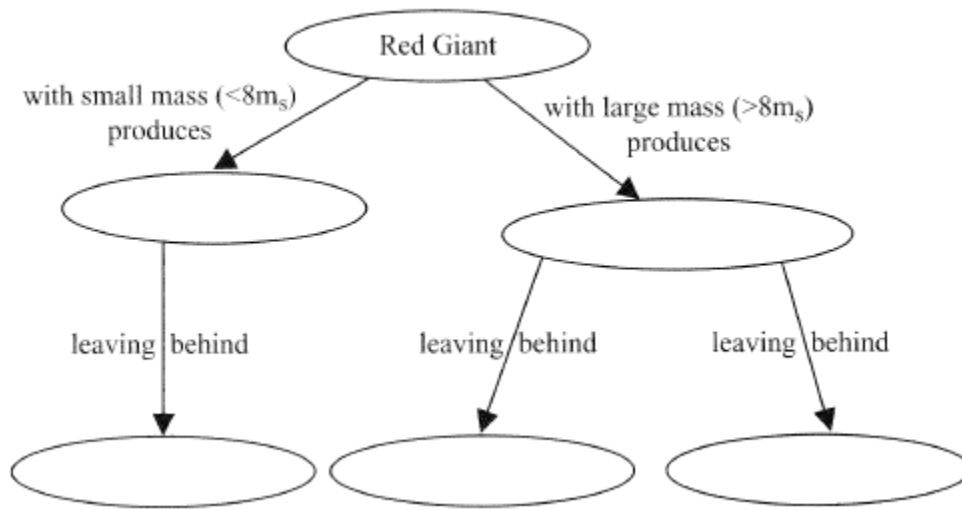
Section 9: The Lives of Stars



Section 9 Question: What impacts the brightness of objects in the sky?

What Do You See?
(cartoon)

What Do You Think?



What Do You Think Now?

Focus Question A: What is the relationship between brightness and distance from the source?

Data:

(How does the brightness of each bulb compare)

How does the brightness of the bulbs change as you move farther away?

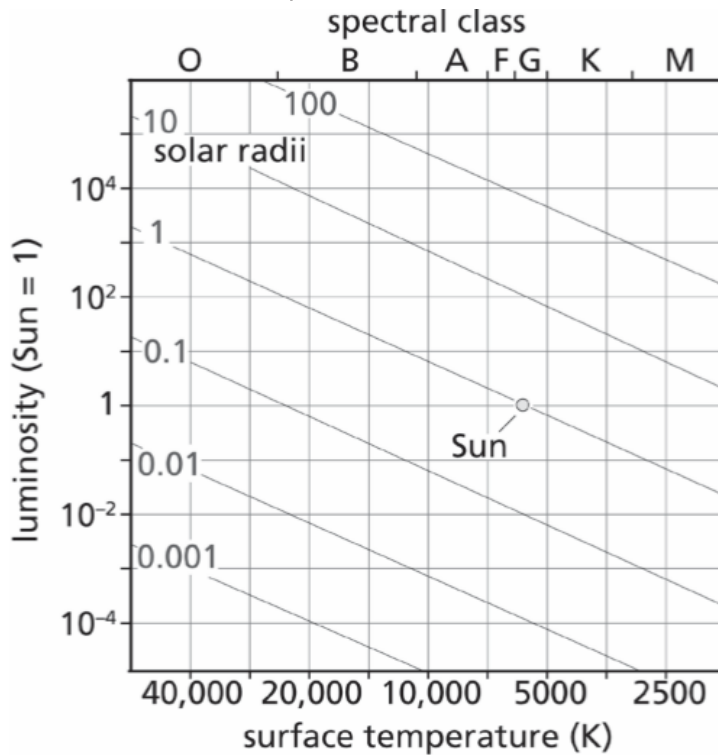
Explanation:

Focus Question B: What is the relationship between luminosity and temperature of stars?

Table 1: Selected Properties of Some Stars

Star	Surface Temperature (K)	Luminosity (Relative to Sun)	Distance (Light-Years)	Mass (Solar Masses)	Diameter (Solar Diameters)	Color	Type of Star
Sirius A	9100	22.6	8.6	2.3	2.03	Blue	
Arcturus	4300	115	36.7	4.5	31.5	Red	
Vega	10,300	50.8	25.3	3.07	3.1	Blue	
Capella	5300	75.8	42.2	3	10.8	Red	
Rigel	11,000	38,679	733	20	62	Blue	
Procyon A	6500	7.5	11.4	1.78	1.4	Yellow	
Betelgeuse	2300	105,000	640	20	1183	Red	
Altair	7800	11.3	65.1	2	1.6	Yellow	
Aldebaran	4300	156-171 (variable)	65	25	51.5	Red	
Spica	25,300	2121	262	10.9	7.3	Blue	
Pollux	4500	31	33	4	8	Red	
Deneb	10,500	66,500	1600	25	116	Yellow	
Procyon B	8700	0.0006	11.2	0.65	0.02	White	
Sirius B	24,000	0.00255	13.2	0.98	0.008	Blue-white	

Note: Mass, diameter, and luminosity are given in solar units. For example, Sirius A has 2.3 solar masses, a diameter 2.03 times that of the Sun, and has luminosity 22.6 times brighter than the Sun.
 1 solar mass = 2×10^{30} kg = 330,000 Earth masses; 1 solar diameter = 700,000 km = 110 Earth diameters.



Observations:

- *What does the vertical axis represent?*
- *What does the horizontal axis represent?*
- *Locate the Sun- what is its temperature and luminosity?*
- *Put 4 dots on the diagram labeled A through D*
 - A. *Hot and Bright*
 - B. *Hot and Dim*
 - C. *Cool and Dim*
 - D. *Cool and Bright*

Complete the table below

Star	Surface Temp	Luminosity	Quadrant	Color	Type of Star
Sun					
Eridani B					
Spica					
Polaris					
Alpha Centauri					

Claim:

Evidence:

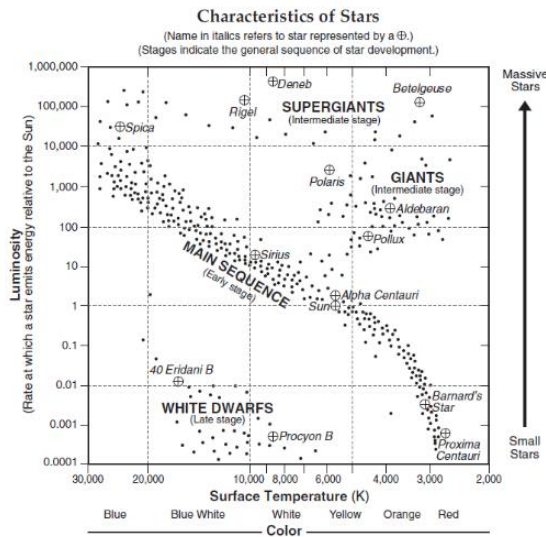
RETURN TO WDYTN

DIGGING DEEPER

Star Classification

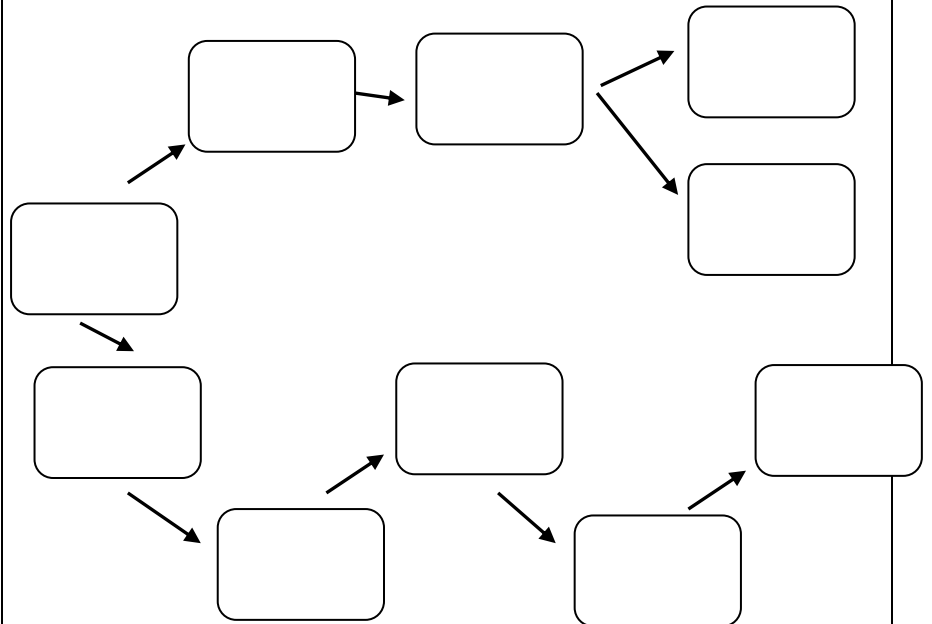
- Astronomers use a magnitude scale to describe the brightness of objects in the sky.
- The smaller the number the brighter the star.
- Color and temperature can tell astronomers the temperature, composition and the stage of a stars life.

How does the brightness of a star change with distance from Earth?



The Lives of Stars

- A star's life cycle is directly related to its mass.
- How long a star lives depends on its mass
- The larger a star is, the shorter its life span.



Creation of Elements	
<ul style="list-style-type: none"> ● Fusion reactions in the core of stars begins when temperatures reach 15 million K. ● It takes 4 Hydrogen atoms to make 1 helium atom. ● The size of a star is maintained by a balance between the inward force of gravity and the outward force from nuclear fusion. ● When a star runs out of fuel it collapses in on itself increasing the core temperature. 	<p>List or illustrate the steps of the proton-proton chain.</p> <p>Elements created in the fusion process include;</p> <p>How are elements heavier than iron formed?</p>

Chapter 1, Section 9 E.B.C.
The Lives of Stars

Name: _____
Period: _____

Question (2)	
Claim 1 (2)	
A. Supporting Evidence (3)	B. Supporting Evidence (3)
<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
Claim 2 (2)	
A. Supporting Evidence (3)	B. Supporting Evidence (3)
<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
Analysis (6)	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

	Claim <i>A statement or conclusion that answers the original question/problem.</i>	Evidence <i>Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.</i>	Analysis <i>A justification that connects the evidence to the claims. It shows why the data counts as evidence by using appropriate and sufficient scientific principles and vocabulary.</i>
0	Does not make a claim, or makes an inaccurate claim.	Does not provide evidence, or only provides inaccurate or vague evidence.	Does not provide an analysis, or only provides an irrelevant analysis.
1	Makes an accurate but vague or incomplete claim.	Provides vague evidence and does not include specific data.	Repeats evidence and links it to claim, but does not include specific scientific principles.
2	Makes accurate and complete claim.	Provides correct evidence but does not include specific data.	Connects all evidence to the claims using scientific principles or vocabulary but not both.
3		Provides correct evidence and includes specific data.	Connects all evidence to both claims using scientific principles and vocabulary.

CHECKING UP: Page 115, 1 through 4 (2 points each)

1.

2.

3.

4.

Two identical stars have different apparent levels of brightness. One star is 10 light-years away, and the other is 30 light-years away from us. Which star is brighter and by how much?(5 points)