

Outline Section 18.2: Stars & the Sun

Using your textbook, fill the outline below. **WARNING:** You must actually read through the section.

1. What are Stars?

A. A star is a huge ball of hot gas that emits light. Ancient civs grouped stars into constellations w/stories or myths that related to their culture.

• Stars in a _____ are not necessarily grouped together in space, it just looks like it from _____.

B. The Sun is a typical star

- diameter= _____
- mass= _____ (_____ times mass of Earth),
- density= _____

C. Brightness of stars depends on...

1. Temperature

2. _____

3. Distance from Earth

• Brightest star= _____ 19 Ly away.

• Study stars by studying _____

• Some _____ detect invisible light waves.

• _____ is our only source of info.

D. Color & Temp

• Hotter temp emits _____ light, cooler temp emits reddish light. The color seen by a star is determined by lambda, which is the _____.

• The sun's color, _____ corresponds to a temp of _____ K

E. Spectral lines reveal the composition of stars.

• Spectral lines are dark lines where light is "missing" from the spectrum emitted by a specific element. Each _____ has its own unique pattern of spectral lines; scientists can look at the spectral line patterns of stars and determine which elements they contain.

• Spectral lines of the element He match Sun. Therefore the Sun contains _____.

• Research science has found:

The sun is _____ % H, 9.9% He, 0.1% other.

F. Stars are driven by _____

• Inside a star- very high-pressure and temp right conditions for fusion

• Nuclear fusion is when nuclei _____

G. Layers of the Sun & stars

1. _____ 4000 to 50,000K

2. Corona _____ K

3. _____ K

H. Energy moves thru Star

• Fusion moves thru layers by _____ and _____ Can take a long time. When it finally gets thru layers, energy is emitted as light travelling _____ m/s

2. Life and Death of stars

A. Stars (including our sun) form from clouds of _____ and _____.

1. A star is born when it begins to have _____ in the core.

A. What is going to happen to our sun?

1. Our sun will become a _____.

2. Then the outer layers will expand outward and form a _____.

3. The rest of the core of the sun will become a _____.

B. What happens to stars that our bigger than our sun?

1. If a star has a mass that is _____ times bigger than our sun, it will become _____ This will produce heavier elements until it core becomes _____ When this happens, _____ stops.

C. A supergiant will die a dramatic death when the core collapses, creating a giant explosion called a _____.

1. This explosion can create _____.

2. After this explosion the star can become either a _____ or a _____.

3. If the mass of the dying star is _____ then it becomes a neutron star.

i. A thinkbleful of matter in a neutron star would weigh _____ on Earth.

4. If the mass of the dying star is _____ when it becomes a black hole.

i. Black holes cannot be seen because _____.

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