



Stellar Evolution Concept Map

Earth Science



What is a concept map? Concept maps use balloons or pictures with captions to represent BIG IDEAS, and labeled arrows connecting those big ideas to help visualize THE BIG PICTURE! Today you will create a concept map that shows the life of a star (low, medium and high mass).

Background: Using your stellar evolution notes and text, construct your own concept map.

Materials: class notes (4.03) colored pencils computer (optional)

Procedures:

1. **Outline life stages of less-massive and more-massive stars in the correct order, including 13 key terms:**

- | | | |
|-----------------|--------------------|------------------|
| Ⓢ Black Dwarf | Ⓢ Neutron Star | Ⓢ Red Supergiant |
| Ⓢ Black Hole | Ⓢ Nova | Ⓢ Supernova |
| Ⓢ Brown Dwarf | Ⓢ Planetary Nebula | Ⓢ White Dwarf |
| Ⓢ Main Sequence | Ⓢ Protostar | |
| Ⓢ Nebula | Ⓢ Red Giant | |

2. For **each** of your stellar evolution stages, include the following:

- Ⓢ What is this stage? (1-2 sentence explanation of physical features at that stage),
- Ⓢ What is happening? (1-2 sentence explanation of processes/stellar activity at each stage),
- Ⓢ How does the star transition? An arrows leading to the next stage(s) an accurate explanation.

3. **Finalize** your sketch by:

- ✓ Adding COLOR images for each stage (or cutting/pasting a picture),
- ✓ Giving your concept map an appropriate title
- ✓ Adding your name date, and hour in the corner of the concept map.

4. **Earning maximum points:**

- A. Use only your class notes or online research as the main reference for this project.
- B. Use your time wisely to create a **HIGH QUALITY** concept map.

Grading Rubric	Points Possible
Concept Map Content Ⓢ all 13 stages illustrated (by hand or printed image) Ⓢ all 13 stages described with detail Ⓢ 11 transitions explained along arrows	/ 18
Quality of Work Ⓢ does concept map show maximized time & effort? Ⓢ is the concept map correctly & clearly designed?	/ 2
TOTAL POINTS	/ 20

Cosmology - notes

Earth Science

Name: _____

Date: _____ Hr: _____

4.05 (p. 554) Sketch how the **Hertzsprung-Russell** diagram classify stars into groups.
(see *H-R Diagram Lab*)

4.06 Galaxies: (p. 562-564)

What is a galaxy?

A typical galaxy is _____ light yrs wide (diameter).

If 1 light year = 9.5 trillion km, then a typical galaxy is _____ km wide!!!!

Most galaxies are composed of _____.

Describe the characteristics of each type of galaxy astronomers observe.

Galaxy	Spiral	Elliptical	Irregular
Description			
Composed of			

Are most stars (or star systems) single (like Our Sun)? Explain.

4.07 BIG points about the BIG BANG THEORY

- Describe what the Big Bang Theory proposes:

- The Big Bang Theory **CANNOT** explain:

4.08 Describe the main scientific evidence supporting Big Bang Theory:

- Cosmic Microwave Background (CMB) radiation

- Abundance of light elements (H, He)

- **Cosmological** red shift with **Doppler** red shift

Cosmology - notes

Earth Science

Name: _____

Date: _____ Hr: _____

4.01 (Textbook p. 11, 14) Complete the chart describing the following scientific terms:

	HYPOTHESIS	THEORY	LAW
Definition			
Examples (research)			

4.02 (Sec 28.3) Formation of Solar System

- Describe how our Sun formed from the solar nebula.
- Describe how planetessimals become protoplanets and become planets.
- Explain why gas giant planets are made of lighter gases but the rocky inner planets are not.

4.03 (p. 555-560) Describe each stage in the life of a star:

Star Stage	Detailed Physical Characteristics (be specific!!!)	Star Stage	Detailed Physical Characteristics (be specific!!!)
NEBULA		PROTOSTAR	
Brown dwarf		MAIN SEQUENCE	
RED GIANT		RED SUPERGIANT	

WHITE DWARF		BLACK DWARF	
PLANETARY NEBULA		SUPERNOVA	
NEUTRON STAR		BLACK HOLE	

4.04 Life of a Star Transitions:

Nebula

