**Stars**

*(The Universe: Life and Death of a Star by The History Channel)*

Watch on YouTube

1. Complete the concept map for the possible life cycles of stars using the following terms.

|  |  |  |
| --- | --- | --- |
| Neutron Star | Supergiant | Black Dwarf |
| Nebula | Supernova | Protostar |
| Planetary Nebula | Red Giant | White dwarf |
|  |  |  |

|  |  |
| --- | --- |
| The Sun | A Massive Star |

|  |  |
| --- | --- |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

2. What is the key elemental component of stars? \_\_\_\_\_\_\_\_\_\_\_

3. What is the most important force in the universe? \_\_\_\_\_\_\_\_\_\_

4. A star’s existence is a balancing act between what force and counterforce? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. What color are hot stars? \_\_\_\_\_\_\_\_\_\_\_

6. What color are cool stars? \_\_\_\_\_\_\_\_\_\_\_\_\_

7. How is the mass of a star related to the life of a star? The bigger the star… \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. What fusion reaction marks the beginning of a star’s death sequence? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. What is a pulsar? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. What is a black hole? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Analyzing Starlight Using a Spectrograph**

|  |  |  |  |
| --- | --- | --- | --- |
| Spectrum Type: | Bright-line  “Emission” | Dark-line  “Absorption” | Continuous |
| What does it tell us? |  |  |  |

1. Temperature: hotter = \_\_\_\_\_\_\_\_ dark bands
2. Composition: Banding pattern = star “fingerprint”
3. **Doppler Effect** is an observed change in the frequency of a wave when the source or observer is moving. So, what do different shifts tell the observer?
   1. Unshifted star light =
   2. Blue shift =
   3. Red shift =
4. **The Hertzsprung-Russel Diagram**

\*Vocab:

Absolute Magnitude =

Kelvin =

Luminosity =

\*Temperature & Color Relationship

1. Hot star = \_\_\_\_\_\_\_\_\_\_ color
2. Cool star = \_\_\_\_\_\_\_\_\_ color
3. Intermediate = \_\_\_\_\_\_\_\_\_\_\_\_ color

\*Temperature & Luminosity Relationship

1. Hotter = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Luminosity
2. Cooler = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Luminosity

\*Mass & Luminosity Relationship

1. Bigger = \_\_\_\_\_\_\_\_\_\_\_\_\_ Luminosity

2. Smaller = \_\_\_\_\_\_\_\_\_\_\_\_\_ Luminosity