Life Cycle of Stars

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ is the total mass of the gas and dust between the stars
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: A dense cloud of gas and dust
3. The nebula begins to contract due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the pressure and temperature increase and becomes a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. When the temperature gets hot enough, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begins and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ star is born.
5. A star loses \_\_\_\_\_\_\_\_\_\_\_\_ during fusion as energy is released. This decreases the star’s gravity. A star will expand, becoming a \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, when the outward force of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is greater than the inward force of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. As the fuel runs out in a star, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slows down. When the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force of fusion is less than the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force of gravity, the star will shrink in size, becoming a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a rotating white dwarf emitting radio waves.

1. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that marks the end of a very massive star’s life. When it occurs, the exploding star can outshine all of the other stars in the galaxy in total for several days and may leave behind only a crushed core.
2. The life cycle of stars depends on their mass.

Small and medium stars become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ once they die.

Larger stars become novae and die as: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A neutron star is an imploded core of an exploded star made up almost entirely of neutrons. A teaspoon of their material would weigh more than all of automobiles in the U.S. together

The most massive stars become supernovae and die as: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A black hole is an extremely massive remnant from which light cannot escape

1. **Why do larger/hotter stars burn their fuel faster and live shorter lives than the Sun.**

Large, more massive stars have much more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the sun. This greater internal pressure causes fusion reactions to occur \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This causes the largest stars to burn their fuel, and eventually run out, much more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Larger stars live shorter \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Bigger stars are brighter and hotter due to the rapid rate of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. **Where do we get the elements??**

All stars spend the majority of their lives fusing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the main sequence.

When all of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the central regions is converted to helium, the star will begin to “burn” helium into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Stars heavier than about 5 times the mass of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can do this with no problem: they burn \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, silicon, and so on…until Iron.

1. Iron is the lightest element that doesn’t release \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when you attempt to fuse it together. You actually end up with less energy than you started with! So instead of generating pressure to hold up the outer layers, the iron fusion actually takes it out of the core. Thus, there is nothing left to combat \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the outer layers. The result: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!

This implosion (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) happens very, very quickly: about 15 seconds. During the collapse, the nuclei in the outer parts of the star are pushed together, so close that elements heavier than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are formed.