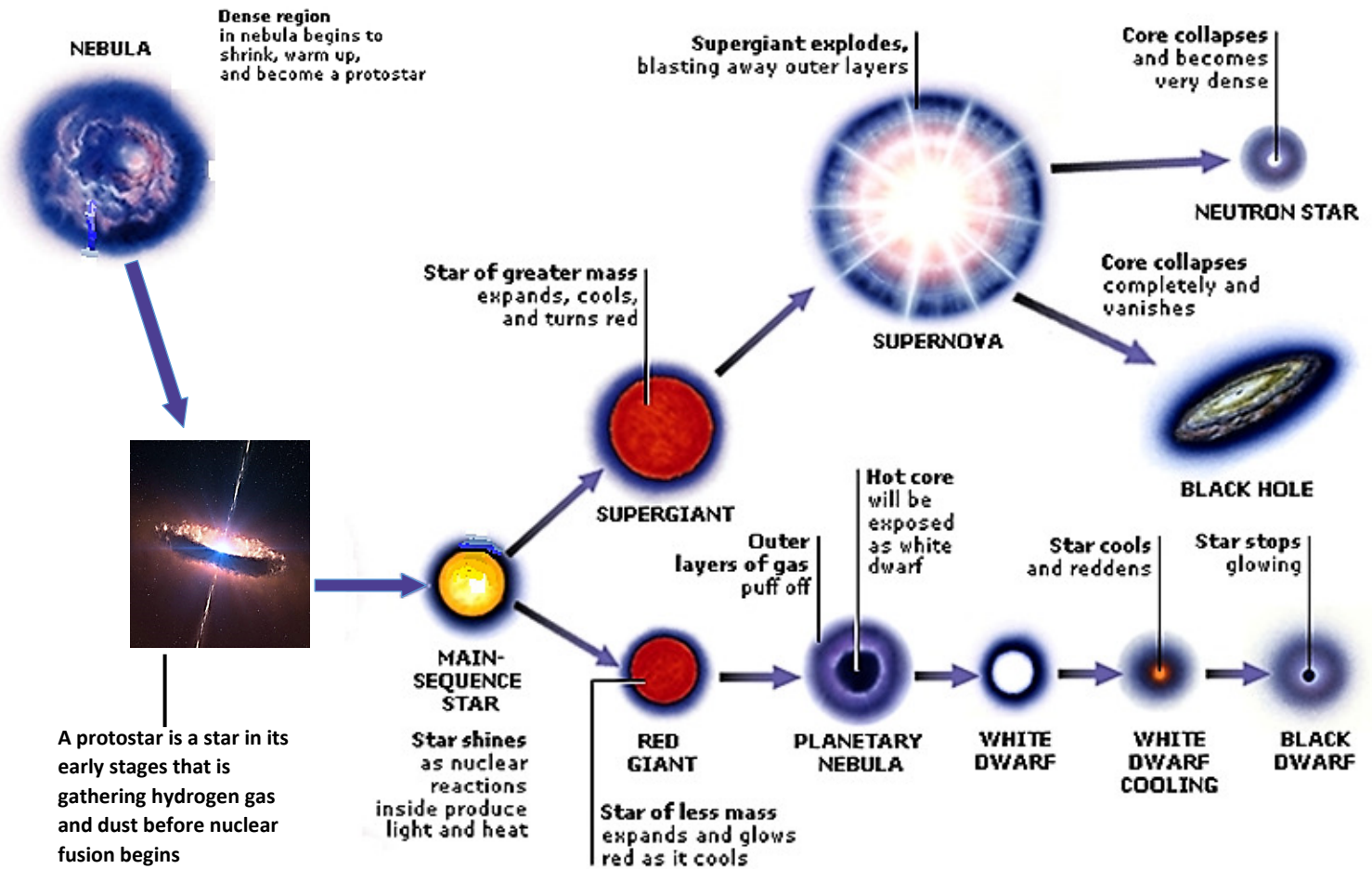


Life Cycle of a Star



A STAR IS BORN – All stars start as a **nebula**. A **nebula** is a large cloud of hydrogen gas and dust. Gravity can pull some of the gases and dust together. The contracting cloud is then called a **protostar**. A **protostar** is the earliest stage of a star’s life. A star is born when the gas and dust from a nebula become so hot that nuclear fusion starts. Once a star has “turned on” it is known as a main sequence star. When a main sequence star begins to run out of hydrogen fuel, the star becomes a red giant or a red super giant.

THE DEATH OF A LOW OR MEDIUM MASS STAR. After a low or medium mass star has become a red giant the outer parts grow bigger and drift into space, forming a cloud of gas called a **planetary nebula**. The blue-white hot core of the star that is left behind cools and becomes a **white dwarf**. The white dwarf eventually runs out of fuel and dies as a **black dwarf**.

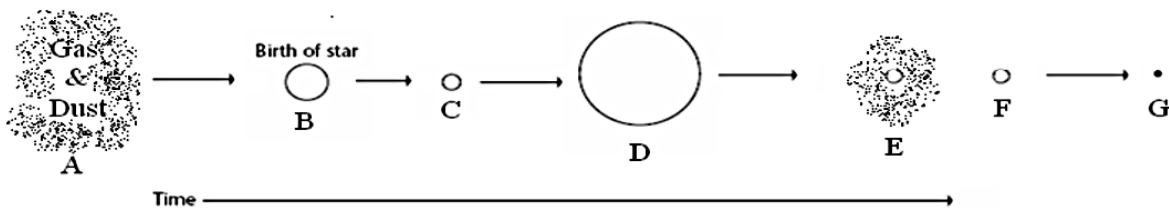
THE DEATH OF A HIGH MASS STAR. A dying **red super giant** star can suddenly explode. The explosion is called a **supernova**. After the star explodes, some of the materials from the star are left behind. This material may form a **neutron star**. **Neutron stars** are the remains of high-mass stars. The most massive stars become **black holes** when they die. After a large mass star explodes, a large amount of mass may remain. The gravity of the mass is so strong that gas is pulled inward, pulling more gas into a smaller and smaller space. Eventually, the gravity becomes so strong that nothing can escape, not even light.

Section One- Sequencing: The stages below are not in the right order. Number the stages in the correct order.

- _____ The star begins to run out of fuel and expands into a **red giant** or **red super giant**.
- _____ Stars start out as diffused clouds of gas and dust drifting through space. A single one of these clouds is called a nebula.
- _____ What happens next depends on the mass of the star.
- _____ Heat and pressure build in the core of the protostar until nuclear fusion takes place.
- _____ The force of gravity pulls a nebula together forming clumps called protostars.
- _____ Hydrogen atoms are fused together generating an enormous amount of energy igniting the star causing it to shine.

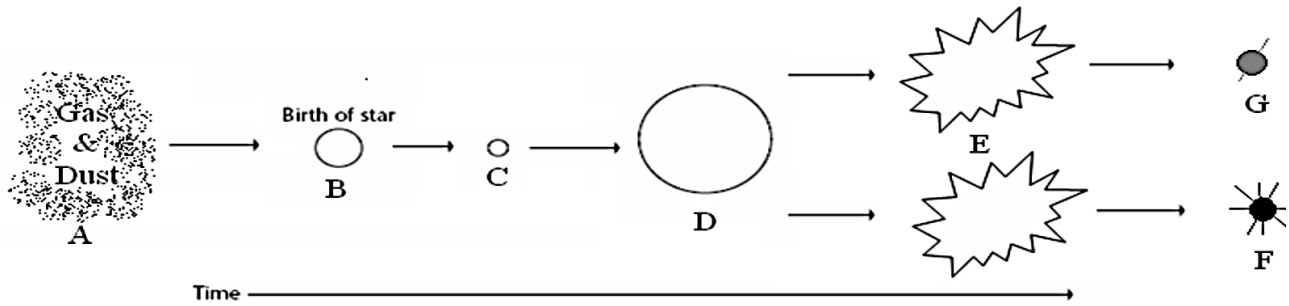
Section Two – Vocabulary: Match the word on the left with the definition on the right.

- | | |
|--------------------|---|
| _____ black dwarf | e. star left at the core of a planetary nebula |
| _____ white dwarf | g. a red super giant star explodes |
| _____ nebula | c. what a medium-mass star becomes at the end of its life |
| _____ protostar | b. a large cloud of gas or dust in space |
| _____ supernova | a. exerts such a strong gravitational pull that no light escapes |
| _____ neutron star | d. the earliest stage of a star 's life. No nuclear fusion exists yet |
| _____ black hole | f. the remains of a high mass star |



Section Three – Understanding Main Ideas - Low Mass Star (use the picture above)

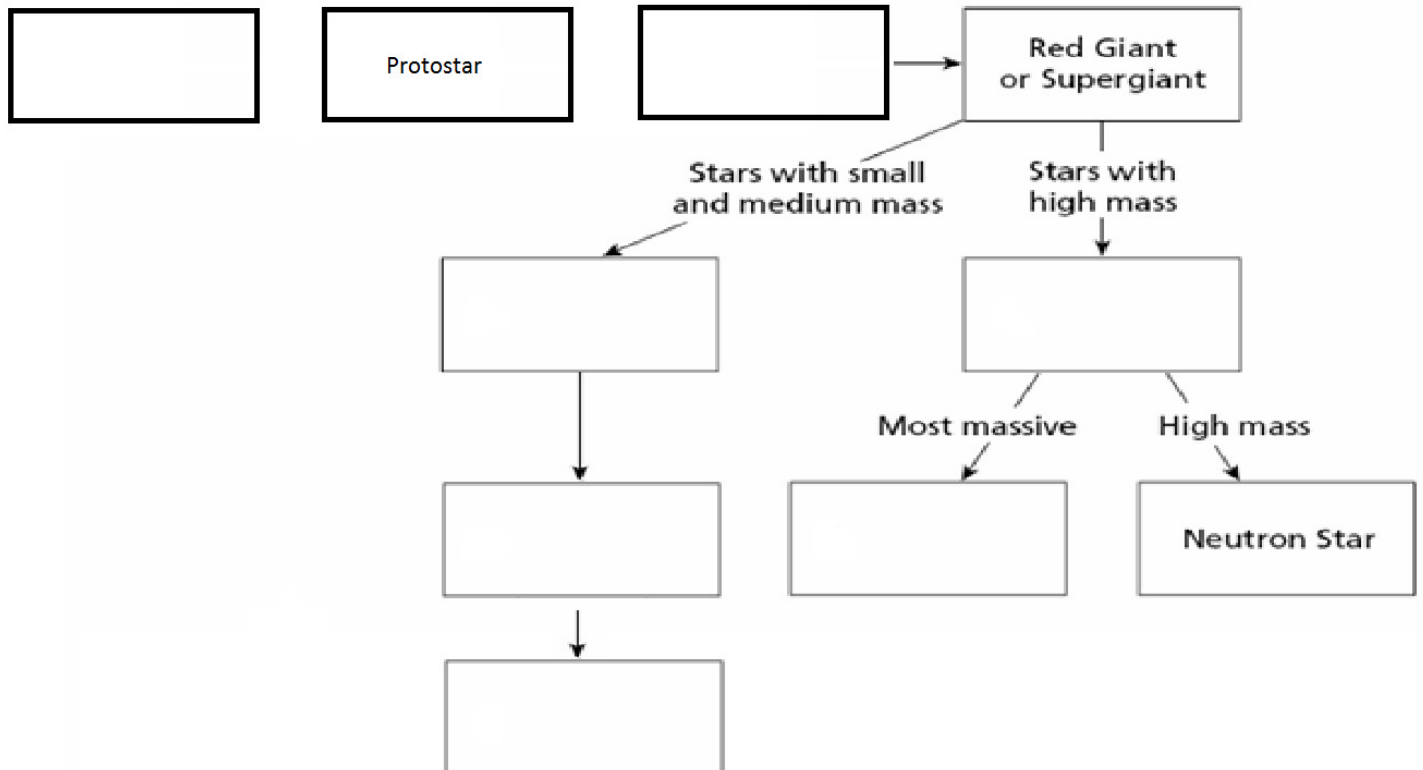
- _____ 1. Red giant
- _____ 2. Protostar
- _____ 3. Stellar Nebula
- _____ 4. Black Dwarf
- _____ 5. The stage where our sun is fusing hydrogen into helium
- _____ 6. White dwarf
- _____ 7. Planetary Nebula



Section Four – Understanding Main Ideas - High Mass Star (use the picture above)

- _____ 1. Black Hole
- _____ 2. Supernova
- _____ 3. Stellar nebula
- _____ 4. Gravity causes hydrogen gases and dust to condense into a protostar
- _____ 5. Main sequence star
- _____ 6. When a star begins to run out of fuel and grows larger
- _____ 7. Neutron star

Section Five- Graphic Organizer. Fill in the blanks



Section six – Venn Diagram- Compare and Contrast

Venn Diagram - Life Cycle of a Star

