Riverton Street Charter School Name: _____
Class: _____ Date: _____

Life Cycle of a Star

Just like living things and humans, stars have a life cycle, which consists of birth, growth, development, middle age, old age, and death. The life cycle of a star spans over billions of years.

A Star is Born-stages Common to All Stars

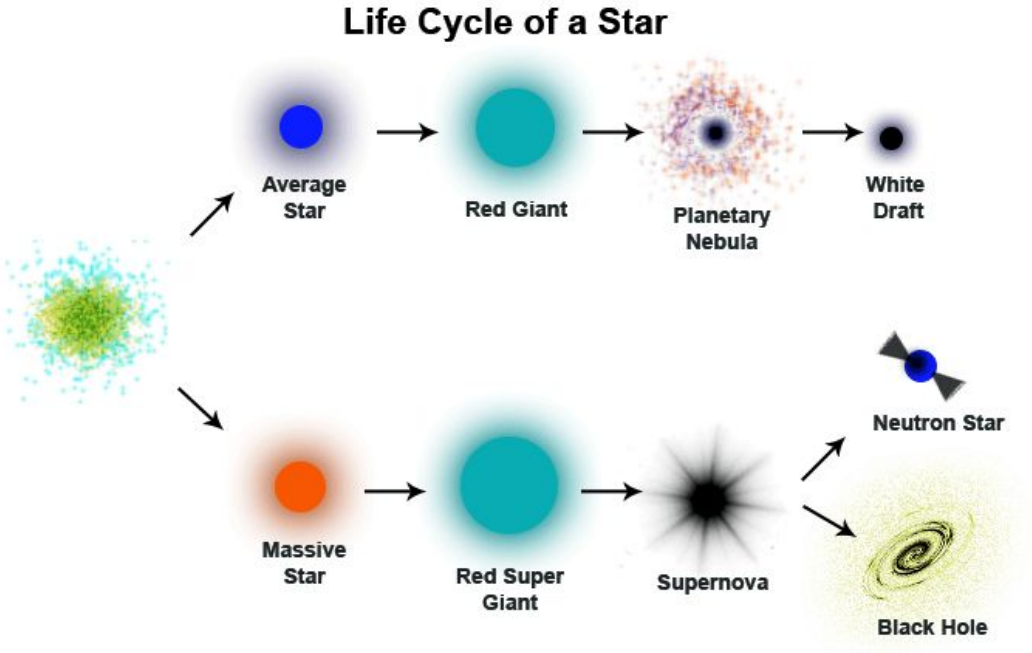
All stars start as a nebula. Nebula is a large cloud of gas and dust. Gravity can pull some of the gas and dust in a nebula together. The contracting cloud is then called a protostar. A protostar is the earliest stage of a star's life. A star is born when the gas and dust from a nebula become so hot 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 supergiant.

The Death of a Low or Medium Mass Star

After a low or medium mass or star has become a red giant the outer parts grow bigger and drift into space, forming a cloud of gas called 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.

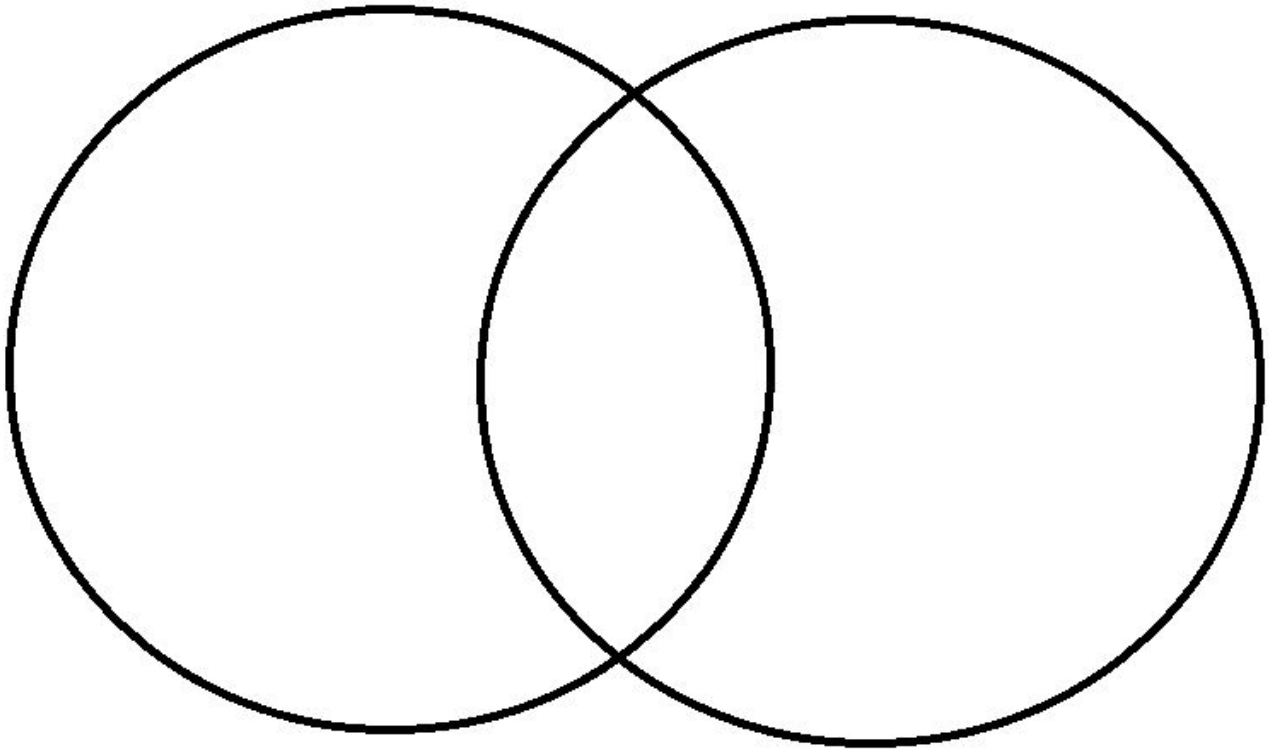
The Death of a High Mass Star

A dying red supergiant 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: Compare and Contrast- Venn Diagram, Life Cycle of a Star

Low/Medium Mass Star ***Both*** ***High Mass Star***



Section Two: Sequencing

The stages below are not in order. Number the stages in the correct order.

_____ The star begins to run out of fuel and expands into a red giant or red supergiant.

_____ 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.

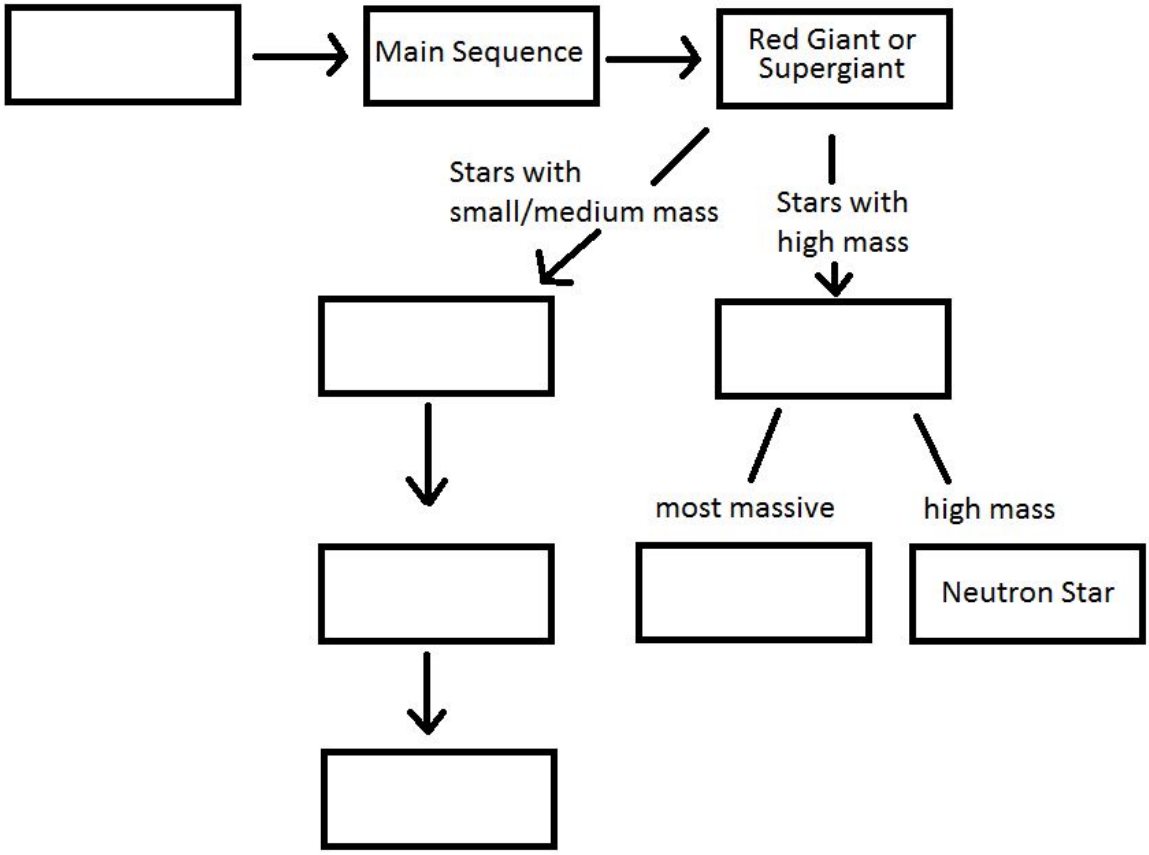
_____ Hydrogen atoms are fused together generating an enormous amount of energy igniting the star causing it to shine.

Section Three- Vocabulary

Match the word on the left with the definition on the right.

_____ black dwarf	e. Star left at the core of the planetary nebula
_____ white dwarf	g. A red supergiant 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
_____ black hole	f. The remains of a high mass star

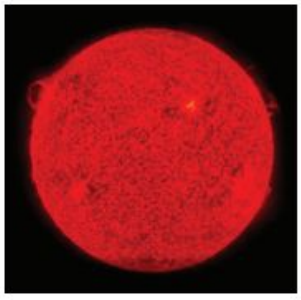
Section Four: Graphic Organizer, Putting it all Together



Section Five: Place the images in the correct order from the birth of a star to its death. Briefly describe what stage in the lifecycle of a star is represented in each image.

A

B



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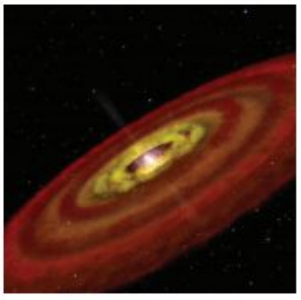
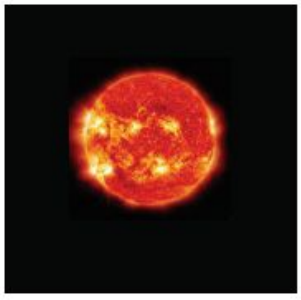


D



1.
2.
3.
4.