Life Cycle of a Star Notes

**Where do stars come from?** Interstellar medium

* A thinly spread area of gas and dust
* The
* The

 **What is a nebula?**

* Interstellar medium begins to collect into big clouds
* “Star Nursery”
* The

**What is a protostar?**

* Inside the nebula are regions of greater and lesser gravity causing the gas and dust to pull together
* As more atoms gather, their gravitational attraction increases

**What is equilibrium?**

* A battle between gravity and gas pressure
* Reactions within life cycle phases where gravity and gas pressure are constantly changing
* Equilibrium

**When is a star born?**

* When a critical temperature in the core of the protostar is reached and nuclear fusion begins
* Hydrogen

**What is a star?**

* An extremely hot ball of gas, with hydrogen (H2) fusing into helium (He) at its core
* Spend most of the lives fusing hydrogen
* When
* They

**THE MASS OF A STAR DETERMINES WHAT HAPPENS TO IT AFTER LIVING MOST OF ITS LIFE IN MAIN SEQUENCE!**

**Main Sequence-**

* Stars live out most of their lives in this phase
* Stars have achieved nuclear fusion
* Stars
* Stars

**Low Mass Stars-**

* Half as massive as the Sun
* Can live 80 to 100 billion years in Main Sequence
* Example-Red Dwarf

**Red Giant-**

* Phase after main sequence
* Low and high mass Main Sequence stars progress to Red Giants
* Outer gas layers of the star expand
* As the star uses all its fuel its core shrinks
* Red in color
* High luminosity

**Planetary Nebula-**

* Occurs at the end of a low mass Red Giant’s life
* The outer layers of the star are expelled
* The core is very hot and luminous
* The outer shell appears as bright colored gas clouds

**White Dwarf-**

* Forms when a low mass star runs out of fuel
* The core of a planetary nebula
* Final stage in the cycle for low mass stars
* Incredibly dense
* Gravity
* Will

**Black Dwarf-**

* End product of a white dwarf
* The last state of stellar evolution for low mass stars
* No
* No

**Our Sun-** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**High Mass Stars-**

* 10 times as massive as our Sun
* Remains in Main Sequence for about 20 **million** years

**Red Super Giant-**

* The same thing as a giant star only much bigger
* As

**Supernova-**

* Last stage of a massive star’s life
* Occurs as the star runs out of nuclear fuel, some of its mass flows into its core
* Core becomes so heavy that it cannot withstand its own gravitational force
* The

**Neutron Star-**

* The core left behind in a supernova
* Very dense- 1 Tsp. = 1 billion tons
* Gravity
* Gravity presses the material onto itself so tightly that protons and electrons combine to make neutrons, yielding the name neutron star

**Black Hole-**

* Forms when very massive stars collapse at the end of their cycle
* A large area
* Nothing