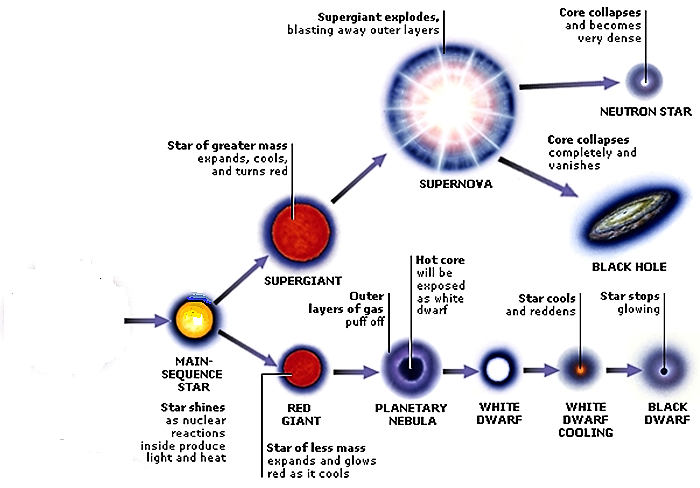
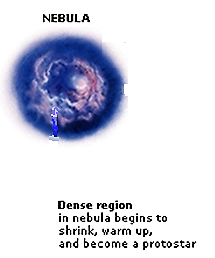
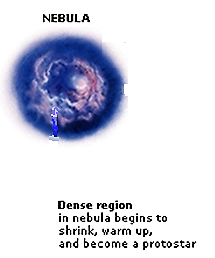
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**Life Cycle of a Star**





**A protostar is a star in its early stages that is gathering hydrogen gas and dust before nuclear fusion begins**

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 or 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

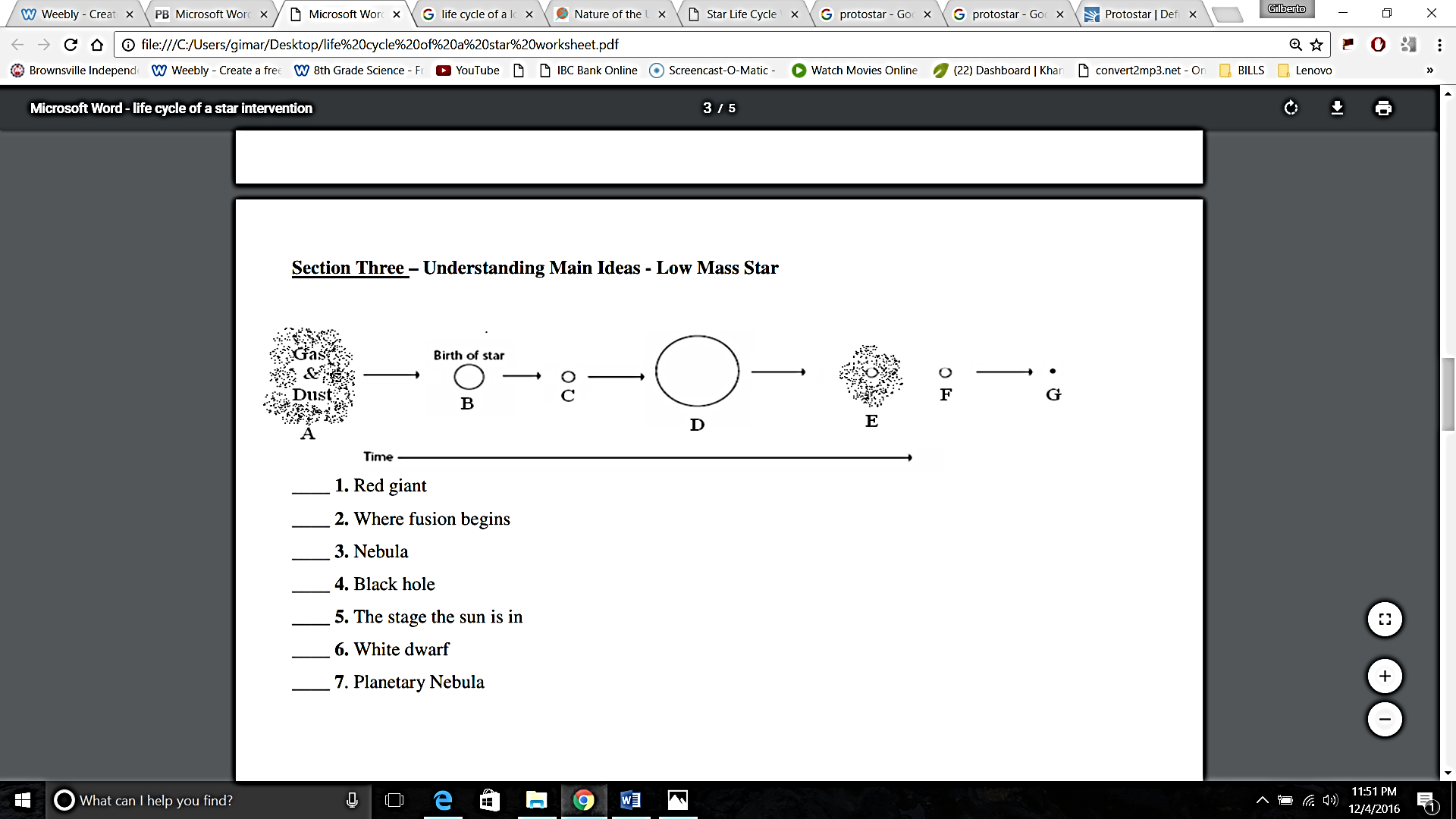
\_\_\_\_ nebula **c**. what a medium-mass star becomes at the end of its life

\_\_\_\_ 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

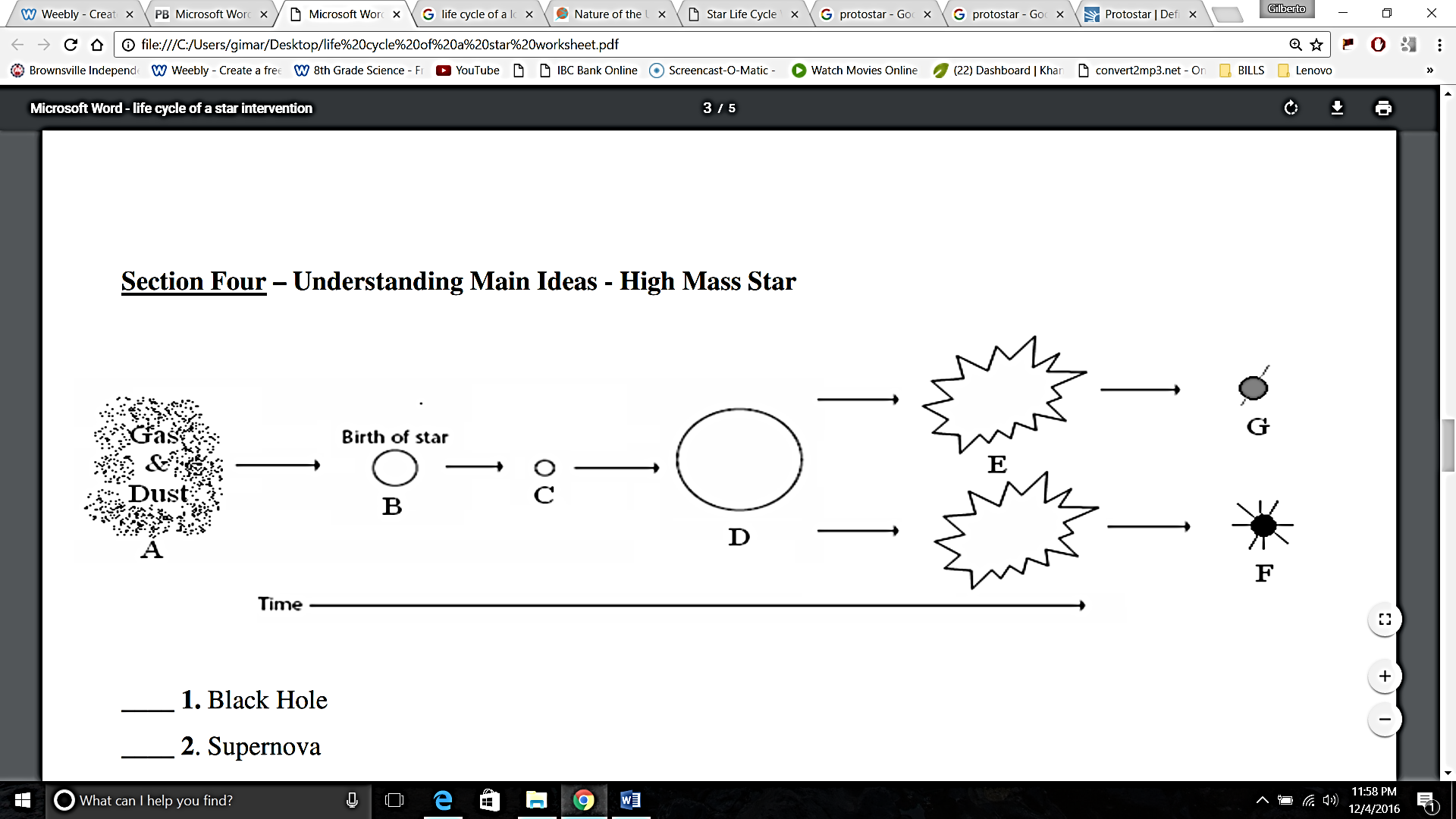
\_\_\_\_ 3. Stellar Nebula

\_\_\_\_ 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

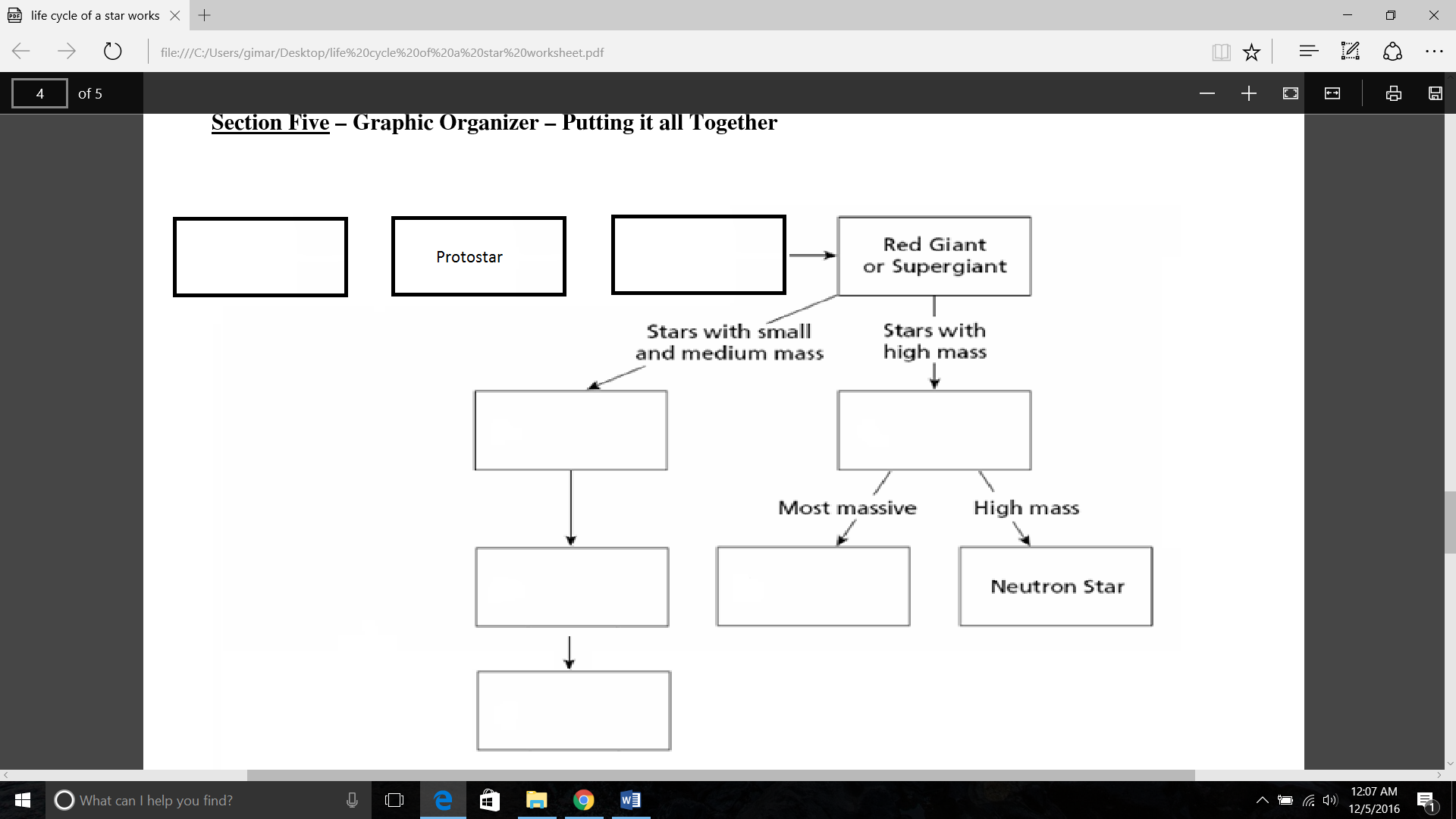
\_\_\_\_\_\_ 3. Stellar nebula

\_\_\_\_\_\_ 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

