Name: _____

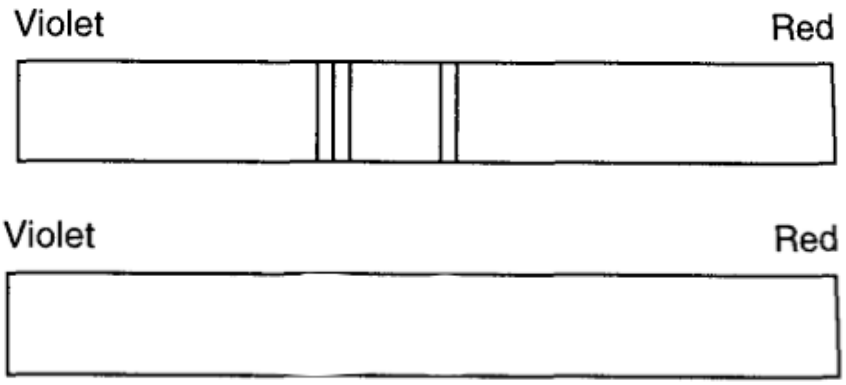
Universe - Stars - Planets Review

1. According to the Big Bang Theory, the universe is _____.
   (expanding or contracting)

2. Evidence of the Big Bang can still be detected in all directions in the universe. This leftover radiation is called _____.

3. The age of the universe is estimated to be _____ years old.

4. The spectrum below shows the spectral lines of a light source that is not moving either towards or away from an observer. In the box beneath it, draw in how those spectral lines would look if that light source was moving away from the observer.



5. Put the following terms in order from smallest to largest: **galaxy, planet, solar system, universe, sun**

   _____, _____, _____, _____, _____
   (smallest) (largest)

6. Our Milky Way galaxy is what shape? _____

7. What force causes clouds of dust and gas to contract in space to form stars?
   _____

8. The force of gravity between two objects is greatest when
    a. Masses are small and the objects are close together
    b. Masses are small and the objects are far apart
    c. Masses are large and the objects are close together
    d. Masses are large and the objects are far apart

9. Using the words listed below, identify the characteristics of Terrestrial and Jovian planets.

smaller	***inner***	***gaseous***	***outer***	***larger***
Longer periods of rotation	***High density***	***Low density***	***rocky***	***Shorter periods of rotation***

Terrestrial Planets	Jovian Planets

10. Using one or more sentences, state the relationship that appears to exist between a planet's mean **<u>distance</u>** to the sun and its **<u>period of revolution.</u>**

    _____

    _____

11. The center of the asteroid belt is approximately 404 million kilometers from the Sun. State the name of the planet that is closest to the center of the asteroid belt.

    _____

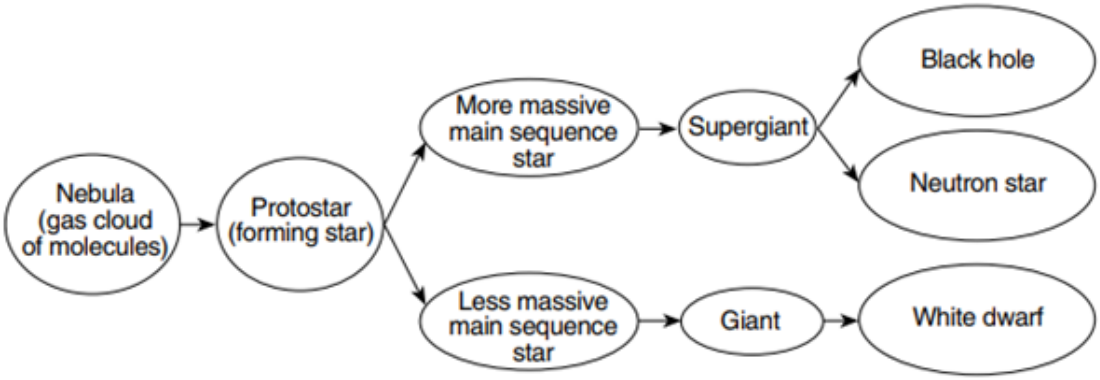
12. Name two stars that have a higher temperature and lower luminosity than our sun.

    _____ _____

Base your answers to questions 13 through 16 on the passage and flowchart below and on your knowledge of Earth science.

The Future of the Sun

Hydrogen gas is the main source of fuel that powers the nuclear reactions that occur in the Sun. But just like many sources of fuel, the hydrogen is in limited supply. As the hydrogen gas is used up, scientists predict that the helium created as an end product of earlier nuclear reactions will begin to fuel new nuclear reactions. When this happens, the Sun is expected to become a red giant star with a radius that would extend out past the orbit of Venus to as far as Earth's orbit. Earth will probably not survive this change in the Sun's size. But no need to worry at this time. The Sun is not expected to expand to this size for a few billion years.

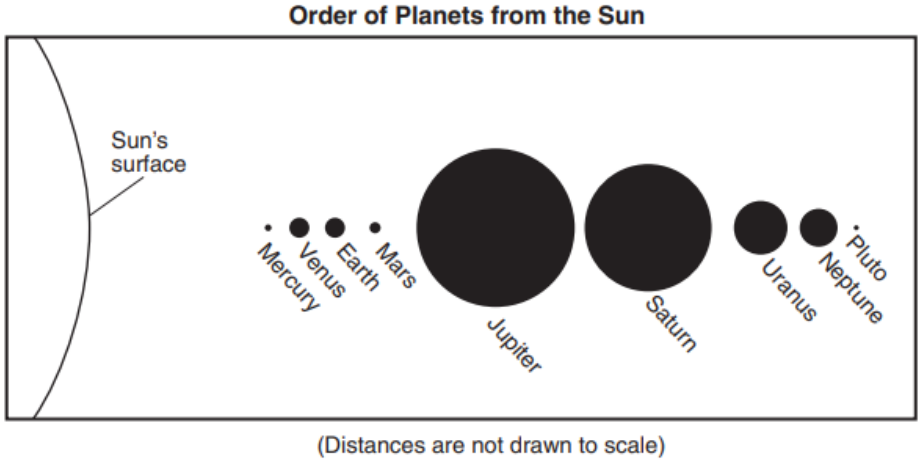


13. Our sun formed directly from a cloud of dust and gas called a _____.

14. Identify the nuclear reaction referred to in this passage that combines hydrogen gas to form helium and produce most of the Sun's energy. _____

15. Based on the flowchart, identify the characteristic of a main sequence star that determines whether the star becomes a giant or supergiant. _____

16. On the diagram below, draw a vertical line to represent the inferred location of the Sun's surface when it becomes a red giant star.



Base your answers to questions 17 through 19 on the table below and on your knowledge of Earth science. The table shows the velocities, in kilometers per second (km/s), for several galaxies, represented by the letters A, B, C, D, and E, that are moving away from Earth. The vast majority of stars and galaxies in the universe are moving away from our solar system. Scientific evidence indicates that the farther away a galaxy is, the faster it is moving away.

17. Identify the evidence scientists use to determine that a galaxy is moving away from Earth.

    _____

18. A star in one of these galaxies has a surface temperature of 8000 K and a luminosity of 10. Identify the life cycle stage and color of this star. _____

19. How many times greater is the velocity of Galaxy A compared to the velocity of Galaxy C? _____

Velocities of Galaxies Moving Away From Earth

Galaxy	Velocity (km/s)
A	61,000
B	15,000
C	1200
D	39,000
E	22,000