

**Unit 5 Astronomy**

1. Universe - means everything that exists in any place.
2. The universe is extremely vast and it is more than 10 – 20 billion years old.
3. The Big Bang Theory - states that all matter and energy started out concentrated in a small area and , after a gigantic explosion, matter began to organize into subatomic articles and atoms.
4. The universe is still expanding today.
  - a. There is microwave radiation fro the explosion coming from all areas of the universe.
  - b. The apparent red shift of most of the galaxies.
    - i. Doppler Effect is the shifting of wavelengths as an object passes.
      1. Blue has a shorter wavelength and the object is coming toward you.
      2. red has a longer wavelength and is moving away.
5. Galaxies are collection of billions of stars and various amounts of gas and dust held together by gravity.
6. An average galaxy has over 100 billion stars and there are over 100 billion galaxies.
7. There are three types of galaxies based on shape: spiral, elliptical and irregular
8. Our solar system is part of the Milky Way galaxy.
9. We are part of a spiral galaxy and are located in one of the arms.
10. A star is usually a large ball of gas held together by gravity provides tremendous amounts of energy and shines.
11. Most of the energy of stars comes from nuclear fusion.
12. Nuclear fusion is the combining of the nuclei of smaller elements to form the nuclei of larger elements with some of the mass being converted into energy.
13. The Sun converts hydrogen into helium.
14. luminosity of a star measures how bright it would be in relation to the sun if all stars were the same distance from an observer.
15. Know how to use the Luminosity and Temperature of Stars chart in your ESRT.
16. Main sequence stars are 90% of starts. Average size and color.
17. Bigger stars are usually hotter.
18. Our sun is a main sequence star of yellow color.
19. Giant Stars red, orange and yellow giant stars are rare types of stars that are commonly seen in the night sky because of their large size.
20. Super Giants are very big stars that are very luminous.
21. White dwarfs are small stars. They are in the last luminous or shining stage of low to medium mass stars.
22. Black dwarfs happen when a white dwarf cools and no longer emits energy. It is a dead star.
23. Stars have an evolution (life cycle).
24. Stars originate from clouds of gas and dust molecules.
25. Gravity causes the gases to clump together. When the mass is high enough nuclear fusion starts and the star begins to shine.
26. black holes are extremely strong gravity fields that allow no visible light or any other form of energy to escape.
27. solar system is the sun and all objects that orbit the sun under its gravitational influence.
28. 99% of the mass in the solar system belongs to the sun.
29. A satellite is any object that orbits or revolves around another object.
30. An asteroid is a solid rocky and/or metallic body that orbits the sun.
31. There is a known asteroid belt between Mars and Jupiter.
32. A moon is a body that orbits a planet or an asteroid.

33. A \_\_\_comet\_\_\_ is often compared to a dirty snowball.
34. \_\_\_meteoroids\_\_\_ are very small fragments that orbit the sun.
35. When meteoroids enter the Earth's atmosphere they leave a visual streak in the sky and are called \_\_\_meteor\_\_\_.
36. \_\_\_meteorite\_\_\_ is when a meteor actually touches the Earth's surface.
37. Some meteorites have sufficient mass to create a depression in the Earth's crust called an \_\_\_impact\_\_\_ crater.
38. Scientists think that our solar system started to form approximately 5 billion years ago.
39. Our \_\_\_Sun\_\_\_ formed from a giant cloud of dust and gas that condenses into a star and several planets.
40. \_\_\_Inner\_\_\_ \_\_\_terrestrial\_\_\_ planets are close to the sun, small, are dense, have few moons, have no rings
41. \_\_\_outer\_\_\_ \_\_\_Jovian\_\_\_ planets are far away from the sun, made from gas, are large, low densities, have many moons, have many rings
42. Know how to use the Solar System Data chart in your ESRT.
43. \_\_\_rotation\_\_\_ is the spinning on an imaginary axis.
44. The \_\_\_period\_\_\_ of rotation is the amount of time for a planet to spin 360 degrees. The length of one day on the planet.
45. \_\_\_revolution\_\_\_ is the movement around the sun in a path called an ellipse.
46. An \_\_\_ellipse\_\_\_ is the oval shape of a planet's path around the Sun.
47. Within the ellipse are two fixed points called \_\_\_foci\_\_\_.
48. The sun is at one focus and \_\_\_nothing\_\_\_ is at the other.
49. \_\_\_eccentricity\_\_\_ is the degree of ovalness of an ellipse.
50. If the eccentricity equals 1, then the orbit will be a straight line.
51. If the eccentricity equals 0, then the orbit will be a circle.
52. Calculate the eccentricity of the ellipse below. Round to the nearest thousandth.