

16. **Explain the purpose of gravity.** Gravity affects all things in the universe. It is the attraction of all objects to each other. (The Law of Universal Gravitation) It allows gasses, water, etc. to stay on a planet
17. **Explain the characteristics of asteroids, comets, meteors, and meteorites. Where are these objects found?** Asteroids are chunks of rock that are orbiting the sun in our solar system. Most are found in the Asteroid Belt. Comets are chunks of rock and ice that also orbit the sun. (Most comets are found in the Kuiper Belt or the Oort Cloud far past Pluto) Scientist think Asteroids and Comets show us what the early solar system was like. Sometimes the dust or particles of a comet or asteroid can enter Earth's gravitational pull. They are called Meteoroids when they are above our atmosphere, Meteors if they are burning up in our atmosphere, and Meteorites if they do not burn all the way and land on the surface of the Earth.
18. **Explain why comets have tails.** As a comet orbits near the sun, the ice will start to turn into vapor. The front of the Comet we call the coma and a tail will form. The tail points away from the sun due to the solar wind.
19. **Explain the location of the asteroid belt.** Between Mars and Jupiter.
20. **Explain how the amount of light on the moon changes from full Moon to new Moon.** After the full moon the amount of light gets smaller or wanes. We have waning gibbous, 3rd or last quarter and then finally waning crescent.
21. **What determines the moon phase seen from earth?** The position of the moon as it revolves around the Earth determines what phase we see. The moon phase is caused by the amount of the lit side of the moon that can be seen from our vantage point looking up at the moon.
22. **During which two moon phases, can you see the same amount of the moon being lit?** 1st and 3rd quarters.
23. **Draw and explain a solar eclipse and a lunar eclipse.** Which moon phase is seen during each eclipse? Solar Eclipse- (new moon) The Moon blocks the sun and the moon's shadow falls on the Earth. Lunar Eclipse -(full moon). The Earth's shadow falls on the moon.
24. **Why are you less likely to see a solar eclipse than a lunar eclipse?** The moon's orbit is not on the same plane as the Earth's orbit. When these orbital plains meet or cross, we have more of a chance to see an eclipse.
25. **Where does most of the energy in the United States come from?** Fossil fuels
26. **List different types of fossil fuels. Explain how fossil fuels are made.** They are made from organisms that lived millions of years ago, that were buried and changed by heat and pressure. Natural gas, coal, and oil are the fossil fuels.
27. **Explain where biomass comes from.** Biomass is from a recently living organism that is used to make fuel (biodiesel, alcohol) or that is burned as fuel. (sugar cane, corn, wood, and manure are biomass)
28. **What are the advantages of hydroelectric energy? What are the disadvantages?** Hydroelectric power does not burn fossil fuels to provide power. It uses the force of running water. Disadvantages include the damming up of a river, There are consequences of building a dam on organisms and the natural river flow.
29. **List ways to conserve energy. What are ways people waste energy?** Doing your part to not use as much electricity, or fuels. Turn off the lights, carpool, walk, ride bikes are ways to conserve electricity and fuels. Wasting energy: doing the opposite of the list above.
30. **Describe our galaxies place in the universe.** There are billions of stars in our Milky Way and our Milky Way is one of billions of galaxies.
31. **Draw and label the phases of the moon.** Make sure to include the Earth and the Sun in your drawing. See your notes!

Quarter 4 Science Exam With Answers

- 1. Explain in detail both the heliocentric and geocentric views of the solar system.**
The geocentric (earth centered) view is the past theory and model that placed the Earth as the center of the universe.
The heliocentric (sun centered) view is the current accepted model of how the sun is the center of our solar system with the planets revolving around the sun. Major people that helped change the ideas to the heliocentric view are Copernicus, Galileo, and Kepler.
One thing in common between the two models is that both have the moon going around the Earth.
- 2. Explain in detail how the solar system formed.** The sun formed and the remaining spinning disk formed the planets
- 3. How do scientists know the universe is expanding?** The galaxies are moving away from each other.
- 4. What events led to the Big Bang Theory?** Edwin Hubble discovered that the galaxies are moving away from each other, and the discovery of background radiation led to the acceptance of the Big Bang Theory.
- 5. In detail explain the following types of galaxies: Elliptical, Spiral, and Irregular**
Elliptical- a flattened type of oval shape filled with old stars.
Spiral- a pinwheel shape (Our Milky Way galaxy shape)
Irregular- no definite shape – mostly new stars.
- 6. Explain the location of our solar system in the Milky Way Galaxy.**
We are located approximately 25,000 LY from the center on the spiral known as the Orion Arm. The Milky Way is approximately 100,000 LY across. (not on the outside, not in the middle)
- 7. Explain the effect earth's rotation has on how we view the sky during the day and night.**
As the Earth rotates from W to E (counter clockwise) it appears that the sun and constellations rise in the east and set in the west.
- 8. What would happen if Earth's rotation sped up? What if the rotation slowed down?**
If the rotation sped up, then the day length would get shorter (< 24 hours)
If the rotation slowed down then the day length would increase (>24 hours)
- 9. How long does it take for the Earth to rotate one time? How long does it take to revolve one time? What does rotation and revolution result in?**
One rotation 24 hours (rotation takes a day)- makes day and night
Revolution 365 days (revolution takes a year) makes the seasons with the tilt of the axis
- 10. List the order of the planets from the sun?** Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune My Very Educated Mother Just Served Us Nachos.
- 11. Explain characteristics (size, surface, distance from sun, rings, moons) that all inner planets share. Explain characteristics (size, surface, distance from sun, rings, moons) shared by the outer planets. See your notes!**
Inner planets are terrestrial or rocky surface: Earth one moon, Mars (2 moons)
Outer planets are the Gas Giants: All have rings, many moons, with huge cold gas atmospheres.
- 12. What allows moons to orbit planets?** The balance between gravity pulling the moon toward the planet and inertia (the planet wanting to continue out into space)
- 13. What is the largest source of gravity in our solar system other than the sun?** Gravity increases with mass, so Jupiter has the most mass besides the sun in our solar system.
- 14. What would happen to a moon if gravity suddenly disappeared?** It would not orbit anymore and would fly out into space.
- 15. Order the inner planets from most gravitational attraction to the sun...explain the order. Of the inner planets, Earth has the greatest mass, then Venus, Mars, and Mercury. So that is the order of greatest gravity to least in the inner planets.**