

1. The mean number of moons orbiting a planet in the solar system is 23.125 (this mean is defined as the total number of moons orbiting planets divided by total number of planets). If over the next 10 years 30 additional moons are discovered, what is the new mean?



- a. 26.875 moons per planet
- b. 26 moons per planet
- c. 26.458 moons per planet
- d. 25 moons per planet

2. A person weighs 500 N on Earth. What is this person's mass on Mars? (Assume Mars' acceleration due to gravity on its surface is half that of Earth's, and use $g=10 \text{ m/s}^2$)



- a. 250 N
- b. 25 kg
- c. 500 kg
- d. 50 kg

3. The Moon rises almost 2 hours before the Sun has set on a particular day. Estimate the Moon's phase.



- a. Full Moon
- b. Waxing Gibbous
- c. Waning Crescent
- d. First Quarter

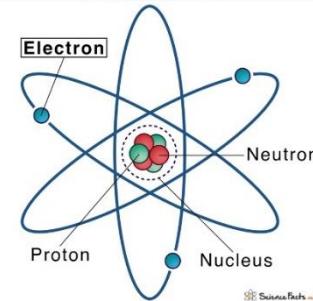
4. What is the name of the rocket that carried the Apollo 11 module into space?



- a. Saturn IV
- b. Saturn V
- c. Titan V
- d. Titan IV

5. The current flowing through a wire is 3 A. Find the number of electrons that pass through the wire in 3 seconds. (the charge on one electron is approximately $1.6 \times 10^{-19} \text{ C}$).

Electron



- a. 5.625×10^{19} electrons
- b. 1.875×10^{19} electrons
- c. 6.25×10^{18} electrons
- d. 6.25×10^{19} electrons

6. Kepler's third law states that the square of the time period of revolution of a planet around the Sun is directly proportional to the cube of the orbital radius of the planet. Using this law as fact, estimate a time period for the revolution of a hypothetical planet in orbit around the Sun which orbits the Sun in a nearly circular orbit at 100 times the Earth-Sun distance.



- a. 100 years
- b. 1,000 years
- c. 10,000 years
- d. 100,000 years

7. The sine of an angle A is 6/10. Find the value of the $\sec A + \tan A$.

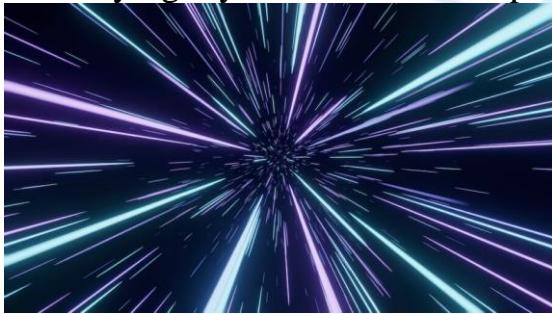
- a. 2
- b. 10/8
- c. 6/8
- d. 1

8. Which is the second brightest star in the night sky?



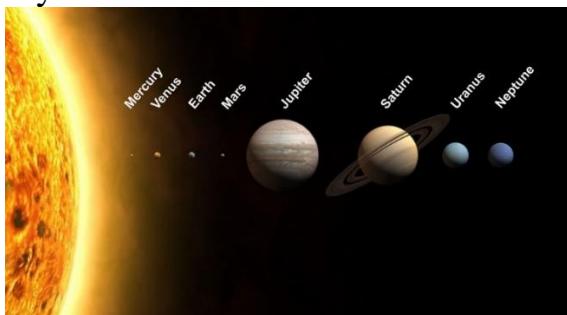
- a. Sirius
- b. Alpha Centauri
- c. Canopus
- d. Vega

9. How many light years are there in a parsec?



- a. 2.3 light years
- b. 3.26 light years
- c. 4.2 light years
- d. 2.6 light years

10. Which is the most massive object in our solar system?



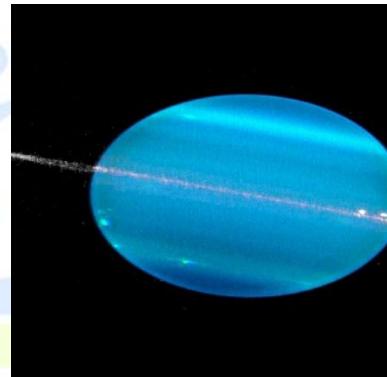
- a. Earth
- b. Jupiter
- c. Saturn
- d. Sun

11. The famous cluster of stars, the Pleiades, lies in which constellation?



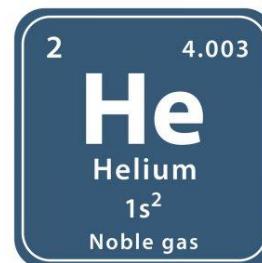
- a. Taurus
- b. Orion
- c. Ursa Major
- d. Centaurus

12. Which was the first spacecraft to visit the planet Uranus?



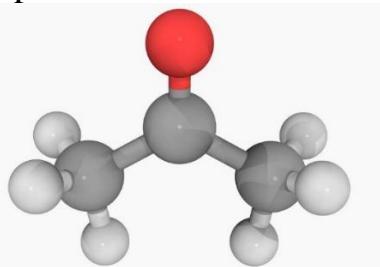
- a. Voyager 1
- b. Voyager 2
- c. Pioneer 10
- d. New Horizons

13. Which phenomena led to the discovery of Helium?



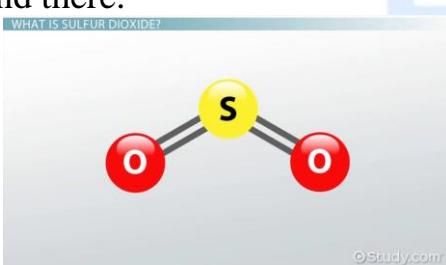
- a. The absorption spectrum of the Sun
- b. Nuclear fusion of Hydrogen atoms
- c. Nuclear fission
- d. X-ray diffusion

14. In astronomy, we are very interested in compounds that have an organic origin, because it has the potential to indicate life on other worlds. What compounds are considered organic compounds?



- a. Compounds made up of predominantly heavy metals like Iron
- b. Compounds made up of predominantly radioactive substances like Uranium
- c. Compounds made up of predominantly non-metals like Oxygen
- d. Compounds made up of predominantly Carbon

15. It is well known that combustive phenomena, particularly in the presence of sulfur compounds, have the ability to release Sulfur Dioxide gas as a by-product. During the course of scientific inquiry, it was found that large amounts of Sulfur Dioxide was detected near the moon Io. Using your knowledge of contemporary scientific fact, suggest the most suitable reason as to why the Sulfur Dioxide was found there.



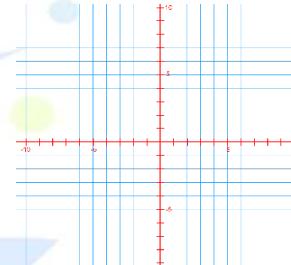
- a. The presence of micro-organisms which release Sulfur Dioxide as a respiratory gas
- b. The presence of an alien species which burns Sulfur compounds as a fuel source
- c. The presence of volcanoes which release plumes of Sulfur Dioxide gas into the atmosphere
- d. The gravitational interactions between Io and the Sun

16. Who is credited with the invention of the reflector telescope?



- a. Galileo Galilei
- b. Robert Hooke
- c. Nicholas Copernicus
- d. Sir Isaac Newton

17. The Sun is defined as the origin in a coordinate system. If the Earth has coordinates (3,6,10) in this coordinate system, find the Earth-Sun distance in terms of these arbitrary units. Hint: Distance in 3D is calculated in a similar way to that in 2D.



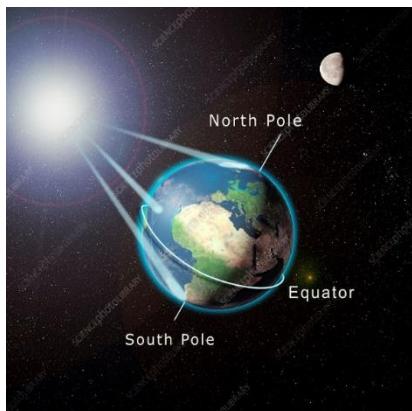
- a. 11.89
- b. 13.12
- c. 12.04
- d. 12.56

18. What is the approximate time of sunrise for an observer located in Indonesia (close to the Equator) on March 21st?



- a. 7 am
- b. 6 am
- c. 5 am
- d. 8 am

19. Which famous star is used as a reference to determine directions in the Northern Hemisphere?



- a. Polaris
- b. Vega
- c. Arcturus
- d. Sirius

20. How many planets in our solar system do not have moons?

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- a. 1
- b. 2
- c. 3
- d. 4

21. How many planets in our solar system have rings?



Answer:

22. If the Sun is located in the constellation of Capricorn, determine the season in the Northern Hemisphere.



Answer:

23. Which country recently landed a probe on the far-side of the Moon?



Answer:

24. What is the highest point in the sky called?



Answer:

25. Which colours corresponding to the different wavelengths of light suffers from most atmospheric scattering?



Answer: