

Astronomy Quiz Bowl

Categories

Celestial Spheres	Heliocentric History	Syzygy!	Terrestrial Extras	Planetary Potpourri	Lifestyles of the Big and Gaseous
Lines and points in the sky	Historical Astronomy, Copernican Revolution	Eclipses	Terrestrial Planet trivia	Properties of planets	Jovian planet trivia

Quiz Bowl Questions

I. Celestial Spheres

1. What do you call the projection of the Earth's equator onto the celestial sphere?
2. For navigation, one can use the transit time of stars to find one's ____.
3. Which asterism do most North Americans see in the constellation Ursa Major?
4. How many constellations are there in the sky?
5. What is the angle between the two points where the central meridian crosses the horizon?
6. One's latitude on Earth is the same as the altitude of the ____.
7. If your latitude on Earth is 40 degrees, what will be the maximum altitude of the celestial equator?
8. On how many days does the Sun pass directly overhead in one year for people on the Earth's equator?
9. On which days of the year is the length of the day 12 hours for virtually all latitudes?
10. How many arcseconds in a degree?
11. In what units is right ascension measured?
12. How many degrees apart are the pointer stars of the big dipper?
13. What do you call a star which is visible at night but never sets?
14. What determines how many stars are circumpolar for a given observer, their longitude, latitude, or altitude?
15. Where is declination defined to be 0 degrees?
16. What is the declination of the NCP?
17. About how many degrees does the Sun move each day relative to the stars?
18. How many years does it take for the Earth's spin axis to precess 360 degrees?
19. Which coordinate system will give the same coordinates independent of where the observer is standing?

II. Heliocentric History

1. In what year did Galileo build his first telescope?
- 2.
3. Which planetary configuration occurs during retrograde motion?
4. Who had a model for the solar system that was a mixture of the ptolemaic and copernican models? (*Tycho B.*)
5. What is Kepler's first law? (*Orbits are ellipses*)
6. Who argued that the Earth cannot be revolving because of the absence of stellar parallax? *Answer: Aristotle*
7. Which pre-Aristotle Greek has a theorem named after him involving triangles?
8. Which early astronomer died on the birth year of Isaac Newton?
9. Name one of the two cultures that contributed the most to astronomy during Europe's Dark Ages. (*Arab and Chinese*)
10. Who was known for his meticulous planetary observations up until AD 1601?
11. Which geometric construct was used by Ptolemy (and Hipparchus) to model retrograde motion?
12. Who used calculus and a theory of gravity to show why planets have elliptical orbits.
13. In approximately which direction do you go from the center of the Sun to reach the center of mass of the Solar system? (*towards Jupiter*)
14. Which Greek proposed a heliocentric model of the Solar System?
15. Which Greek determined the size of the Earth using shadows cast by sticks?
16. Galileo's observation of which phase of Venus directly contradicted the Ptolemaic model?
17. Copernicus' heliocentric model still did not match observations well because he assumed that the shape of the planets' orbits were _____.
18. Which of Kepler's laws states that equal areas are swept out in equal times?
19. Kepler's third law relates which two properties of planets?
20. Who discovered the four brightest moons around Jupiter?
21. Which early astronomer had a quarrelsome mother who sold drugs?
22. Which astronomer does Sagan describe as the embodying the separation of astronomy from astrology?
23. In "Harmony of the Spheres" Sagan visits Chivas built by this Indian civilization.

III. Lunacy

1. How long does it take for the Moon to rotate relative to the stars?
2. A 1 km across meteoroid should make a crater about how big? (*10 km*)
3. What do you call the fine powder on the Moon's surface?

4. What surface feature on the Moon indicates where lava once flowed? (*rilles*)
5. Rilles and volcanoes are both examples of what? (*vulcanism*)
6. How much stronger is the Moon's tidal force than the Sun's tidal force on the Earth? (*2 times*)
7. Which layer of Earth's interior is missing from the Lunar interior? (*liquid outer core*)
8. Of the sister theory, the capture theory, the daughter theory and the impact theory, which theory is preferred for the Moon's formation? (*impact theory*)
9. What was detected on the Moon that makes us think it has water? (*protons or H*)
10. Which NASA spacecraft was purposefully crashed into a dark crater? (*Lunar Prospector*)
11. How many times does the Moon rotate relative to the Earth in one Month?
12. What is the ratio of the Moon's diameter to the Earth's diameter? (*0.3*)
13. An object which in the solar system which orbits around a planet is called a natural satellite or a _____.

IV. Terrestrial Extras

1. Name a big volcano on Mars. (*Olympus Mons, Elysium Mons, Ascraeus Mons, Pavonis Mons, Apollonaris, Hecates Tholus, and Arsia Mons*)
2. Which planet has the highest average surface temperature?
3. What process on Earth keeps its volcanoes smaller than those on Mars?
4. What unique thing does Earth have which explains the low levels of Carbon Dioxide in the atmosphere? (*Oceans.*)
5. What is the minimum temperature on the surface of Mercury? (*100K, -173K, -280 F*)
6. Which planet was mapped by the Magellan satellite using radar?
7. On which planet do meteorites containing small, worm-like structures probably originate?
8. Which planet is sometimes referred to as our sister planet?
9. Which terrestrial planet is the most massive?
10. What is the largest mountain on Venus? (*Maxwell Montes*)
11. What surface feature on Mercury is caused by the cooling and contracting of the planet?
12. Some astronomers around 1910 suspected intelligent life on Mars because of alleged observations of _____.
13. The Face on Mars is an example of what psychological phenomenon?
14. Name a surface formation on Mars that indicates previously flowing water.

(*runoff channels, outflow channels*)

15. Which long trench on Mars was probably caused by crustal stress?
16. What is the name of the large supercontinent that broke up into Earth's current seven continents? (*Pangea*)
17. Where would you find the features Aphrodite Terra, and Ishtar Terra?
18. What layer of a planet's atmosphere has decreasing temperature with altitude and the highest density? (*Troposphere*)
19. What atmospheric phenomenon is most likely to change the appearance of the low latitude regions of Mars? (*dust storms*)
20. Which lunar features appear to the eye as dark blotches on the Moon?
- 21.

V. Planetary Potpourri

1. What property of all planets suggests that the solar system originated as a rotating cloud of gas and dust? (*CCW sense of revolution.*)
2. How many times more massive is Jupiter than the Earth? (*318*)
3. Which planet has the longer synodic period, Venus or Mercury?
4. What do we call learning about the planets by comparing them to one another?
5. Which planet has the longest sidereal period?
6. Which planet has the longer synodic period, Mars or Pluto?
7. Which property determines whether a planet will have seasons?
8. Which spacecraft, destined for Jupiter, got gravitational assists by Venus and the Earth? (*Galileo*)
9. The fraction of light which is reflected off of a planet's surface is called its _____.
10. Large mass is associated with which class of planets?
11. Which planetary configuration is only observed for superior planets?
12. High density is associated with which class of planets?
13. The distances of the planets from the Sun roughly follows a mathematical series called _____ Law.
14. If the asteroids had formed a planet, where would their orbit lie in the solar system?
15. What is the least massive planet in the Solar System? (*Pluto-> Mercury*)
16. What is the greatest elongation that can be observed for Mercury? (*18+-1*)
17. All of the planets appear near which imaginary line in the sky?
18. How many times more massive is the Sun than Jupiter?

19. Venus is nearest which planetary configuration when it appears nearly full?
20. Which terrestrial world has the highest surface pressure?
21. Which planet is made of the most dense materials?
22. What is the only object in the Solar system that we can only ever see about ½ of? (*The Moon*)

VI. Lifestyles of the Big and Gaseous (Jovians)

1. Which planet has the most massive ring system?
2. Which of the outer planets do not have a ring system?
3. Which of the outer planets has the most extreme seasons?
4. Which planet was predicted based on perturbations in Uranus' orbit?
5. Which frozen world was discovered photographically in 1930?
6. What is the name of the largest hurricane in the Solar System?
7. On which planet was the Great Dark Spot observed by Voyager 2?
8. Which planet is probably the largest of a class of small icy worlds.
9. Which Jovian planet appears the most uniform and featureless?
10. What molecule gives Uranus and Neptune their color?
11. What are the dark stripes on Jupiter called? (Belts)
12. Which are the bright stripes on Jupiter called? (Zones)
13. Most of the Storm systems on the Jovian planets are not perfect circles, but are _____.
14. The highest wind speeds on Jupiter and Saturn occur near which latitude?
15. On which moon of Jupiter have active volcanoes been photographed?
16. Which two Jovians have a large angle between their spin and magnetic axes?
17. Name the Galilean Moons of Jupiter.
18. A photochemical reaction called radiation darkening was invoked to explain the Moons of _____.
19. What are the first letters of the names of the 9 biggest moons of Saturn?
20. Which large moon of Neptune has a retrograde orbit? (*Triton*)
21. The thin rings called Galle, Leverrier, and Adams are named after the discoverers of which planet?
22. Which planet has the largest moon to planet size ratio? (*Pluto*)
- 23.

IV. Syzygy (eclipses)

1. What is the time between eclipse seasons on the Earth?
- 2.

