

Question 1

1. According to Aristotle what would an object like the Moon be made of?

		Fire
		Earth
		A 5th element not found on Earth at all
		Air
		Water

2.5 points

Question 2

2. Copernicus proposed which of the following?

		the Moon is a perfect sphere
		Venus should only have crescent phases
		Planets, including Earth, orbit around the Sun
		Jupiter has moons in orbit around it

2.5 points

Question 3

3. What would happen to seasonal temperature variations if the axis of Earth was tilted by 60 degrees instead of 23.5 degrees?
- 4.

		All locations would have more extreme variation
		Variations in temperature would be reduced globally
		The northern hemisphere would always be in summer
		Variations would increase in the northern hemisphere, but decrease in the south

2.5 points

Question 4

5. Which of the following is NOT true about scientific progress

		New observations can force a re-examination of an accepted hypothesis
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		It avoids explanations that invoke the supernatural
		It proves theories to be 100% true, beyond all doubt
		It progresses by creating and testing models of nature

2.5 points

Question 5

6. When the ancient Greeks referred to the heavens as “perfection”, what did they mean?

		The heavens were made of several geometrical shapes called the platonic solids
		The heavens are made of perfect spheres moving in perfect circles
		The heavens operate by the same laws as Earth
		The heavens are constantly changing to make perfect conditions here on Earth

2.5 points

Question 6

7. A planet in retrograde motion

		Temporarily reverses its path through the sky relative to the stars
		Will be at the North Celestial Pole
		Rises in the west and sets in the East
		Will be overhead at midnight

2.5 points

Question 7

8. If you were to look at the star Polaris and watch the motion of stars in the sky for several hours, what would you see?

		Half the stars move toward Polaris, half move away
		All the stars move in straight lines away from Polaris
		All the stars move in circles around Polaris
		All the stars rise in the East and set in the West

2.5 points

Question 8

9. Which of the following claims is falsifiable (testable) in a realistic way?

		The Mona Lisa painting is a better work of art than the Ode to Joy symphony.
		The Universe was actually created 10 years ago by a pan-dimensional being who planted all the observable evidence, including memories, isotope ratios, etc..., to make it look like the Universe has been around for about 13.7 billion years.
		Charlotte Johnson, AKA "Madame Charlotte", claims to have the power to make an invisible astral projection of herself that can float around freely while maintaining contact with her body's physical senses (taste, touch, sight, smell, and hearing). In other words, while using this technique, she can sense distant things with her astral projection that her physical body will be aware of.
		The best team in the history of the National Football League was the 1986 Chicago Bears

2.5 points

Question 9

10. The imaginary circle on the sky which is a projection of the Earth's equator onto the celestial sphere is called the

11.

		Celestial equator
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		zodiac
		ecliptic
		horizon

2.5 points

Question 10

12. If you were at 70° N latitude on Jun 21st, where would you point if you were asked to locate Polaris?

		70° above the northern horizon
		Due east along the horizon
		70° above the southern horizon
		Toward the zenith

2.5 points

Question 11

13. If it is sunset and the Moon is on your meridian, what phase is it in?

		Third quarter
		New
		First quarter
		Full

2.5 points

Question 12

14. What is the point directly overhead called?

		zenith
		meridian
		horizon
		ecliptic

2.5 points

Question 13

15. The sun's position mapped across the celestial sphere over the course of a year is called

		zodiac
		ecliptic
		zenith
		meridian

2.5 points

Question 14

16. If you see the Sun rising exactly due East in the morning, what day is it?

		the Winter solstice
		Either the spring or fall equinox
		the Summer solstice

		Any day, the Sun always rises due East
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2.5 points

Question 15

17. Kepler demonstrated that planetary orbits in the solar system are best described by

18.

		ellipses, with the Sun at one focus
		Circles, with the Earth at the center
		Circles, with the Sun at the center
		ellipses, with the Earth at one focus

2.5 points

Question 16

19. How would Copernicus explain why we have day and night on Earth?

		The Sun goes around the Earth every 24 hours, illuminating the side of Earth facing it.
		Earth spins on its axis every 24 hours, the side facing the sun has daytime, the opposite side has night
		Earth orbits the Sun every 24 hours and different parts are in day depending on where Earth is in its orbit
		Trick question, he had no way to explain day and night

2.5 points

Question 17

20. Which of the following is false?

		One day we might discover a planet that rises in the West and sets in the East
		Polaris is located very close to the North Celestial Pole
		In Ohio, the daylight hours are longer in July than in January

		The Full moon rises as the Sun sets
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2.5 points

Question 18

21. When Astronomers say the Universe is expanding, what are they referring to?

		The size of Earth is getting bigger
		The distance between galaxies is getting bigger
		the distance between planets is getting bigger
		You are getting bigger

2.5 points

Question 19

22. When an eclipse of the sun (solar eclipse) occurs, the phase of the moon must be

23.

		New Moon
		Full Moon
		Third quarter
		First quarter

2.5 points

Question 20

24. The star Polaris will no longer be located close to the north celestial pole several thousand years from now, due to the

25.

		Earth's location in its orbit around the Sun
		precession of Earth's axis of rotation
		change in the Earth's spin rate
		changes in global temperature

2.5 points

Question 21

26. Who made observations of moon going around Jupiter?

		Copernicus
		Galileo
		Kepler
		Ptolemy

2.5 points

Question 22

27. Who proposed an Earth centered model of the universe with epicycles for the planets that would prevail for roughly 1500 years?

		Galileo
		Copernicus
		Ptolemy
		Kepler

2.5 points

Question 23

28. If you are in Columbus and see a star near the Zenith at midnight, roughly where would you look to see it 6 hours later at sunrise?

		straight up, directly overhead
		40 degrees above the northern horizon
		Low in the Eastern sky
		Low in the western sky

2.5 points

Question 24

29. During a full moon, what fraction of the total surface of the moon is illuminated by the Sun?

30.

		Half of it
		Three quarters
		One quarter
		All of it

2.5 points

Question 25

31. Who observed decades worth of planetary data accurate to about 1 arc minute (1/60th of a degree)?

32.

		Tycho Brahe
		Copernicus
		Kepler
		Ptolemy

2.5 points

Question 26

33. Would it be possible from Columbus to go outside at midnight and see Mercury rising in the East?

		No because Mercury will always be close to the Sun, so it can't be seen at midnight
		Yes, you can always see Mercury at midnight
		Yes, it just depends on the time of year
		No because Mercury always rises at Noon

2.5 points

Question 27

34. What physically drives the changes in seasonal temperatures?

		The tilt of Earth's axis and how it changes which parts of Earth are closer to the Sun. It is summer for the closer parts and winter for the farthest parts
		The shape of Earth's orbit and how it changes the length of the day depending on how far we are from the Sun
		The shape of Earth's orbit. It is summer when we are closer to the Sun and winter when farthest away.
		The tilt of Earth's axis and how it affects the angle the sunlight hits the different hemispheres of Earth

2.5 points

Question 28

35. If the Moon is in first quarter phase, the what time will it rise?

		Sunrise
		Noon
		Sunset
		Midnight

2.5 points

Question 29

36. One week after a "New Moon" what phase will the Moon be in?

		Full
		Third Quarter
		New
		First quarter

2.5 points

Question 30

37. As seen from Columbus, if the sun rises north of due east, it will set

38.

		Trick question, the sun always rises due East
		south of due west
		north of due east
		north of due west

2.5 points

Question 31

39. Who was the first person to observe that the Sun had spots that rotated around its surface.

		Galileo
		Copernicus
		Tycho Brahe
		Kepler

2.5 points

Question 32

40. Which of the following is an example that relates to Kepler's 3rd law?

		Mercury moves faster in its orbit when closer to the Sun
		The gravity of Earth holds the Moon in orbit
		Venus shows a full cycle of phases
		Mars orbits the Sun at a faster speed than Jupiter

2.5 points

Question 33

41. Galileo used his observations of the changing phases of Venus to demonstrate

		Sun moves around the Earth
		Venus orbits around the Sun
		Earth is a sphere
		Moon orbits the Earth

2.5 points

Question 34

42. Imagine three stray asteroids, (X, Y, and Z) in orbit around the Sun. Asteroid X has an orbit with a semi-major axis of 3 AU. Asteroid Y has an orbit with a semi-major axis of 5 AU, Asteroid Z has an orbit with a semi-major axis of 1 AU. Which of the following correctly lists the asteroids from **shortest to longest** orbital period?

		Y, Z, X
		Z, Y, X
		Z, X, Y
		Y, X, Z

2.5 points

Question 35

43. At astronomical noon, where would you find the sun in the sky as seen from Columbus?

		In the northern sky, crossing the meridian
		In the southern sky, crossing the meridian
		Due East on the horizon
		Due West on the horizon

2.5 points

Question 36

44. What is special about the planets as compared to the other lights in the sky?

		They can only be seen in the Northern hemisphere of Earth
		They are the brightest objects in the night sky
		They are the faintest objects in the night sky
		Their position changes over time relative to the background stars

2.5 points

Question 37

45. Which of the following is a NOT a measure of distance?

		Trick question, all of the other answers are distances
		Light Year
		Kilometer
		Astronomical Unit

2.5 points

Question 38

46. What phase must the moon be in during a Lunar eclipse?

		Full
		Third quarter
		First quarter
		Full

2.5 points

Question 39

47. When it is Winter in Ohio, what season is it in Australia?

		Winter
		Summer
		Fall
		Spring

2.5 points

Question 40

48. Which of the following lists the objects in order from smallest to largest?

		Sun, Earth, Milky Way, Solar system
		Milky Way, Sun, Solar system, Earth
		Earth, Milky Way, Sun, Solar system
		Earth, Sun, Solar system, Milky Way