1. _____ planets [are located closest to the sun / have weather caused by internal heat / have weather caused by the sun / have surfaces covered with craters / are densest].

(A) Terrestrial.
(B) Jovian.
(C) (Unsure/guessing/lost/help!)

2. _____ is the terrestrial planet that [has the hottest core / is most geologically active].

(A) Mercury (closest to the sun).
(B) Venus (hottest atmosphere).
(C) Earth (most massive).
(D) Mars (tallest volcanoes).
(E) (The moon (formed from a large impact that formed Earth).)
(F) (Unsure/guessing/lost/help!)

3. Earth's plate tectonics is caused by:
(A) gradual slowing rotation.
(B) asteroid impacts that cracked the crust.
(C) convection currents underneath the crust.
(D) tidal forces from the moon.
(E) (Unsure/guessing/lost/help!)

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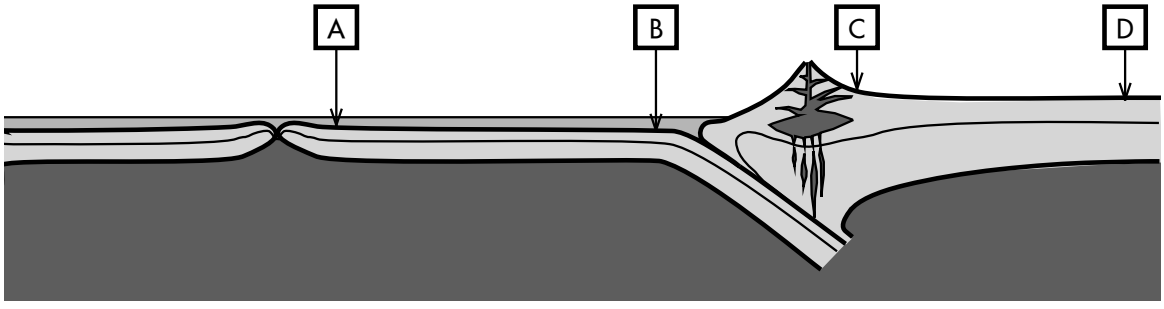
4. In the cross-section of Earth's crust and mantle shown below, _____ is the oldest (solidified the longest time ago).
(A) sample A.
(B) sample B.
(C) sample C.
(D) sample D.
(E) (Unsure/guessing/lost/help!)



5. _____ is blocked by $\left\lfloor \begin{matrix} \text{carbon dioxide} \\ \text{ozone} \end{matrix} \right\rfloor$.

(A) Ultraviolet.
(B) Visible light.
(C) Infrared.
(D) Radio waves.
(E) (Unsure/guessing/lost/help!)

6. An object warmed by sunlight will typically emit _____ as it cools off.
(A) Ultraviolet.
(B) Visible light.
(C) Infrared.
(D) Radio waves.
(E) (Unsure/guessing/lost/help!)

7. The $\left\lfloor \begin{matrix} \text{carbon dioxide} \\ \text{oxygen} \end{matrix} \right\rfloor$ in Earth's atmosphere was produced by:

(A) volcanoes.
(B) oceans.
(C) plants.
(D) the greenhouse effect.
(E) (Unsure/guessing/lost/help!)

8. _____ prevent(s) Earth's atmosphere from building up too much carbon dioxide.
(A) Volcanoes.
(B) Oceans.
(C) Infrared radiation.
(D) The greenhouse effect.
(E) (Unsure/guessing/lost/help!)

9. Which feature on the moon is the $\left\lfloor \begin{matrix} \text{youngest} \\ \text{oldest} \end{matrix} \right\rfloor$?

(A) Craters partially filled in with flat lava plains.
(B) Craters on top of flat lava plains.
(C) Flat lava plains.
(D) (There is a tie.)
(E) (Unsure/guessing/lost/help!)

10. Which feature on Mercury is the $\left[\begin{matrix}\text{youngest}\\\text{oldest}\end{matrix}\right]$?

(A) Lava-filled lowlands.
(B) Large crater basins.
(C) Long curving ridges.
(D) (There is a tie.)
(E) (Unsure/guessing/lost/help!)

11. The origin of Earth's moon best supported by current evidence is that it:
(A) formed alongside Earth.
(B) was captured by Earth.
(C) was debris from a collision.
(D) broke off of a spinning Earth.
(E) (Unsure/guessing/lost/help!)

12. Evidence that Mercury's crust compressed and shrank is its:
(A) weak magnetic field.
(B) long curving ridges.
(C) lack of atmosphere.
(D) huge multi-ringed Caloris Basin.
(E) (Unsure/guessing/lost/help!)

13. Mercury's _____ is evidence that it $\left[\begin{matrix}\text{may}\\\text{may not}\end{matrix}\right]$ have experienced a major impact origin.
(A) many impact craters.
(B) lack of geological activity.
(C) large metallic core.
(D) easily vaporizable crust.
(E) (Unsure/guessing/lost/help!)

14. _____ are used to compare the ages of different regions on terrestrial planets.
(A) Impact crater densities.
(B) Infrared measurements.
(C) Volcano heat maps.
(D) Polar ice caps.
(E) (Unsure/guessing/lost/help!)

15. Earth currently has fewer impact craters than [its moon / Venus] because of:

(A) the greenhouse effect.
(B) its magnetic field.
(C) plate tectonics.
(D) a different formation age.
(E) (Unsure/guessing/lost/help!)

16. Venus' _____ is evidence that its crust [is younger than the moon's surface / is older than Earth's surface / was recently entirely covered by lava].

(A) thick atmosphere.
(B) runaway greenhouse effect.
(C) small number of impact craters.
(D) lack of oceans.
(E) (Unsure/guessing/lost/help!)

17. [Coronae on Venus / Shield volcanoes on Mars] were produced by:

(A) runaway greenhouse effect.
(B) heavy bombardment.
(C) oceans, when it was younger.
(D) vertical motion of magma under the crust.
(E) (Unsure/guessing/lost/help!)

18. Mars' _____ is evidence that its crust [does not have plate tectonics / is very thick].

(A) thin atmosphere.
(B) lack of oceans.
(C) permafrost layers.
(D) large shield volcanoes.
(E) (Unsure/guessing/lost/help!)

19. The water remaining on $\begin{bmatrix}\text{Venus}\\ \text{Mars}\end{bmatrix}$ today is:

(A) in the mantle.
(B) frozen underground.
(C) trapped in sediments in the crust.
(D) in the atmosphere.
(E) (Unsure/guessing/lost/help!)

20. Most of the carbon dioxide from the early atmosphere of $\begin{bmatrix}\text{Venus}\\ \text{Mars}\end{bmatrix}$:

(A) escaped into space.
(B) is trapped under widespread lava flows.
(C) is in the mantle.
(D) is in the atmosphere.
(E) (Unsure/guessing/lost/help!)

21. $\begin{bmatrix}\text{Venus has a very thick}\\ \text{Mars has a very thin}\end{bmatrix}$ atmosphere because it:

(A) is too close to the sun.
(B) has plate tectonics.
(C) does not have enough mass.
(D) did not have plant life.
(E) (Unsure/guessing/lost/help!)

22. If $\begin{bmatrix}\text{Venus}\\ \text{Earth}\\ \text{Mars}\end{bmatrix}$ had originally formed $\begin{vmatrix}\text{closer to the sun}\\ \text{farther from the sun}\\ \text{with less mass}\\ \text{with more mass}\end{vmatrix}$, the temperature of its atmosphere would now be:

(A) cooler.
(B) approximately the same.
(C) warmer.
(D) (Unsure/guessing/lost/help!)

23. Jupiter's _____ is evidence that it [emits more heat than it absorbs from the sun / has liquid metallic hydrogen / is mostly liquid].

(A) belt-zone clouds.
(B) flattened shape.
(C) infrared radiation.
(D) strong magnetic field.
(E) (Unsure/guessing/lost/help!)

24. Jupiter's _____ makes its belt-zone clouds have [more active weather patterns / bolder colors] than Saturn's belt-zone clouds.

(A) mass.
(B) distance from the sun.
(C) density.
(D) magnetic fields.
(E) (Unsure/guessing/lost/help!)

25. Neptune has more atmospheric circulation than Uranus because Neptune:

(A) is closer to the sun.
(B) has more moons.
(C) has a warmer core.
(D) rotates faster.
(E) (Unsure/guessing/lost/help!)

26. _____ may explain how the interior of Uranus became cooler than Neptune's.

(A) More mass.
(B) Dissolved ammonia and methane.
(C) Closer orbit to the sun.
(D) A large impact.
(E) (Unsure/guessing/lost/help!)

27. The magnetic fields of Uranus and Neptune may be generated by:
(A) rotating molten iron cores.
(B) tidal interactions with the other jovian planets.
(C) energy from the sun.
(D) circulation of electrically conducting material.
(E) (Unsure/guessing/lost/help!)

28. Under the new International Astronomical Union classification scheme,
$\left[\begin{array}{l}\text{Pluto is now classified as a dwarf planet instead of a planet}\\ \text{Ceres is now classified as a dwarf planet instead of an asteroid}\end{array}\right]$ because it:
(A) has a tilted orbit around the sun.
(B) has a spherical shape.
(C) did not clear its orbit.
(D) does not have moons.
(E) (Unsure/guessing/lost/help!)

29. According to the International Astronomical Union classification scheme, if $\left|\begin{array}{l}\text{Pluto}\\ \text{Ceres}\end{array}\right|$ were placed in $\left[\begin{array}{l}\text{orbit around Earth}\\ \text{the Kuiper belt}\\ \text{orbit around the sun, between Earth and Mars}\end{array}\right]$, it would be:
(A) a moon.
(B) solar system debris.
(C) a dwarf planet.
(D) a planet.
(E) (Unsure/guessing/lost/help!)

30. Listed below are the minimal qualifications established by the International Astronomical Union for a planet:

I. Orbits the sun.
II. Shape "rounded-out" by gravity.
III. Cleared/dominates orbit around sun.

Which qualification(s) are met by [a dwarf planet / a small asteroid / a comet / Earth's moon]?

(A) I only.
(B) II only.
(C) III only.
(D) Both I and II.
(E) Both II and III.
(F) Both I and III.
(G) I, II, and III.
(H) (None of the above choices.)

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31. Listed below are the minimal qualifications established by the International Astronomical Union for a planet:

I. Orbits the sun.
II. Shape "rounded-out" by gravity.
III. Cleared/dominates orbit around sun.

Which solar system object(s) only meets qualification(s) [I / II / III]?

(A) Mars.
(B) Io, a moon of Jupiter nearly the same size as Mercury.
(C) Eris, a dwarf planet.
(D) Parnethope, an irregular-shaped asteroid.
(E) (More than one of the above choices.)
(F) (All of the above choices.)
(G) (None of the above choices.)
(H) (Unsure/guessing/lost/help!)

Listed below are the minimal qualifications established by the International Astronomical Union for a planet:

I. Orbits the sun.
II. Shape "rounded-out" by gravity.
III. Cleared/dominates orbit around sun.

32. Cruithne, an irregularly shaped body sharing Earth's orbit around the sun, is sometimes referred to as "Earth's second moon[1]." According to the IAU qualifications, Cruithne is classified as:
(A) a moon.
(B) solar system debris.
(C) a dwarf planet.
(D) a planet.
(E) (None of the above choices.)
(F) (Unsure/guessing/lost/help!)

33. Vulcanoids[2] are hypothesized to be a group of irregularly shaped bodies inside of Mercury's orbit around the sun. According to the IAU qualifications, Vulcanoids would be classified as:
(A) moons.
(B) solar system debris.
(C) dwarf planets.
(D) planets.
(E) (None of the above choices.)
(F) (Unsure/guessing/lost/help!)

34. Caduceus[3] is purported to be an irregularly shaped body in orbit around Mercury. According to the IAU qualifications, Caduceus would be classified as:
(A) a moon.
(B) solar system debris.
(C) a dwarf planet.
(D) a planet.
(E) (None of the above choices.)
(F) (Unsure/guessing/lost/help!)

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[1] Lynn Carter, "Have Astronomers Discovered Earth's Second Moon?" curious.astro.cornell.edu/question.php?number=578.

[2] wikipedia.org/wiki/Vulcan_(astronomy)#Vulcan_revived.

[3] messenger.jhuapl.edu/gallery/sciencePhotos/image.php?gallery_id=2&image_id=811.

(Subjective)

35. $\begin{bmatrix}\text{Pluto}\\ \text{Ceres}\end{bmatrix}$ should still be a planet.

(A) Strongly disagree.
(B) Disagree.
(C) Neutral.
(D) Agree.
(E) Strongly agree.

(Subjective)

36. $\begin{bmatrix}\text{Pluto}\\ \text{Ceres}\end{bmatrix}$ should be a dwarf planet.

(A) Strongly disagree.
(B) Disagree.
(C) Neutral.
(D) Agree.
(E) Strongly agree.