

Sample Test

1. Which of the images is the youngest?

- A) A.
- B) B.
- C) C.
- D) D.
- E) They are all the same age.

2. What is at the center of our solar system?

- A) Jupiter.
- B) The Sun.
- C) The Earth.
- D) The center of our galaxy.
- E) Nothing.

4. How old is the Earth estimated to be based on radiometric dating?

- A) 3,000 years old.
- B) 2.5 million years old.
- C) 4.6 billion years old.
- D) 10.6 billion years old.
- E) There is no way to tell- no one witnessed it happen.

5. What is the structure of Earth and Venus?

- A) Thin atmosphere over rocky crust, mantle, and core.
- B) Mostly H atmosphere over liquid/ice mantle of water/ammonia/methane over a rocky core.
- C) Mostly H atmosphere which thickens to liquid, then becomes metallic H, over a rocky core.
- D) Ice crust over a water ocean over a rocky mantle and core.
- E) None of the above.

6. What feature are the pink arrows pointing to in Image C?

- A) A crater.
- B) A dry river bed.
- C) A lake.
- D) A volcano.
- E) A mountain range.

7. The 3 most massive things in our solar system (the Sun, Jupiter, and Saturn) are made mostly of,

- A) Rock.
- B) Hydrogen (the lightest gas).
- C) Oxygen (like our atmosphere).
- D) Light.
- E) There is no way to determine this since we can't see through to their centers.

9. What is the structure of Europa and Ganymede?

- A) Thin atmosphere over rocky crust, mantle, and core.
- B) Mostly H atmosphere over liquid/ice mantle of water/ammonia/methane over a rocky core.
- C) Mostly H atmosphere which thickens to liquid, then becomes metallic H, over a rocky core.
- D) Ice crust over a water ocean over a rocky mantle and core.
- E) None of the above.

10. About how old is the surface of Image A?

- A) Under a few million years old as there are no craters.
- B) 200-500 million years old; there are some craters, but not a large amount.
- C) 4-4.5 billion years old: it is saturated with craters.
- D) It is impossible to estimate the age of this object as it is made only of gas.

12. Since terrestrial planets have crusts which are lighter than their cores, what else can I infer?

- A) They should have thick atmospheres.
- B) They should be heavily cratered.
- C) They all formed past the asteroid belt.
- D) They have differentiated, and so must have been liquid (molten) at some time in the past.
- E) They should not have many moons.

13. Planets with densities near 5.0 g/cc are mostly made of ____ while planets with densities near 1.0 g/cc are made mostly of _____.

- A) Ice Rock.
- B) Gas Rock.
- C) Ice Gas
- D) Rock Gas.
- E) Ice Gas.

14. What causes Earth's seasons?

- A) The distance the Earth is from the Sun.
- B) The amount of shadow falling on the Earth.
- C) The tilt of the Earth's spin axis.
- D) How bright the Sun is (the intrinsic brightness of the Sun changes on a yearly basis).
- E) Nothing

15. Aristarchus measured the relative sizes of the Earth, Moon, and Sun using eclipses and phase timings. Since the Moon is smaller than the Earth and orbits the Earth and the Earth is smaller than the Sun, he deduced that the Earth must orbit the Sun. This last phrase is what part of the scientific method?

- A) Observation.
- B) Theory.
- C) Prediction based on theory.
- D) Observation of prediction.
- E) Confirm/refute/modify theory.

16. About how old is the surface of Image B?

- A) Under a few million years old as there are no craters.
- B) 200-500 million years old; there are some craters, but not a large amount.
- C) 3-3.5 billion years old: it is moderate-to-heavily cratered but not saturated with craters.
- D) It is impossible to estimate the age of this object as it is made only of gas.
- E) 4-4.5 billion years old. It is saturated with craters.

17. All items listed below are an important part of science, except...

- A) Theory can be disproven.
- B) Experiments can be replicated.
- C) Based on observation.
- D) An expert says it is correct.

18. Why is Mars' atmosphere so thin compared to Venus', even though it is made of the same stuff and Venus is hotter?

- A) Venus has volcanoes and Mars does not.
- B) Mars' mass (escape velocity) is much lower than Venus'.
- C) Mars is too cold for an atmosphere.
- D) Venus has lost most of its water to space.
- E) Because Venus is heavier, its atmosphere is made of heavier particles.

19. Our Moon, Mars' moons, and Io all show that our solar system is...

- A) extremely old.
- B) extremely young.
- C) full of objects that are too small to be round.
- D) dynamic and always changing, even though most changes are quite slow.
- E) nothing special. Those are just a bunch of moons.

20. If I observe a moon that has a similar composition as its planet's crust, has a small core, and orbits nearly over the spin equator, how did that planet most likely get that moon?

- A) Formed with the planet.
- B) Was captured.
- C) Spun off the surface of the planet.
- D) Was produced from a collision.
- E) None of the above.

Short answer questions. 5 points each. Spelling and Grammar count.

21. List 3 observations of Image D and describe what they mean.

22. Estimate the surface age of Image C and describe how you do it.

23. Put the images in order from youngest to oldest.

24. In two sentences, describe the object in Image B.

25. What does the coloring of Image A tell us?