

You are required to answer 50 questions, for 1 pnt. each. If you answer MORE than that, you will earn ½ point extra credit for each correct answer. Go for it!

Chapter 1

/50

1. The movement of Earth around the sun once a year is called Earth's
 - A. inertia.
 - B. rotation.
 - C. revolution.
 - D. axis.

2. A day when the sun reaches its greatest distance north or south of the equator is called a(an)
 - A. umbra.
 - B. penumbra.
 - C. equinox.
 - D. solstice.

3. The tendency of an object to resist a change in motion is called
 - A. gravity.
 - B. inertia.
 - C. force.
 - D. the law of universal gravitation.

4. When Earth's shadow falls on the moon, the shadow causes a
 - A. new moon.
 - B. solar eclipse.
 - C. full moon.
 - D. lunar eclipse.

5. The craters on the moon were caused by
 - A. tides.
 - B. volcanoes.
 - C. meteoroids.
 - D. maria

If the statement is true, write true. If it is false, change a word or words to make the statement true.

(6)Earth's spinning on its axis is called rotation.

(7)The force that attracts all objects toward each other is called inertia.

(8)The tilt of Earth's axis as Earth revolves around the sun causes eclipses.

(9)The amount of matter in an object is its weight.

(10)The greatest difference between low and high tides occurs during a neap tide.

(11)Explain how the length of the day and year are related to Earth's movement through space.

(12)Suppose you moved two objects farther apart. How would this affect the force of gravity between those objects?

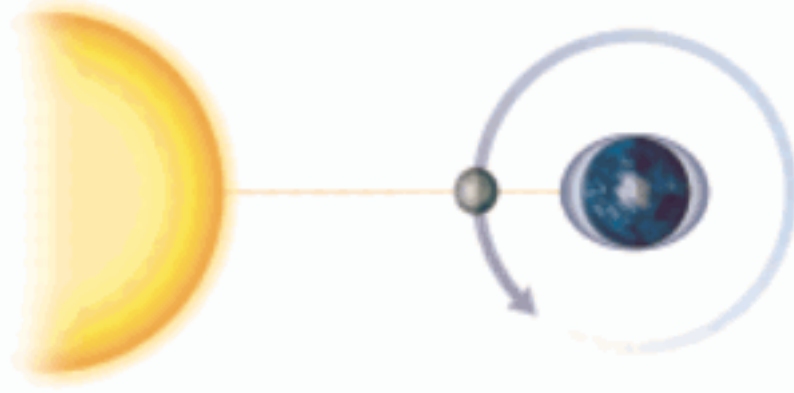
(13) Explain Newton's first law of motion in your own words.

(14) Why does the moon have phases?

(15) Why do more people see a total lunar eclipse than a total solar eclipse?

(16) Why is there a high tide on the side of Earth closest to the moon? On the side of Earth farthest from the moon?

(17) Does the diagram below show a spring tide or a neap tide? How do you know?



(18) How did the invention of the telescope contribute to our knowledge of the moon's surface?

(19) Why do temperatures vary so much on the moon?

(20) Explain how scientists think the moon originated

(21) Mars's axis is tilted at about the same angle as Earth's axis. Do you think Mars has seasons? Explain your answer.

(22) How are mass and weight different?

(23) Suppose a person weighs 450 newtons (about 100 pounds) on Earth. How much would she weigh on the moon?

(24) At about what time does the full moon rise? Is it visible in the eastern sky or the western sky?

(25) Suppose you were assigned to design a spacesuit for astronauts to wear on the moon. What characteristics of the moon would be important to consider in your design?

Use the illustration below to answer Questions 26–28.



(26) On which hemisphere are the sun's rays falling most directly?

(27) In the Northern Hemisphere, is it the summer solstice, winter solstice, or one of the equinoxes? How do you know?

(28) Six months after this illustration, Earth will have revolved halfway around the sun. Draw a diagram that shows which end of Earth's axis will be tilted toward the sun.

Chapter 2

1. A device that expels gas in one direction to move in the opposite direction is a
 - A. rocket.
 - B. space probe.
 - C. space station.
 - D. rover.
 2. To fly beyond a planet's gravitational pull, a spacecraft must reach
 - A. velocity.
 - B. orbital velocity.
 - C. escape velocity.
 - D. geosynchronous orbit.
 3. Any object that revolves around another object in space is called a
 - A. vacuum.
 - B. space station.
 - C. satellite.
 - D. rocket.
 4. A spacecraft that can carry a crew into space, return to Earth, and then be reused for the same purpose is a
 - A. rover.
 - B. space shuttle.
 - C. space station.
 - D. space probe.
 5. Acquiring information about Earth and other objects in space without being in direct contact with these worlds is called
 - A. microgravity.
 - B. spinoff.
 - C. thrust.
 - D. remote sensing.
- (6) The reaction force that propels a rocket forward is called microgravity.
- (7) The velocity a rocket must reach to establish an orbit in space is escape velocity.
- (8) A large artificial satellite on which people can live for long periods is a space station.
- (9) An item that has uses on Earth, but was originally developed for use in space is called a space shuttle.
- (10) A satellite in geosynchronous orbit stays over the same place on Earth all the time.

(11) What are three types of rocket fuels?

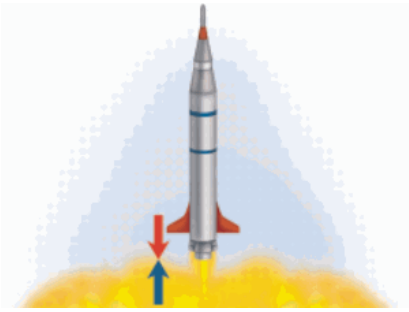
(12) What did Neil Armstrong say when he first set foot on the moon?

(13) Describe some tasks carried out by the crew of the space shuttle.

(14) What is the purpose of a space station?

(15) Name a space spinoff in each of the following categories: medical devices, materials, and consumer products.

(16) The diagram below shows a rocket lifting off. What does each of the arrows represent?



17) A jet airplane usually uses liquid fuel that is burned with oxygen from the atmosphere. A jet engine expels hot gases to the rear, and the airplane moves forward. Is a jet a type of rocket? Explain.

(18) When the Soviet Union launched Sputnik I into orbit in 1957, educators in the United States decided to improve math and science education in U.S. schools. Why do you think educators made that decision?

(19) Do you think that the benefits of the Apollo program outweighed the program's costs? Explain.

Chapter 3

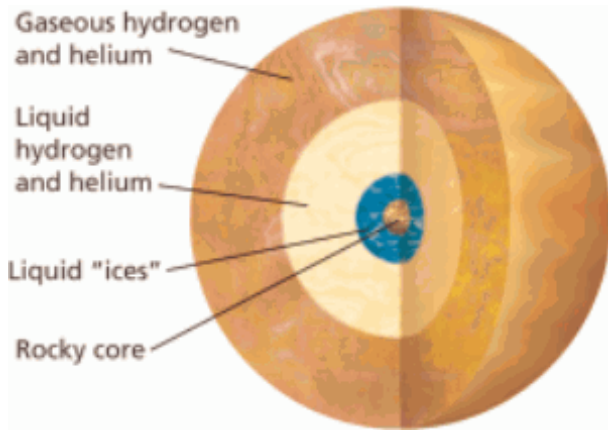
1. Copernicus thought that the solar system was
 - A. an ellipse.
 - B. a constellation.
 - C. geocentric.
 - D. heliocentric.

2. The part of the sun where nuclear fusion occurs is the
 - A. photosphere.
 - B. core.
 - C. chromosphere.
 - D. corona.

3. Pluto is a(n)
 - A. inner planet.
 - B. terrestrial planet.
 - C. dwarf planet.
 - D. gas giant.

 4. The region between Mars and Jupiter where many rocky objects are found is the
 - A. asteroid belt.
 - B. Oort cloud.
 - C. convection zone.
 - D. Kuiper belt.

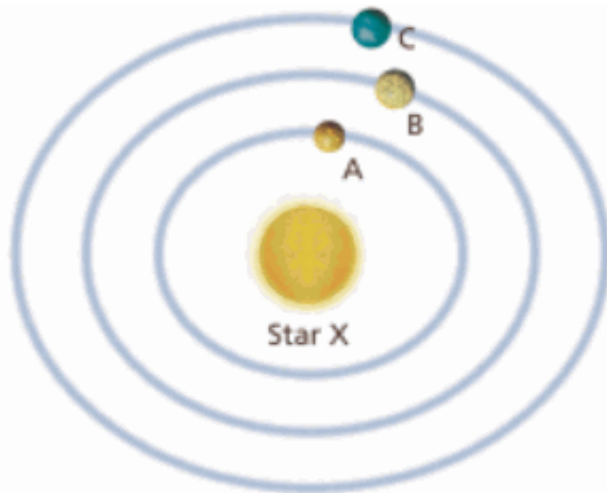
 5. A meteoroid that reaches Earth's surface is called a(n)
 - A. comet.
 - B. meteorite.
 - C. meteor.
 - D. asteroid.
- (6) The shape of the orbit of each planet is a(n) ellipse.
- (7) Prominences are regions of cooler gases on the sun.
- (8) The trapping of heat by a planet's atmosphere is called nuclear fusion.
- (9) All the terrestrial planets are surrounded by rings.
- (10) The solid inner core of a comet is its coma.
- (11) Describe the contributions Tycho Brahe and Johannes Kepler made to modern astronomy.
- (12) What is the solar wind?
- (13) Why does Mercury have very little atmosphere?
- (14) Why can astronomers see the surface of Mars clearly but not the surface of Venus?
- (15) What evidence do astronomers have that water once flowed on Mars?
- (16) Mars has a radius of 3,397 km at its equator. Find its circumference.
- (17) Jupiter has a circumference of about 449,000 km at its equator. Calculate its radius.
- (18) Concepts Explain why Venus is hotter than it would be if it had no atmosphere.
- (19) Do you think astronomers have found all of the moons of the outer planets? Explain.
- (20) Comparing And Contrasting Compare and contrast comets, asteroids, and meteoroids.
- (21) Look at the diagram below. Do you think it represents the structure of a terrestrial planet or a gas giant? Explain.



(22) Why would the discovery of liquid water on another planet be important?

Use the diagram of an imaginary, newly discovered planetary system around Star X to answer Questions 23–25.

The periods of revolution of planets A, B, and C are 75 Earth days, 200 Earth days, and 300 Earth days.



(23) Which planet in this new planetary system revolves around Star X in the shortest amount of time?

(24) In 150 days, how far will each planet have revolved around Star X? Copy the diagram and sketch the positions of the three planets to find out. How far will each planet have revolved around Star X in 400 days? Sketch their positions.

(25) Can Planet C ever be closer to Planet A than to Planet B? Study your drawings to figure this out.

Chapter 4

1. Visible light is a form of
 - A. spectrum.
 - B. electromagnetic radiation.
 - C. wavelength.
 - D. cosmic background radiation.

2. An H-R diagram is a graph of stars' temperature and
 - A. apparent brightness.
 - B. main sequence.
 - C. absolute brightness.
 - D. parallax.

3. A low-mass main sequence star will eventually evolve into a
 - A. white dwarf.
 - B. protostar.
 - C. black hole.
 - D. nebula.

4. A star system in which one star blocks the light from another is called a(n)
 - A. open cluster.
 - B. quasar.
 - C. binary star.
 - D. eclipsing binary.

5. Astronomers theorize that the universe began in an enormous explosion called the
 - A. solar nebula.
 - B. supernova.
 - C. big bang.
 - D. big crunch.

(6) A reflecting telescope uses convex lenses to gather and focus light.

(7) Astronomers use spectrographs to determine the chemical composition of stars.

(8) Pulsars are a kind of neutron star.

(9) A galaxy shaped like a ball and containing only older stars is most likely a spiral galaxy.

(10) Globular clusters are small asteroid-like bodies that formed the building blocks of the planets.

(11) Is a light-year a unit of distance or a unit of time? Explain.

(12) Why can't astronomers measure the parallax of a star that is a million light-years away?

(13) At what point in the evolution of a star is the star actually born?

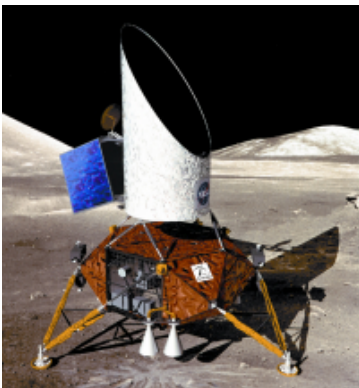
(14) Where in our galaxy does most star formation take place?

(15) What is Hubble's law?

(16) How can astronomers detect dark matter if they cannot observe it directly?

(17) The bright star Spica is 262 light-years from our solar system. How many kilometers is this?

(18) The star Antares is approximately 604 light-years from Earth. Write this distance in scientific notation.



(19) What advantage might there be to locating a telescope, such as the one shown below, on the moon?

(20) Describe a real-world situation involving absolute and apparent brightness. (: Think about riding in a car at night.)

(21) How does a star's mass affect its lifetime?

(22) Compare the conditions that led to the formation of the terrestrial planets with those that led to the formation of the gas giants.

Use the data in the H-R diagram from your book on page _____ to answer Questions 23–26.

23) Which star has a greater absolute brightness, Aldebaran or Sirius B?

(24) Which stars have higher surface temperatures than Sirius A?

(25) Which star is most likely to be red: Rigel, Sirius B, or Betelgeuse?

(26) Compare Aldebaran and the sun in terms of size, temperature, and absolute brightness.