MEA Earth Science Review 1851

(1)

20. Scientists compare layers of rock to each other in order to determine the

E

- O A. relative age of rocks.
- O B. composition of rocks.
- O C. amount of fossils in rocks.
- O D. chemical composition of rocks.

(2)

7. What conditions **must** occur for a star to be "born"?

E

- A. the presence of a black hole
- B. a shock wave that spreads out interstellar gas
- C. the gravity pushing outward equal to the gas pressure of the star
- D. a core temperature high enough for nuclear fusion to begin

(3)

3. **All of the following conditions affect the time it takes for a rock to weather except**

E

- A. **the intensity of the color.**
- B. **the climate conditions.**
- C. **the composition of the rock.**
- D. **how much of the rock is exposed.**

(4)

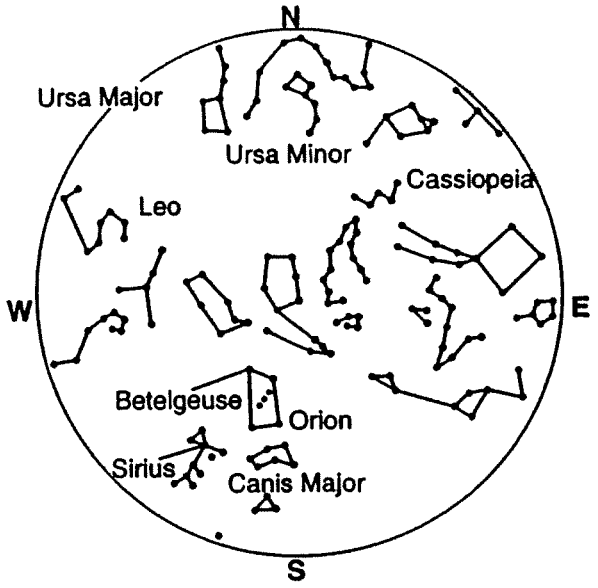
11. As a scientist was hiking up a mountain, she found fossils of seashells in some of the rocks. Which is a reasonable conclusion she can make?

E

- O A. The rocks were formed when molten lava was cooled.
- O B. Shelled sea organisms once inhabited forested mountains.
- O C. The rocks were formed in an ocean and later uplifted when the mountain was formed.
- O D. The fossil seashells were carried up from an ocean and embedded in the rocks by strong winds.

(5)

*Use the star chart below to answer question 11.*




11. **You are outdoors on a clear night when the Moon is in the new moon phase. You have only a basic star chart, as shown above. As a novice, you would immediately know**

E

- O A. **it is 9:30 P.M.**
- O B. **you are in the Northern Hemisphere.**
- O C. **your approximate longitude.**
- O D. **the solar system's position in the universe.**

(6)

12. Which of the following would cause a long-term (lasting thousands of years) change to Earth?

E

- O A. spring flooding along the Saint John River
- O B. a hurricane coming north from the banks of the Carolinas
- O C. a volcano erupting such as Mount Pinatubo in the Philippines
- O D. tornadoes spawned from cold and warm air clashing

(7)

13. By observing the characteristics of the Sun, people can learn more about

E

- O A. stars.
- O B. comets.
- O C. distant planets.
- O D. the Moon.

(8)

5. Which of the following is an example of a nonrenewable energy resource?

- O A. wind
- O B. solar
- O C. fossil fuels
- O D. hydroelectric

(9)

25. Which item does **not** come from a material in Earth's crust?

E

O A.

Clay pot

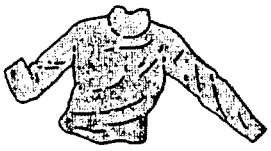
O B.

Tin can

O C.

Metal spoon

O D.



Wool sweater

(10)

1. Which sources of energy are nonrenewable?

E

A. solar
oil
coal

B. natural gas
oil
coal

C. coal
geothermal
wind

D. natural gas
water power
geothermal

(10)

Which of the following distances is **most likely** the greatest?

- O A. between stars in a galaxy
- O B. between a planet and its moon
- O C. between planets in a solar system
- O D. between galaxies in a local group

(12)

21. Which statement **best** describes the motion of stars, moons, and planets?

E

A. Planets orbit stars and stars orbit galaxies.
B. Moons orbit planets and planets orbit stars.
C. Moons orbit stars and planets orbit solar systems.
D. Stars orbit planets and planets orbit moons.

(13)

24. It takes hours to fly to Hawaii, and days to travel to the Moon. Even using the fastest rockets, it would take months to travel to Mars. If a person were to step into a space vehicle today and travel the rest of his or her life, which object is too far away to reach?

E

(A) Venus
(B) Pluto
(C) one of Jupiter's moons
(D) nearest star to our solar system

(14)

27. Fossils of the fern Glossopteris have been found in Africa, Australia, Antarctica, and South America. How do scientists explain this observation?

E

O A. The wind blew the seeds across the oceans from continent to continent.
O B. The fern developed independently on each continent.
O C. The continents were at one time joined together and then moved apart.
O D. The fern had adaptations to survive the different environments of the continents.

7. Which of the following shows the order of size from the smallest to the largest?

O A. galaxy, solar system, star
O B. star, galaxy, solar system
O C. star, solar system, galaxy
O D. solar system, galaxy, star

28. Alex changed his car's oil and dumped the used oil in the backyard. What is the **most likely** environmental impact of this action?

O A. The oil will pollute the air.
O B. The oil will fertilize the soil.
O C. The oil will cause global warming.
O D. The oil will drain into the groundwater.

16. Which of the following cannot be seen by the Hubble Space Telescope?

O A. a comet
O B. a nebula
O C. an asteroid
O D. a black hole

5 The picture below shows a stream flowing over rocks.

How do the water and rocks interact?

A. The water evaporates into the air because of the position of the rocks.
B. The water soaks into the ground beneath the rocks.
C. The water changes the shape of the rocks.
D. The water floods over its banks because of the mass of the rocks.

18 Which statement **best** explains why wood is considered a renewable energy resource and coal is not?

A. Wood is easier to find than coal.
B. Wood has less carbon per unit mass than coal.
C. Wood grows more quickly than coal forms.
D. Wood has less stored energy per unit mass than coal.

16 Which event would **most likely** cause a rapid extinction of organisms?

A. a large asteroid impact
B. regional drought
C. new glacier formation
D. a decrease in the growth of weeds

14 How do warm ocean currents move to cooler ocean regions of Earth?

A. by conduction
B. by convection
C. by evaporation
D. by radiation

3 Which location on Earth has the **least** intense sunlight on December 22?

A. Equator
B. Florida
C. Maine
D. North Pole

10. Which of the following is made primarily of pieces of rock or iron that enter Earth's atmosphere?

○ A. pulsars
○ B. comets
○ C. solar flares
○ D. meteorites

24

10 Which gravitational pull has the greatest influence on Earth's tides?

E

A. the gravitational pull between Earth and the Moon

B. the gravitational pull between Earth and the Sun

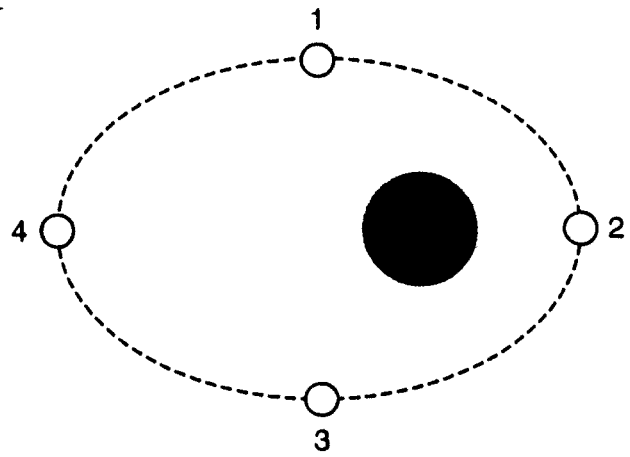
C. the gravitational pull between Earth and Jupiter

D. the gravitational pull between Earth and Mars

25

18 The diagram below shows a moon revolving around a planet in an elliptical orbit.

E




At which location is the gravitational pull between the moon and the planet the **weakest**?

A. location 1

B. location 2

C. location 3

D. location 4

26

8. Which statement **best** describes why stars differ in color when seen through a telescope?

E

○ A. They vary in size.

○ B. They are made up of different gases.

○ C. They are various distances from Earth.

○ D. They have different surface temperatures.

27

14. An astronomer observes a neutron star that has formed after a supernova. It is spinning rapidly and emitting radio waves. This star is a

E

○ A. supergiant.

○ B. pulsar.

○ C. nova.

○ D. black hole.

28

15. Which instrument would be **best** to use to study the soil on another planet?

E

○ A. a satellite

○ B. a space probe

○ C. a light telescope

○ D. a radio telescope

29

3 The best evidence that the continents were once connected is that they have matching

E

A. weather, fossils, and rock types.

B. rock types, fossils, and coastlines.

C. coastlines, weather, and rock types.

D. coastlines, weather, and fossils.

30

2. Which space object is **most** comparable to a rock?

F

O A. a comet

O B. a pulsar

O C. a quasar

O D. an asteroid

31

12. Why is winter on Mars almost twice as long as on Earth?

E

○ A. Mars takes almost twice as long to orbit the Sun as Earth does.

○ B. Mars's axis is more tilted than Earth's.

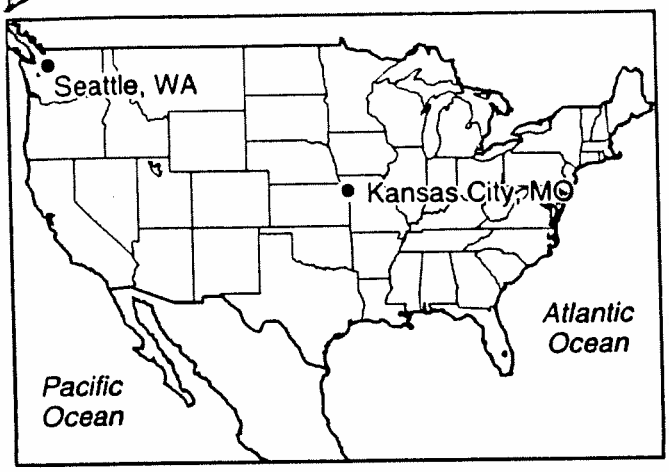
○ C. Mars has less than half the atmospheric gas of Earth.

○ D. Mars is about half the size of Earth.

32

5 The map below shows the locations of Seattle, Washington and Kansas City, Missouri.

E




Which statement **best** explains why Seattle has warmer winters and cooler summers than Kansas City?

A. Seattle is closer to an ocean.
B. Seattle is located at a higher latitude.
C. Seattle is located near an active volcano.
D. Seattle has longer summer days and shorter winter days.

33

6 What can scientists learn about the past by studying sedimentary rocks?

E

A. how a species changed over time
B. how animals made a shelter
C. the color of leaves on a plant
D. the number of chambers in a dinosaur's heart

39

24. Fossils of similar species are found in South America and Africa. Which is the **best** explanation for this?

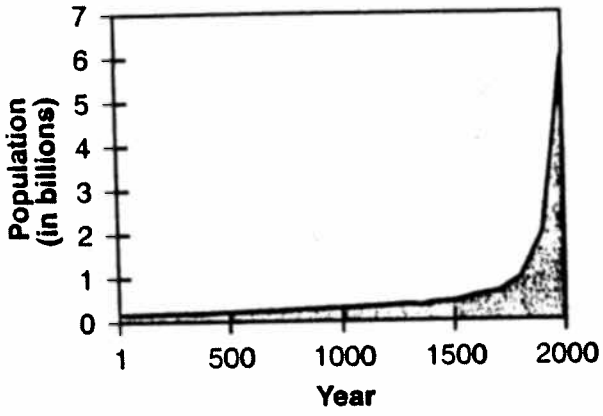
E

A. People transported the fossils from South America to Africa.
B. The fossils were transported by strong winds across the Atlantic Ocean.
C. Long ago, all of Earth's continents were connected to form one large continent.
D. As volcanoes erupted, rocks containing fossils were thrown from South America to Africa.

35

6 The graph below shows the estimated global population from AD 1 to AD 2000.

E




Based on this trend, which statement is the **best** prediction of the competition for and cost of scarce natural resources in the future?

A. Competition and cost of natural resources will both decrease.
B. Competition and cost of natural resources will both increase.
C. Competition for natural resources will increase, and cost of natural resources will decrease.
D. Competition for natural resources will decrease, and cost of natural resources will increase.

36

14 The map of the United States below shows the locations of Missoula, MT, and Cape Elizabeth, ME.

E

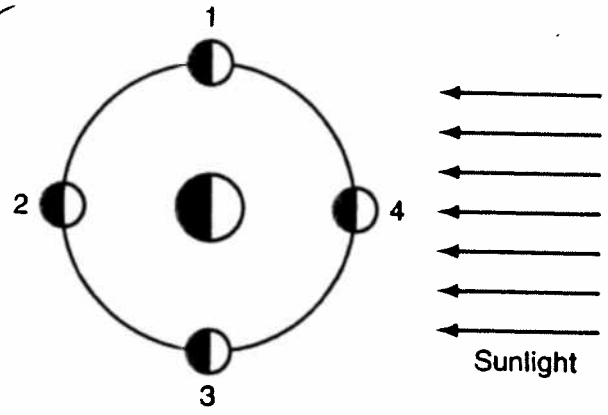

What factors make the climates different at these two locations?

A. latitude and longitude
B. altitude and longitude
C. latitude and proximity to large bodies of water
D. altitude and proximity to large bodies of water

37

14 The diagram below shows the Moon's revolution around Earth.

E




■ Shaded from sunlight  □ Lit by sunlight

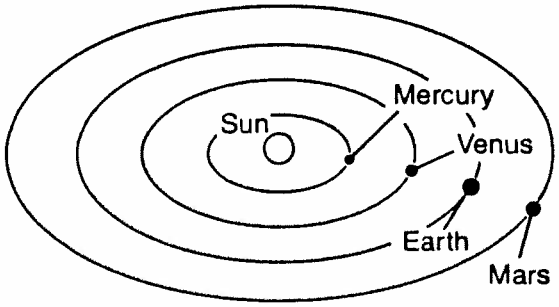
Which position will result in a new moon?

A. position 1
B. position 2
C. position 3
D. position 4

38

10 The diagram below shows some of the planets in our solar system.

E




Which statement **best** describes these planets?

A. They are made of gases.
B. They are made of rock.
C. They move at the same speed around the Sun.
D. They travel the same distance around the Sun.

39

9 How would the Sun appear to an astronaut on Pluto compared with how it looks from Earth?

E

A. The Sun would appear larger and brighter.
B. The Sun would appear smaller and brighter.
C. The Sun would appear larger and dimmer.
D. The Sun would appear smaller and dimmer.

40

4 Which statement describes the location of our Sun in the universe?

E

A. Our Sun orbits Earth in the Andromeda galaxy.
B. Our Sun orbits Earth in the Milky Way galaxy.
C. Our Sun is the center of a solar system in the Milky Way galaxy.
D. Our Sun is the center of a solar system in the Andromeda galaxy.

41

8 How many times does Earth rotate on its axis in one day?

E

A. once
B. twice
C. 24 times
D. 365 times

42

3 Which factor at the North and South poles makes the climate at the poles colder than the climate at the equator?

E

A. the presence of oceans
B. the lack of direct sunlight
C. the presence of ice caps
D. the lack of vegetation

43

1 Which sentence explains why the Moon can be seen at night from Earth?

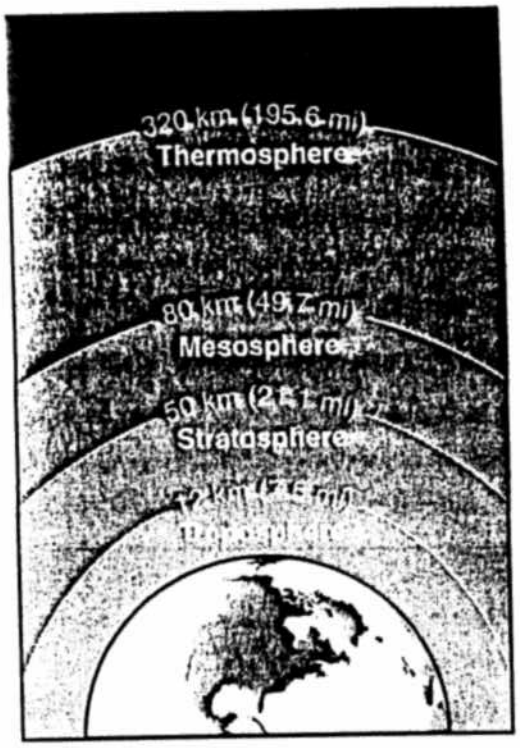
E

A. The Moon reflects light from the Sun.
B. The Moon burns gases that give off light.
C. The Moon reflects light from the lights on Earth.
D. The Moon absorbs light during the day and then gives off light at night.

44

12 The diagram below shows layers of Earth's atmosphere.

E




Which layer of the atmosphere has clouds and weather?

A. troposphere
B. stratosphere
C. mesosphere
D. thermosphere

45

13 After more than 30 years, the spacecraft *Pioneer 10* continues to travel through space, beyond the solar system. Which statement explains why this spacecraft continues to move?

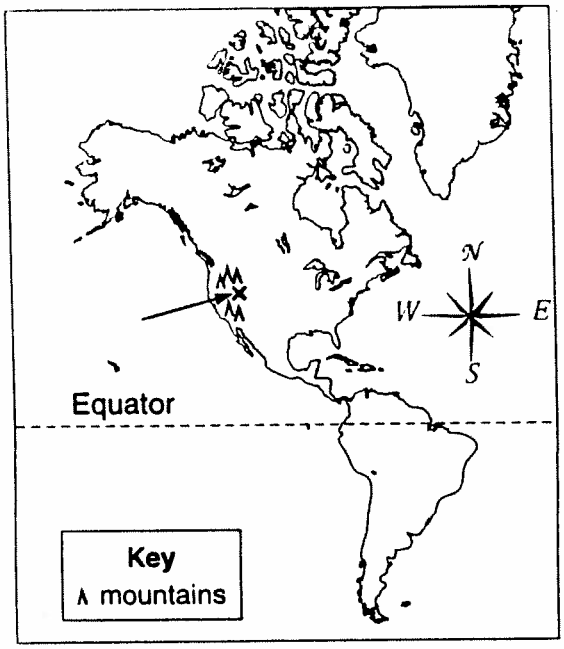
E

A. *Pioneer 10* is in motion and will stay in motion.
B. *Pioneer 10* carries excess fuel to allow more motion.
C. NASA astronauts are steering *Pioneer 10*.
D. NASA has refueling missions to *Pioneer 10*.

46

14 The map below shows the Western Hemisphere.

E




Coral fossils that are about 90 million years old have been found at site X. What do these fossils indicate?

A. Coral was once a land organism.
B. Coral migrated north of the equator.
C. Site X was once covered by a warm sea.
D. Site X was once located further north.

47

16 The dwarf planet Pluto takes much longer to revolve around the Sun than do other planets. This is because Pluto

E

A. is farther from the Sun than other planets.
B. is smaller than other planets.
C. has fewer satellites than other planets.
D. has a very slow rotation as compared to other planets.

48

20 What is the **most likely** outcome of the Moon moving away from Earth?

E

A. A lunar day is shorter.
B. A lunar eclipse lasts longer.
C. Earth moves closer to the Sun.
D. Earth's tides decrease in size.

1. Describe the weather conditions before, during and after a thunderstorm. Then, explain h thunderstorm may affect the living and non-living environment.

36. a. Give **two** examples describing how soils are formed.

b. Give **three** reasons why soil in one region is different from soil in another region.

11 Which factor produces a short-term effect on Earth?

A. glaciation
B. a tornado
C. a filled wetland
D. global warming

9 Earth's seasons are caused by the planet's

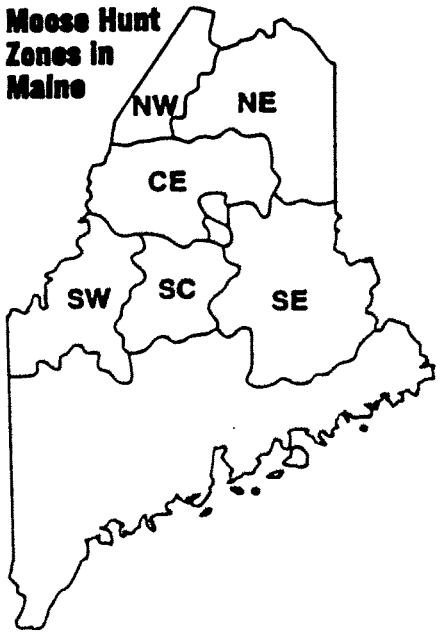
A. tilt on its axis.
B. distance from the Sun.
C. speed of rotation on its axis.
D. speed of revolution around the Sun.

2. The table below shows the average number of moose seen for each ten hours hunters spent outside. The information was gathered during every moose hunting season for eight years. The data in the table are arranged by the moose hunt zones shown on the map next to the table.

a. Make a bar graph on the grid provided that shows the average number of moose seen during each year.

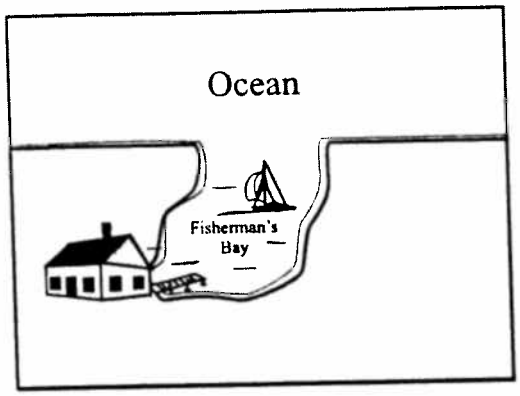
b. Suppose you wanted to look for moose. Based on the information in the table, which moose hunt zone would probably be the best place to find moose? Explain why.

| | MOOSE HUNT ZONE | | | | | | |
|---|---|---|---|---|---|---|---|
| SEASON | NW | NE | CE | SE | SC | SW | AVG. |
| 1986 (10/20-25) | 0.9 | 1.5 | 3.0 | 1.0 | 4.5 | 6.4 | 2.9 |
| 1987 (10/18-23) | 0.8 | 2.0 | 3.9 | 1.1 | 7.5 | 4.8 | 3.4 |
| 1988 (10/17-22) | 2.2 | 3.2 | 5.3 | 1.3 | 5.3 | 8.8 | 4.4 |
| 1989 (10/16-21) | 2.4 | 3.4 | 5.5 | 2.1 | 11.0 | 10.7 | 5.9 |
| 1990 (9/24-29) | 1.1 | 1.5 | 2.4 | 0.9 | 4.0 | 4.2 | 2.4 |
| 1991 (10/7-12) | 1.2 | 4.1 | 4.8 | 1.7 | 9.6 | 10.3 | 5.3 |
| 1992 (10/5-10) | 2.4 | 2.9 | 3.7 | 1.5 | 7.9 | 7.7 | 4.4 |
| 1993 (10/4-9) | 2.0 | 3.5 | 4.3 | 1.8 | 7.7 | 8.2 | 4.6 |

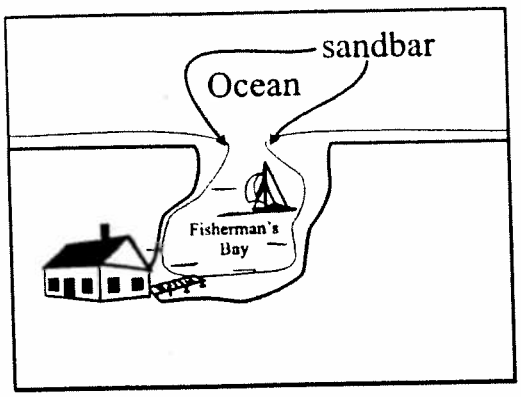


*Use the pictures below to answer question 18.*

54




**A long time ago**




**Now**

18. Over a long period of time, a sandbar has been forming across the mouth of Fisherman's Bay.

E Describe three changes that may occur to living and nonliving things in the ecosystem on the land and in the water of the Fisherman's Bay area.

55

23. You and your friend are planning a garden. The only space that you have to plant on is on the side of a hill. Your friend hypothesizes that if the rows are put across the hill the plants will grow better. You hypothesize that the rows should go up and down the hill.

E Design a controlled experiment to test which hypothesis is correct.

56

20 The table below shows some information about objects found in our solar system.

F

**Comparison of Objects Found in Our Solar System**

| Object | Diameter (km) | Composition | Atmosphere |
|---|---|---|---|
| 1 | 142,700 | Rocky core, liquid hydrogen ocean | Hydrogen, helium, methane, ammonia |
| 2 | 12,800 | Rocky core, liquid water ocean, supports life | Nitrogen, oxygen |
| 3 | 1 to 1,000 | Iron, nickel | None |
| 4 | 3,400 | Silica, iron | Very limited amounts of argon helium |

Based on the information, which object is **most likely** an asteroid?

A. Object 1
B. Object 2
C. Object 3
D. Object 4

57

*Use the table below to answer question 4.*

**MINERALS WITH A METALLIC LUSTER**

| Mineral | Color | Streak | Hardness | Specific Gravity |
|---|---|---|---|---|
| graphite (C) | steel gray | black | 1 | 2 |
| galena (PbS) | silver gray | gray | 2.5 | 7.5 |
| chalcopyrite ($CuFeS_2$) | golden yellow | greenish black | 4 | 4.3 |
| pyrite ($FeS_2$) | brass yellow | greenish black | 6 | 5 |
| hematite ($Fe_2O_3$) | steel gray | reddish brown | 6 | 5.2 |
| magnetite ($Fe_3O_4$) | black | black | 6 | 5.2 |

4. Which characteristic would be most useful in distinguishing a sample of hematite from the other minerals listed in the table?

E

O A. color
O B. streak
O C. hardness
O D. specific gravity

58

5. Various areas in Maine are being considered for a low-level toxic waste site. Describe the pc effects of a toxic waste site on the local environment. Be sure to include both the living non-living environments.

E

59

28. Alex changed his car's oil and dumped the used oil in the backyard. What is the **most likely** environmental impact of this action?

E

A. The oil will pollute the air.
B. The oil will fertilize the soil.
C. The oil will cause global warming.
D. The oil will drain into the groundwater.

**MC#:** 28
**Key:** D
**Learning Results:** M-4
Implications of Science and Technology
M Students will understand the historical, social, economic, environmental, and ethical implications of science and technology. Students will be able to
4 describe an individual's biological and other impacts on an environmental system.

60

2. Which space object is **most** comparable to a rock?

E

A. a comet
B. a pulsar
C. a quasar
D. an asteroid

**MC#:** 2
**Key:** D
**Learning Results:** G-4
The Universe
G Students will gain knowledge about the universe and how humans have learned about it, and about the principles upon which it operates. Students will be able to
4 describe scientists' exploration of space and the objects they have found (e.g., comets, asteriods, pulsars).

61

17. Sarah and Joe went on a cross-country camping trip with their family. When they set up their tents each night, they noticed that the soils were very different in different places. They began to keep a record of the differences they noticed as shown below.

E

| Location | Soil Color | Soil Texture | Kinds of Plants |
|---|---|---|---|
| Maine woods | dark brown | loamy | trees (broadleaf and evergreen), grasses, flowers |
| Arizona desert | red, yellow, orange | coarse, crumbly, dry with thorns | cacti, low bushes |
| California beach | white | dry, fine-grained | dune grasses |

Using the information from Sarah's and Joe's chart, describe **three** reasons why soils are different from region to region.

62

19. a. Glaciers created many natural features. List at least **three** features that glaciers created in Maine.

62A E

b. Describe how glaciers formed each feature you listed.

62B 62C

c. Explain the connection between your **three** features created by glaciers and economic development in Maine.

63

33. Describe the size or shape of the Milky Way galaxy in a few words.

E 64

23. Humans have been observing stars for thousands of years.

a. List **two** things we know about stars today that we did not know 200 years ago.

b. Describe **two** ways scientists gather information about stars today that were not possible 200 years ago.

65

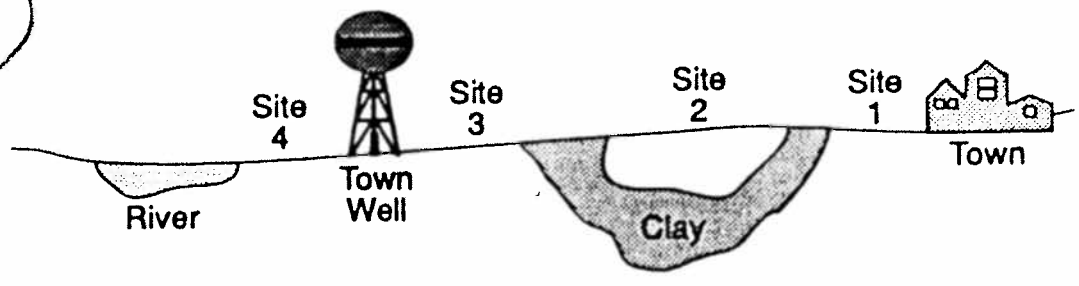
33. Name two natural phenomena that cause a long-term (lasting thousands of years) change to Earth.

E

66

2. You are having a conversation with your neighbor about the seasons. Your neighbor says, "Earth is closer to the Sun in the summer and farther away in the winter, and that is why there are seasons." Explain in detail why you either agree or disagree with your neighbor.

67




3. On the diagram above are four possible sites for a landfill area. You have been hired by the town to analyze the sites and decide which one is the best. Which would you select? Describe why your choice of site is the best compared to each of the other sites and why the other three are not as good.