Name _____

C **15.** How is an estuary different from other ocean environments?
- **A.** It receives little light.
- **B.** It does not attract many organisms.
- **C.** Fresh water and salt water mix there.
- **D.** It is where streams join to form a river.

H **16.** Which statement about beach restoration is **not** true?
- **F.** Beach restoration may cost millions of dollars.
- **G.** During beach restoration, channels can be reopened.
- **H.** Beach restoration causes permanent changes to a beach.
- **J.** After beach restoration, the slope of the beach may be changed.

Inquiry Skills **8 points each**

17. If you were at the shore during a hurricane and the winds were strong and gusty, what kinds of waves would you **observe**? **Infer** what the shoreline would look like after the hurricane.

Possible answer: The strong, gusty winds would cause waves to surge stronger and higher than normal waves. The waves would be choppy and capped with white. After the storm, the shore might be eroded.

18. Rainwater flows along the side of a street, carrying leaves and twigs and depositing them where the flow turns a corner, which makes the flow slow down. Is this a good **model** for longshore currents that carry beach materials? Explain.

Possible answer: Yes; longshore currents drop their sediments at a place where the current slows, just as the flow of rainwater deposits leaves and twigs as it slows to turn a corner.

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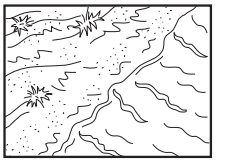
Critical Thinking **10 points each**

19. Why are waves usually bigger in an ocean than in a small lake?

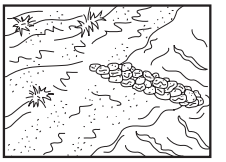
The size of a wave depends on the area of the water and the strength of the wind. The wind may blow with the same strength over the lake and over the ocean, but the ocean surface is larger. So, the wind blows over a longer distance as it moves over the ocean, producing larger waves.

20. Look at the pictures. Picture X shows a natural beach. Picture Y shows a beach with a jetty. Include information from the pictures in your answers to the questions below.

X



Y



Part A How does a jetty work?

A jetty traps sand carried by the longshore current. Picture Y shows that sand has built up before the jetty.

Part B Why might some beach property owners oppose the building of jetties?

Picture Y shows that erosion has occurred past the jetty. This is why property owners past a jetty might object.

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Chapter Assessment

Earth, Moon, and Beyond

Vocabulary **4 points each**

Use the letters of the terms in the box to complete the sentences.

A. solar system	**C.** planet	**E.** universe	**G.** moon phase
B. galaxy	**D.** constellation	**F.** star	**H.** axis

1. The sun is a F, a huge ball of very hot gases.
2. The imaginary line that passes through Earth's poles is Earth's H.
3. Each shape the moon seems to have throughout a month is called a G.
4. A pattern of stars is a D.
5. Everything that exists, including planets, stars, dust, and gases, is the E.
6. The gravitational force of a star holds a C in orbit around it.
7. A B contains a group of stars, gas, and dust.
8. A A is made up of a star and all the planets and other objects that revolve around it.

Science Concepts **4 points each**

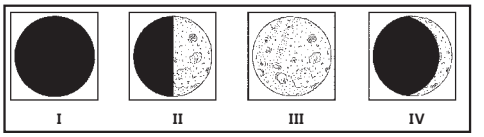
Write the letter of the best choice.

C **9.** How are Earth and the moon alike?
- **A.** Both have liquid water.
- **B.** Both have satellites.
- **C.** Both are rocky and dense.
- **D.** Both have a thick atmosphere.

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Use the drawings to answer Questions 10–11.



J **10.** Which of the drawings represents the waxing crescent moon?
- **F.** I
- **G.** II
- **H.** III
- **J.** IV

B **11.** Which of the drawings represents the first-quarter phase of the moon?
- **A.** I
- **B.** II
- **C.** III
- **D.** IV

H **12.** Which of these is the basis for timekeeping on Earth?
- **F.** hemispheres
- **G.** satellites
- **H.** time zones
- **J.** distance from the sun

C **13.** Which of these occurs when it is summer in the Northern Hemisphere?
- **A.** Earth has its winter equinox.
- **B.** The Southern Hemisphere is tilted toward the sun.
- **C.** The sun's rays strike the Northern Hemisphere directly.
- **D.** Earth's equator experiences three months of darkness.

F **14.** Which is a true statement about the planets in our solar system?
- **F.** Only Earth has liquid water.
- **G.** The inner planets are made of frozen gases.
- **H.** The outer planets are located in an asteroid belt.
- **J.** Jupiter is the only outer planet that is small and rocky.

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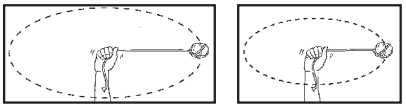
Name _____

B 15. Which is **not** a type of galaxy?
- A. barred spiral
- B. circular
- C. elliptical
- D. irregular

F 16. Which of these causes seasonal changes on Earth?
- F. Earth's orbit and tilt
- G. the shape of the sun's orbit
- H. the changing shape of Earth's orbit
- J. Earth's position in relation to the moon

Inquiry Skills 8 points each

Use the pictures to answer Questions 17–18.



17. If you tie a string to a rock and spin the rock in a circle, you are **modeling** the orbit of Earth (the rock) around the sun (your hand). What would happen if the string were only half as long and still being turned with the same force, as shown in the picture on the right?

Possible answers: The rock would orbit the hand much faster. The orbit would be shorter.

18. **Use time and space relationships** to compare the two pictures with Earth's orbit around the sun and the moon's orbit around Earth.

Possible answer: The distance between Earth and the moon is much smaller than the distance between Earth and the sun. This means that the moon orbits Earth much faster than Earth orbits the sun. So, the picture on the right represents the moon orbiting Earth, and the picture on the left represents Earth orbiting the sun.

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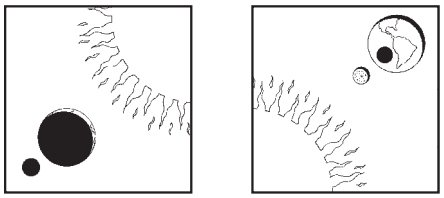
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Critical Thinking 10 points each

19. Compare the advantages and disadvantages of crewed space explorations and space probes.

Possible answer: Space probes, which are robots, can go where humans cannot go and do not need food or water. But humans can think and make decisions when problems occur.

20. The diagrams below show two kinds of eclipses.



I II

Part A Identify the kind of eclipse shown in each diagram.

Picture I: lunar eclipse; Picture II: solar eclipse

Part B Explain how you identified each diagram.

In Picture I, the moon is in Earth's shadow, which causes a lunar eclipse. In Picture II, the moon is between Earth and the sun, so the moon casts a shadow on Earth. This is a solar eclipse.

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Unit Assessment

Write the letter of the best choice. 3 points each

C 1. Which statement about Earth's atmosphere is true?
- A. Most weather occurs in the highest of the four layers.
- B. The atmosphere is a very thick layer surrounding Earth.
- C. Most gases in the atmosphere are in the layer closest to Earth.
- D. The higher in the atmosphere you go, the higher the air pressure.

G 2. What is the main cause of wind?
- F. ocean currents that change direction
- G. uneven heating of Earth's surface by the sun
- H. differences in the rate of rotation at Earth's surface
- J. changes in the amount of ozone in the troposphere

C 3. Taylor is staying at a hotel at the beach. The weather is sunny and warm. He rushes outdoors to fly a kite at 6:00 A.M., but there is no wind. By 10:00 A.M., a good breeze is blowing. What happened between 6:00 A.M. and 10:00 A.M.?
- A. The prevailing winds started blowing after sunrise.
- B. A climate change came through and brought wind with it.
- C. The sun heated the land more quickly than the sea, and a sea breeze formed.
- D. The sun heated the sea more quickly than the land, and a land breeze formed.

G 4. Which process occurs when water that is heated by the sun becomes water vapor?
- F. condensation
- G. evaporation
- H. precipitation
- J. runoff

A 5. Which is a measure of the relative amount of moisture in the air?
- A. humidity
- B. oxygen level
- C. temperature
- D. wind speed

F 6. Which is **not** a factor that affects the climate in a particular area?
- F. ozone in the stratosphere
- G. distance from Earth's poles
- H. shape of the local landforms
- J. distance from a body of water

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B 7. Which pattern is generally true?
- A. As temperature increases, humidity decreases.
- B. As temperature decreases, air pressure increases.
- C. As air pressure increases, precipitation increases.
- D. As air pressure decreases, temperature decreases.

G 8. Which instrument measures air pressure?
- F. anemometer
- G. barometer
- H. hygrometer
- J. wind vane

A 9. The weather has been hot and humid for days. Then thunderstorms pass through, traveling from west to east. The weather is cooler and drier for the next few days. What probably happened?
- A. A cold front moved through.
- B. A warm front moved through.
- C. A continental tropical air mass left.
- D. A maritime tropical air mass arrived.

G 10. What is the main difference between weather and climate?
- F. Climate has a pattern; weather has no pattern.
- G. Weather changes from day to day; climate stays the same for years.
- H. Climate is affected by landforms and ocean currents; weather is not.
- J. Weather is driven by the sun; climate is driven by prevailing winds.

B 11. What would be about the same at the ocean's surface and 1000 meters below the surface?
- A. amount of light
- B. salinity
- C. temperature
- D. water pressure

H 12. Your friend has drawn a picture that shows a scuba diver waving to a person inside the submersible *Alvin*, which is resting on the bare, flat abyssal plain. What is wrong with your friend's picture?
- F. The abyssal plain is hilly, not flat.
- G. There should be seaweed growing on the ocean floor.
- H. The diver would be crushed by water pressure at that depth.
- J. The submersible cannot travel to the ocean floor.

C 13. Which statement is true?
- A. Waves carry water across the ocean.
- B. Waves break only during a storm surge.
- C. Waves carry the energy through the ocean.
- D. Waves are caused by tides pulling water onto the shore.

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