Name _____ Class _____ Date _____

Skills Worksheet

Concept Review

MATCHING

In the space provided, write the letter of the term or phrase that best matches the description.

_____ **1.** international agreement to limit CFC production

_____ **2.** destroyed by CFCs

_____ **3.** caused by wind and influenced by Earth's rotation

_____ **4.** increases when fossil fuels are burned

_____ **5.** low-angle sunlight

_____ **6.** winds push warm water eastward in the Pacific Ocean

_____ **7.** heat trapped by atmosphere near Earth's surface

_____ **8.** potential result of high UV radiation at Earth's surface

_____ **9.** water is cooler than usual in the eastern Pacific Ocean

_____ **10.** trade winds, westerlies, and polar easterlies

a. El Niño
b. atmospheric CO_2
c. stratospheric ozone
d. winter
e. Montreal Protocol
f. greenhouse effect
g. DNA damage
h. surface ocean currents
i. prevailing winds
j. La Niña

MULTIPLE CHOICE

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

_____ **11.** Climate in a region is
- **a.** the long-term, prevailing atmospheric conditions.
- **b.** determined only by seasonal daylight hours.
- **c.** the atmospheric conditions on a given day.
- **d.** never affected by ocean currents.

_____ **12.** Rain frequently results whenever
- **a.** cold, moist air rises.
- **b.** warm, moist air rises.
- **c.** warm, dry air sinks.
- **d.** cold, dry air sinks.

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Concept Review *continued*

_____**13.** Latitude strongly influences climate because _____ solar energy falls on areas that are closer to the equator than to the poles.
- **a.** less
- **b.** the same amount of
- **c.** more
- **d.** sometimes less

_____**14.** An important property of air circulation is
- **a.** warm air is denser than cold air.
- **b.** cold air and warm air have the same density.
- **c.** cold air is denser than warm air.
- **d.** air has no mass.

_____**15.** Which of the following gases is *most* responsible for the greenhouse effect?
- **a.** nitrous oxide
- **b.** methane
- **c.** oxygen
- **d.** water vapor

_____**16.** Which of the following reduce(s) CO_2 in the atmosphere?
- **a.** phytoplankton
- **b.** tropical rain forests
- **c.** oceans
- **d.** all of the above

_____**17.** During the summer, sunlight in the Northern Hemisphere shines
- **a.** obliquely for long days.
- **b.** slanting for short days.
- **c.** more directly for long days.
- **d.** less directly for short days.

_____**18.** Ozone in the stratosphere
- **a.** causes skin cancer.
- **b.** prevents DNA repair.
- **c.** absorbs UV light.
- **d.** destroys CFCs.

_____**19.** Ozone holes appear in polar regions during springtime when ozone-destroying
- **a.** chlorine atoms are released from polar stratospheric clouds.
- **b.** chlorine atoms are captured by polar stratospheric clouds.
- **c.** CFCs are synthesized on polar stratospheric clouds.
- **d.** CFCs magnify ultraviolet light.

_____**20.** Once in the atmosphere, CFCs
- **a.** quickly become harmless.
- **b.** destroy ozone for only a short time.
- **c.** persist but stop destroying ozone.
- **d.** persist and continue to destroy ozone for decades.

_____**21.** La Niña is the _____ phase of the El Niño-Southern Oscillation (ENSO) cycle.
- **a.** warm
- **b.** cold
- **c.** neutral
- **d.** mixing

_____**22.** The average global temperature has _____ during the 20th century.
- **a.** remained the same
- **b.** increased every year
- **c.** risen some years and fallen other years but has increased overall
- **d.** risen some years and fallen other years but has decreased overall

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Skills Worksheet

Critical Thinking

ANALOGIES

In the space provided, write the letter of the pair of terms or phrases that best completes the analogy shown. An analogy is a relationship between two pairs of words or phrases written as a : b :: c : d. The symbol : is read "is to," and the symbol :: is read "as."

_____ **1.** carbon dioxide : plants ::
- **a.** CFCs : ozone layer
- **b.** oxygen : humans
- **c.** methane : livestock
- **d.** water vapor : global warming

_____ **2.** El Niño : warm phase ::
- **a.** weather : drought
- **b.** wind : solar energy
- **c.** poles : latitude
- **d.** La Niña : cold phase

_____ **3.** oblique sunlight : poles ::
- **a.** summer sunlight : winter sunlight
- **b.** day : night
- **c.** weather : climate
- **d.** vertical sunlight : equator

_____ **4.** chlorofluorocarbon : chlorine ::
- **a.** ozone : oxygen
- **b.** carbon dioxide : nitrogen
- **c.** reaction : atom
- **d.** ozone hole : stratosphere

_____ **5.** UV light : phytoplankton ::
- **a.** water : plants
- **b.** air : animals
- **c.** chlorine atoms : ozone molecules
- **d.** greenhouse effect : water vapor

_____ **6.** model : equations ::
- **a.** warming : cooling
- **b.** computer : calculations
- **c.** radiation : atmosphere
- **d.** language : alphabet

_____ **7.** polar ice mass : sea level ::
- **a.** coastal wetlands : floods
- **b.** clouds : weather
- **c.** ocean surface temperature : storms
- **d.** Gulf Stream : currents

_____ **8.** beaches : erosion ::
- **a.** agriculture : droughts
- **b.** atmosphere : rivers
- **c.** model : warming
- **d.** water : cooling

INTERPRETING OBSERVATIONS

Read the following passage and answer the questions that follow.

Ignoring the effects of air resistance, careful measurements of a falling object will show the object picks up more and more speed with each passing second. This is easy to prove by rolling a ball downhill. Friction notwithstanding, the ball will roll faster and faster the further it rolls. Many scientists have used this analogy when describing global warming in Arctic areas. The more these areas warm, the faster they continue to warm. Worldwide, over the past hundred years, scientists have measured the average temperature rise to be approximately 1°F. However, since 1970, measurements from some parts of Alaska indicate a 5°F rise. Though warmer temperatures bring increased snowfall, the same conditions each year are also melting the snow faster than it can accumulate. As Alaskan glaciers melt and expose more bare earth, the glaciers appear to be retreating northward. In many northern areas, as permafrost and ice beneath the surface melts, lands sink and roots of trees drown. Entire forests are disappearing from too much water and from damage brought about by increased insect populations.

9. Compare polar regions (with glaciers and snow-and-ice cover) to temperate regions. Which region is likely to experience a sharper temperature rise? Explain your answer.

10. Do you agree with scientists' predictions about the warming of Alaska and other polar regions? Justify your response.

AGREE OR DISAGREE

Agree or disagree with the following statements, and support your answer.

11. Industrialized countries should assist countries with tropical rain forests so that those governments can afford to leave their forests intact.

12. The correlation between carbon dioxide levels in the atmosphere and world temperatures for the past 160,000 years proves that higher carbon dioxide levels cause global warming.

13. Developing countries should not participate in treaties that set allowable levels of greenhouse emissions in developed countries.

REFINING CONCEPTS

The statements below challenge you to refine your understanding of concepts covered in the chapter. Think carefully, and answer the questions that follow.

14. Some scientists predict that global warming will cause major ocean currents to shut down. The Gulf Stream moves warm water from equatorial areas toward northern latitudes. How might an ocean current shutdown affect the climate?

15. A catalyst speeds up a process but is not changed itself. CFCs are known to release catalysts that break down the ozone layer. How does this process work?

16. The carbon in fossil fuels was in the atmosphere long ago. Why does burning these fuels and releasing the carbon back into the atmosphere create a problem today?

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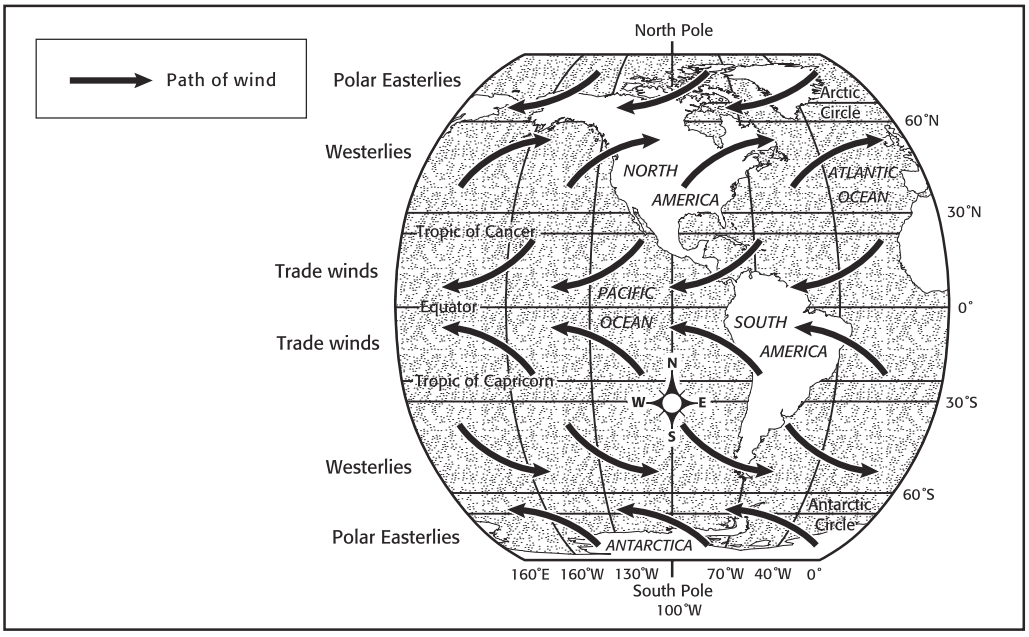
Skills Worksheet

DIFFERENT WINDS

Map Skills



Wind is caused by changes in atmospheric pressure. Atmospheric pressure, also called barometric pressure, is the force, or pressure, of the air above Earth.

Use the map above to answer the questions below.

1. **Analyzing Data** Which do you think affects wind movement more, latitude or longitude?

_____

2. **Finding Locations** If you live in South America at the equator, in which direction does the wind blow?

_____

3. **Making a Hypothesis** In which direction do the Westerlies blow? Why do you think they are called the Westerlies?

_____

4. **Making a Hypothesis** If you were sailing to North America from Europe, near which line of latitude would you sail? Why?

_____

5. **Making Conclusions** Find the general location of your community on the map. If a storm were approaching you, which direction would it be coming from?

_____