Elemental Geosystems, 5e (Christopherson)
Chapter 3 Atmospheric Energy and Global Temperatures

1) The passage of shortwave and longwave energy through the atmosphere or water is an example of
A) absorption.
B) transmission.
C) refraction.
D) insolation.
Answer: B

2) Which of the following is true of insolation?
A) It is the only energy input driving the earth's atmospheric system.
B) It consists of diffuse radiation.
C) It consists of direct radiation.
D) All of these are true.
E) None of these are true.
Answer: D

3) Earth's main energy inputs are
A) longwave radiation and ultraviolet light.
B) ultraviolet, visible, and near infrared radiation.
C) near infrared and far infrared (i.e., longwave radiation).
D) gamma rays, X-rays, and ultraviolet radiation.
Answer: B

4) The insolation received at Earth's surface is
A) usually low at the equator.
B) generally greater at high latitudes because of daylength.
C) greatest over low-latitude deserts with their cloudless skies.
D) inadequate to sustain life.
Answer: C

5) Which two gases are primarily responsible for the greenhouse effect because of their ability to absorb infrared energy?
A) oxygen and hydrogen
B) ozone and dust
C) nitrogen and oxygen
D) water vapor and carbon dioxide
Answer: D

6) When light passes from one medium to another
A) transmission happens.
B) Rayleigh scattering is the predominant effect.
C) refraction occurs a process that is important to the formation of rainbows.
D) it is usually not affected physically.
Answer: C

7) When light passes from space into the atmosphere, it changes _____ in a process known as _____.
A) color; reflection
B) color; refraction
C) color; Rayleigh scattering
D) speed and direction; reflection
E) speed and direction; refraction
Answer: E

8) Mirages (such as the appearance of "water" on a dry, hot road) are caused by
A) differences in the air temperature of layers near the surface.
B) differences in the air density of layers near the surface.
C) refraction.
D) all of the above
E) temperature and density differences only.
Answer: D

9) Because of the process known as _____ the Sun appears above the horizon _____ it has actually risen.
A) transmission; before
B) transmission; after
C) refraction; before
D) refraction; after
E) reflection; before
Answer: C

10) The reflective quality of a surface is known as its
A) conduction.
B) absorption.
C) albedo.
D) scattering.
Answer: C

11) Which of the following has the highest albedo?
A) forests
B) asphalt
C) dry, light sandy soils
D) fresh snow
Answer: D

12) If the surface of the earth were to suddenly turn white, the temperature of the planet would _____ because _____ insolation would be absorbed.
A) decrease; less
B) decrease; more
C) increase; less
D) increase; more
Answer: A

13) Earth's average overall albedo is
A) 31 percent.
B) 51 percent.
C) 69 percent.
D) unknown.

Answer: A

14) Which of the following has the lowest albedo?
A) pack ice off the coast of Antarctica
B) snow that is polluted and several days old
C) dry concrete
D) forests
E) the Moon's surface in full sunlight
Answer: E

15) Which of the following is true of the albedo of water?
A) It changes, depending upon the Sun angle.
B) It is greatest when the Sun is low in the sky.
C) It never changes albedos are constant values.
D) It is less for frozen water than for liquid water.
Answer: A

16) Energy that is reflected from the atmosphere
A) is used to heat the atmosphere.
B) increases the energy surplus of the planet.
C) does not act to heat the atmosphere.
D) heats the atmosphere and increases the planet's energy surplus.
Answer: C

17) An increase in the earth's albedo would
A) warm the planet.
B) cool the planet.
C) have no effect on the planet's temperature because insolation is constant.
Answer: B

18) Air pollution acts to _____ the albedo of cities and therefore _____ the urban heat island effect.
A) increase; enhances
B) increases; diminishes
C) decreases; enhances
D) decreases; diminishes
Answer: B

19) Which of the following is related to Earth's albedo?
A) transmission
B) scattering
C) convection
D) none of these
Answer: B

20) The sky is blue because
A) blue light is absorbed more than other wavelengths.
B) the earth's atmosphere allows only blue light to enter.
C) the atmosphere scatters blue light more than any other visible wavelength.
D) most of the light coming from the Sun is in the blue end of the visible spectrum.
Answer: C

21) On a cloudy day, Earth's surface receives
A) direct insolation.
B) diffuse radiation.
C) direct radiation.
D) a reduced daylength.
Answer: B

22) The Mount Pinatubo eruption in June 1991 affected the atmosphere in the following way
A) the atmospheric albedo increased.
B) an increase occurred in the amount of energy absorbed in the atmosphere.
C) a worldwide decrease in surface temperatures occurred in the two years after the eruption.
D) All of these were effects of the eruption.
E) None of these effects occurred.
Answer: D

23) Conduction refers to
A) the vertical movement of air in response to temperature-induced density differences.
B) strong vertical motions in the atmosphere.
C) the molecule-to-molecule transfer of heat energy that diffuses through the material.
D) the behavior of something.
Answer: C

24) A vertical air current that is generated by temperature-induced density differences is an example of heat transfer by
A) advection.
B) convection.
C) conduction.
D) transmission.
E) diffusion.
Answer: B

25) The analogy of a greenhouse is
A) not applicable to Earth's atmosphere in any way, and is a bizarre concept that should never have been used to describe global warming.
B) exactly how the earth-atmosphere system operates.
C) useful, but not fully applicable because greenhouse gases merely absorb heat, thereby delaying losses to space; they do not trap heat as does the glass in a greenhouse.
D) not discussed in the chapter.
Answer: C

26) Which of the following is false relative to the earth-atmosphere radiation system?
A) If the surface and the atmosphere are considered separately, neither exhibits a balanced radiation budget.
B) The surface exhibits an overall positive radiation balance.
C) The atmosphere exhibits an overall negative radiation balance.
D) Only convection transfers heat energy to the atmosphere from the surface.
Answer: D

27) On the average, which of the following is true regarding the distribution of shortwave and longwave energy at Earth's surface by latitude?
A) The equatorial zone is a region of net deficits.
B) The polar regions are areas of net surpluses.
C) The distribution shows an imbalance of net radiation from equator to poles.
D) More energy is lost than is gained in the equatorial regions.
Answer: C

28) The relationship between the insolation curve and the air temperature curve on a graph of daily surface energy
A) exhibits a lag of several hours between the plotted lines.
B) shows little or no relationship between the two variables.
C) shows that peak temperatures occur near noon, whereas peak insolation receipt is at 3:00 or 4:00 P.M.
D) coincide at noon.
Answer: A

29) The science that specifically studies the climate at or near Earth's surface is
A) geography.
B) meteorology.
C) micrometeorology.
D) microclimatology.
E) astronomy.
Answer: B

30) Net radiation (NET R) refers to
A) the net energy expended for ground heating and cooling.
B) the balance of all radiation incoming and outgoing at Earth's surface.
C) the amount of insolation coming into the surface.
D) the amount of insolation not absorbed at the surface.
Answer: B

31) In the surface energy budget, the term - SW represents
A) heat.
B) incoming energy.
C) the albedo value of the surface.
D) NET R.
Answer: C

32) Which of the following would be true for the net radiation balance in a midlatitude location?
A) Net R is constant throughout the year.
B) There is a surplus of Net R during the summer and a deficit during the winter.
C) There is a deficit of Net R during the summer and a surplus during the winter.
D) The season at which surpluses and deficits occur varies from one year to the next.
Answer: B

33) Longwave radiation (+ LW) arriving at the surface
A) comes primarily from infrared energy emitted by greenhouse gases in the atmosphere.
B) comes directly from the Sun.
C) comes from diffuse solar radiation.
D) comes from UV radiation reflected from the bottoms of clouds.
Answer: A

34) Sensible heat transfer (H) refers to energy transfer between the air and the surface by
A) turbulent eddies, convection, and conduction.
B) evaporation of water.
C) reflection of insolation.
D) all of the above
Answer: A

35) When water evaporates from a surface, which of the following occurs?
A) Energy is stored within the water.
B) Energy is removed from the surface.
C) The surface is cooled.
D) All of the above occur.
Answer: D

36) The highest annual values for latent heat of evaporation (LE) on land occur in the tropics because
A) there is a net annual energy surplus there.
B) rainfall makes water available for evaporation from soils.
C) the dark color of forests (as opposed to sandy soils) results in the absorption of heat energy by vegetation.
D) all of the above
E) B and C only
Answer: D

37) When water evaporates, the energy that was used to evaporate the water
A) is stored as sensible heat in the evaporated water.
B) is stored as latent heat in the evaporated water.
C) is transferred to the air by advection when the water evaporates.
D) is conducted into the underlying layer of water.
Answer: B

38) Which term in the radiation balance equation links the earth's energy, hydrological, and biological systems?
A) albedo
B) sensible heat
C) latent heat of evaporation
D) infrared energy emitted from the ground
Answer: C

39) In terms of latitudinal distribution, the highest annual value for LE over land
A) is between 10 degrees and 10 degrees S latitudes.
B) coincides with the distribution of the value for H.
C) is between 15 degrees to 30 degrees N and S latitudes.
D) is the same for both the El Mirage and Pitt Meadows examples.
Answer: A

40) Which of the following is not responsible for the urban heating effect?
A) The materials cities are constructed from conduct heat better than natural soils.
B) The materials cities are constructed from store heat better than natural soils.
C) The albedo of urban environments is substantially higher than that of natural landscapes.
D) The concentration of people, machines and heat generating devices adds more heat to the environment.
E) Less evaporation occurs from city surfaces.

Answer: C

41) Which of the following is false?
A) Urbanized surfaces tend to be sealed.
B) Urban surfaces have lower albedos and higher NET R values.
C) The amount of human-produced heat is not significant in New York City.
D) A city responds much as a desert surface during and after a rainstorm.
Answer: C

42) Which of the following is true regarding anthropogenic heat production in cities?
A) It can contribute 250 percent more heat energy in winter than is contributed by insolation.
B) It contributes little heat energy relative to that arriving from insolation.
C) It is too small to be considered a relevant part of the energy budget.
D) The production of this heat energy contributes very little to air pollution.
Answer: A

43) Which of the following is not associated with urban environments?
A) higher relative humidity than that in surrounding rural areas
B) greatly increased condensation nuclei relative to surrounding rural areas
C) increased precipitation relative to surrounding rural areas
D) lower annual mean wind speeds relative to surrounding rural areas
Answer: A

44) Which of the following is true?
A) Practical technology for the use of solar energy has not yet been developed.
B) Solar-thermal electrical production is only at the experimental stage.
C) Flat-plate solar collectors were sold in newspapers and merchandise catalogs almost 100 years ago.
D) Solar energy is nonrenewable, and the technology associated with its use is highly centralized and expensive.
Answer: C

45) Solar cookers could replace _____ as an affordable source of energy in rural villages in third world countries.
A) natural gas
B) nuclear power
C) fusion power
D) fire wood
Answer: D

46) Mirrors are used to
A) shine light on photovoltaic cells.
B) generate steam.
C) shine light on passive solar collectors.
D) None of the above mirrors are not used to harness solar energy.
Answer: B

47) Air temperature is a measure of the presence of which of these?
A) heat capacity
B) apparent temperature
C) relative humidity
D) sensible heat

Answer: D

48) As the kinetic energy of the air increases
A) its temperature decreases.
B) its temperature increases.
C) its temperature is unaffected.
D) its temperature may either increase or decrease depending upon the circumstances.
Answer: B

49) Official temperatures are measured using thermometers placed in shelters that are
A) white.
B) placed a few feet above the ground.
C) placed in the shade.
D) all of the above
E) none of the above
Answer: D

50) The principal controls and influences of temperature patterns include
A) Earth's tilt, rotation, revolution, and sphericity.
B) latitude, altitude, land-water heating differences, cloud cover, ocean currents, and surface conditions.
C) land-water heating differences only.
D) specific heat only.
Answer: B

51) The single most important control on temperature is
A) latitude.
B) altitude.
C) distribution of land and water.
D) evaporation.
Answer: A

52) Based on information discussed earlier in the course, you know that seasonal variation in daylength _____ with increasing distance from the equator because _____.
A) decreases; the earth rotates more slowly near the poles
B) decreases; the earth's axis is titled relative to the plane of the ecliptic
C) increases; the earth rotates more slowly near the poles
D) increases; the earth's axis is titled relative to the plane of the ecliptic
E) remains constant throughout the year; the earth is a sphere
Answer: D

53) Based on information discussed previously in the course, you know that average temperatures in the troposphere _____ with increasing elevation because the atmosphere is heated _____.
A) increase; from the top-down by insolation
B) increase; from the top-down by energy emitted from the stratosphere
C) decrease; from the bottom-up by reflected insolation
D) decrease; from the bottom-up by terrestrial infrared energy
Answer: D

54) 6.4C degrees/1000 m (3.5F degrees/1000 ft) refers to
A) a latitudinal lapse rate.
B) a normal lapse rate.
C) an environmental lapse rate.
D) a measure of air pressure.

Answer: B

55) Which of the following is true regarding locations at high elevations?
A) Higher elevations experience higher temperatures during the day because they are closer to the Sun.
B) Higher elevations experience lower average temperatures during both day and night.
C) The density of air increases with increasing elevation.
D) Temperatures at night, and in the shadows, are greater at higher elevations.
Answer: B

56) The people of La Paz, Bolivia can grow wheat and barely at an elevation of 4103 m (13,461 ft) because
A) the air is thicker than normal at their location and it therefore traps more heat energy making the climate much warmer than would be expected based on its location.
B) La Paz is located fairly close to the equator.
C) daylength does not vary much at La Paz and this provides relatively uniform temperatures throughout the year.
D) of all of the above.
E) B and C only
Answer: E

57) If the temperature at the surface of the earth (at sea level) is 100 degrees F, what is the temperature at 2000 feet if the normal lapse rate is 3.5 degrees F/1000 feet?
A) 93 degrees F
B) 96.5 degrees F
C) 103.5 degrees F
D) 107 degrees F
Answer: A

58) The temperature control that specifically relates to opaqueness is
A) altitude.
B) specific heat.
C) transmissibility.
D) evaporation.
Answer: C

59) The temperature control that includes the heat capacity of a substance is
A) movement.
B) evaporation.
C) cloud cover.
D) specific heat.
Answer: D

60) Which of the following is true regarding clouds?
A) They increase temperature minimums and temperature maximums.
B) They cover about 15 percent of Earth's surface at any one time.
C) They act like insulation in that they have a moderating influence on temperatures.
D) They decrease nighttime temperatures and increase daytime temperatures.
Answer: C

61) The temperature on a cloudy night is likely to be _____ those on a clear night all other factors being equal.
A) warmer than
B) colder than
C) the same as
Answer: A

62) Evaporation
A) tends to increase temperatures over land.
B) tends to lower temperatures more over water bodies than over land.
C) tends to increase the temperature over water.
D) affects land more than ocean surfaces.
E) affects the temperature of land surfaces and water bodies the same amount.
Answer: B

63) The ocean temperature rarely rises above 31 degrees C (88 degrees F) because of _____ feedback caused by _____.
A) positive; evaporation
B) positive; ocean currents
C) negative; evaporation
D) negative; ocean currents
Answer: C

64) Transmissibility
A) is greater in land than water.
B) refers to the fact that land is opaque and water is transparent.
C) produces a heat loading at the surface of water bodies.
D) produces a photic layer that normally is 2000 m (6600 ft) deep.
Answer: B

65) The land surface cools off more rapidly at night than water does because
A) the energy is stored in a shallow layer near the surface of the land, and so it can be radiated away faster.
B) the amount of energy stored in the land is less than that stored in the water column.
C) all of the above
D) None of the above land does not cool off more rapidly than water at night.
Answer: C

66) Which of the following is true regarding the specific heat of land and water?
A) Water can hold more heat energy than a comparable volume of rock.
B) The temperature of water will rise faster than that of land when exposed to the same amount of insolation.
C) Land surfaces have a higher specific heat than water surfaces.
D) Land and water have very similar specific heat values.
Answer: A

67) Land has a _____ specific heat than water and therefore heats more _____.
A) higher; slowly
B) higher; quickly
C) lower; slowly
D) lower; quickly
Answer: D

68) The mean (average) temperature of a given location on Earth is controlled primarily by its _____ whereas its temperature range is controlled primarily by its _____.
A) latitude; elevation
B) elevation; location with respect to large water bodies
C) evaporation; latitude
D) latitude; location with respect to large water bodies
Answer: D

69) As a result of the characteristics of water, cities located near a coast should experience a temperature range that is _____ those of cities located in the interior at the same latitude.
A) the same as
B) smaller than
C) larger than
Answer: B

70) During summer, cities located near the coast are _____ than those in the interior at the same latitude, while in the winter they are _____.
A) warmer; warmer
B) warmer; cooler
C) cooler; warmer
D) cooler; cooler
Answer: C

71) Which of the following results from the fact that there is movement (currents) in heat transferring media?
A) Heat energy is more evenly distributed in soil and rock than in water.
B) Heat energy tends to concentrate in one spot.
C) Warmer and cooler water mix, thereby spreading heat over a greater volume.
D) None of the above currents have no effect on either land or water body temperatures.
Answer: C

72) The Gulf Stream
A) moves southward and moderates temperatures in eastern South America.
B) moves equatorward, warming the California coast.
C) moves northward in the western Atlantic, moderating temperatures in Iceland.
D) creates a warming effect on Japan and the Aleutians.
Answer: C

73) If the Gulf Stream shifted away from Iceland and England, winter temperatures in these locations would
A) become cooler, thereby decreasing the average winter temperature.
B) become warmer, thereby increasing the average winter temperature.
C) remain the same.
D) It is impossible to say what would happen to the winter temperatures.
Answer: A

74) The cool ocean currents that flow along the west coasts of continents promote
A) heavy rainfall.
B) fog.
C) thunderstorm development.
D) all of these
Answer: B

75) The Western Pacific Warm Pool
A) averages 20 degrees to 22 degrees C (68 degrees to 72 degrees F).
B) is located around the Hawaiian Islands.
C) averages 28 degrees to 30 degrees C (82 degrees to 86 degrees F) and is measured both by satellite and surface instruments.
D) is not the region of the highest average ocean temperatures in the world.
Answer: C

76) The highest temperature recorded on Earth to date was in
A) North America.
B) Asia.
C) Africa.
D) Mexico.
Answer: C

77) The lowest temperature recorded on Earth to date was in
A) Antarctica in July.
B) Antarctica in January.
C) Alaska in February.
D) Russia in January.
Answer: A

78) Which of the following would experience the least continentality?
A) central Nevada
B) north central Asia
C) a tropical island
D) 200 kilometers inland from the Gulf of Mexico
Answer: C

79) Which of the following experiences the greatest continentality?
A) central Kansas
B) north central Asia
C) a tropical island
D) 200 kilometers inland from the Gulf of Mexico
Answer: B

80) Which of the following is incorrectly matched?
A) Winnipeg continentality
B) Vancouver marine
C) Trondheim continentality
D) Verkhoyansk continentality
E) Wichita continentality
Answer: C

81) The greatest annual temperature ranges are characteristic of places like
A) Los Angeles and Vancouver.
B) Los Angeles and London.
C) Verkhoyansk and Oymyakon.
D) Santa Fe and Kansas City.
Answer: C

82) An isoline that connects all points of highest mean temperature on a world map is called
A) an isobar.
B) the highest mean temperature isoline.
C) the thermal equator.
D) min/max line.
E) the temperature range line.
Answer: C

83) Which of the following is true of the thermal equator during the month of July?
A) It trends equatorward over continents and poleward over the oceans.
B) It trends poleward over continents and equatorward over the oceans.
C) It assumes an orientation that closely parallels that of the equator.
D) Its orientation is apparently random and has yet to be adequately explained.
Answer: B

84) An isoline that connects all points of the same temperature on a map is called
A) an isobar.
B) the mean temperature isoline.
C) the thermal equator.
D) min/max line.
E) an isotherm.
Answer: E

85) The lowest natural temperature on Earth (-89.2 degrees C, -128.56 degrees F) was recorded at
A) Vostok, Antarctica in July.
B) Verkhoyansk, Siberia, Soviet Union in January.
C) at the North Pole in July.
D) at a South Pole scientific base in December.
Answer: A

86) The highest natural temperature on Earth (+58 degrees C, 136 degrees F) was recorded at
A) Death Valley, California.
B) Al-Aziziyah, Libya.
C) Elko, Nevada.
D) Alice Springs, central Australia.
Answer: B

87) The highest maximum temperatures recorded on Earth occur in interior deserts during July because
A) insolation is greater than at other latitudes.
B) the skies are cloudless.
C) little evaporation occurs to supply moisture to the atmosphere.
D) all of the above
E) B and C only
Answer: D

88) Which of the following is true?
A) Northern Hemisphere temperatures are more strongly dominated by continentality than are Southern Hemisphere temperatures.
B) Southern Hemisphere temperatures are more strongly dominated by continentality than are Northern Hemisphere temperatures.
C) The Northern and Southern hemispheres are dominated equally by maritime influences.
D) The Northern and Southern hemispheres are dominated equally by continentality.
Answer: A

89) The annual temperature range map shows that the
A) lowest ranges occur over continental interiors in the Northern Hemisphere.
B) greatest ranges occur in the subtropics over the oceans.
C) greatest ranges occur over the continental masses in the Southern Hemisphere.
D) greatest ranges occur in east central Siberia in Russia.
Answer: D

90) The effect of wind and temperature on the human skin is called the
A) heat index.
B) sensible heat measurement.
C) wind chill factor
D) apparent temperature index.
Answer: C

91) Which of the following is an effect of high temperature exposure?
A) increased appetite
B) shivering
C) reduced blood flow to the skin, so that the skin becomes pale in color
D) decreased urine volume
Answer: D

92) As reported by the National Weather Service, the heat index
A) relates temperature and relative humidity.
B) combines air pressure and temperature in a comfort index.
C) gives you an indication of the effect of wind on the skin.
D) is generally reported during critical winter months.
Answer: A

93) The amount of heat energy present in any substance is expressed as its
A) temperature.
B) latent heat.
C) sensible heat.
D) surface motion.
Answer: C

94) The Celsius and Fahrenheit scales only coincide at: [degrees C → degrees F = (degrees C × 1.8) + 32]
A) -40 degrees.
B) -273 degrees.
C) 0 degrees.
D) 212 degrees.
Answer: A

95) The Celsius scale
A) is used exclusively in the United States.
B) places freezing at 0 degrees and was formerly called centigrade.
C) was developed by the British physicist Lord Kelvin.
D) was developed by Fahrenheit, who also developed the alcohol and mercury thermometers.
E) places freezing at 32 degrees and boiling at 212 degrees.
Answer: B

96) The wind-chill index
A) takes into account infrared solar radiation.
B) assumes people are wearing a basic layer of clothing.
C) uses the same variables as the heat index does.
D) does not consider whether or not a person is engaged in physical activity.
Answer: D

97) Which is true of climate change in polar regions?
A) Temperatures have changed less in the polar regions than the middle and low latitudes.
B) Increased fresh water run off is increasing thermohaline circulation.
C) Both the temperatures and the rate of temperature rise have risen.
D) Sea ice cover has increased at 9% per decade since 1978.
Answer: C

98) Which of the following is false of climate change in Arctic regions?
A) Arctic sea ice has declined by 43% since 1970.
B) Glacial meltponds have increased by 400%.
C) Spring has come 2.3 days earlier per decade.
D) Glaciers have increased in thickness by 1.8 m per year in Alaska due to increased snow fall.
Answer: C

99) Insolation is the only source of energy that is ultimately responsible for heating the atmosphere and driving weather phenomena.
Answer: True False

100) The reflective quality of a surface is called its albedo and is expressed as a percentage.
Answer: True False

101) Reflection is responsible for rainbows and mirages.
Answer: True False

102) High latitudes have a higher albedo in winter than do low latitudes.
Answer: True False

103) The Moon has an average albedo similar to new snow.
Answer: True False

104) Earth's blue sky is a result of diffuse reflection called scattering.
Answer: True False

105) Heat energy flows from objects that are hot to those that are cold.
Answer: True False

106) A daily temperature curve exhibits a lag of about 3 hours relative to an insolation curve.
Answer: True False

107) The coldest time of the year occurs in December at the time of the winter solstice.
Answer: True False

108) Latent heat of evaporation (LE) is the dominant expenditure of Earth's entire net radiation budget.
Answer: True False

109) The average building in the U.S. does not receive enough energy to heat it.
Answer: True False

110) The energy received in just 35 minutes at the surface of the U.S. exceeds the amount of energy derived from the burning of fossil fuels in a year.
Answer: True False

111) Photovoltaic systems are not cost-competitive especially when the environmental costs associated with fossil fuels and nuclear energy are factored into cost assessments.
Answer: True False

112) Air temperature is an indication of the average kinetic energy of individual molecules within the atmosphere.
Answer: True False

113) Monthly mean temperatures are made by taking the average of the highest and lowest temperatures of the month.
[(maximum monthly temperature + minimum monthly temperature)/2]
Answer: True False

114) There is as yet no scientific consensus concerning the idea that the earth is warming as a result of human activities.
Answer: True False

115) The average annual temperature of a location is controlled primarily by latitude.
Answer: True False

116) The normal lapse rate of temperature change is 6.4 degrees C/1000 m (3.5 degrees F/1000 ft).
Answer: True False

117) Average air temperatures at higher elevations are generally higher, with smaller differences between areas of direct sunlight and shadow.
Answer: True False

118) Snow lines generally occur at higher elevations with increasing latitude.
Answer: True False

119) Clouds moderate temperatures producing lower daily maximums and higher nightly minimums.
Answer: True False

120) If you went for a walk on a hot beach, you could cool your feet off substantially by digging them into the sand.
Answer: True False

121) You would expect a tropical island to have a high degree of continentality.
Answer: True False

122) Maritime influences tend to increase both daily and monthly temperature ranges.
Answer: True False

123) Ocean currents along midlatitude west coasts, even near deserts, are cool.
Answer: True False

124) The highest temperatures on Earth are associated with the intense heating over the equator.
Answer: True False

125) The Southern Hemisphere is dominated by maritime influences, whereas the Northern Hemisphere is dominated by continentality.
Answer: True False

126) At higher temperatures, the human body tends to experience a decrease in muscle tone and urine volume.
Answer: True False

127) Ocean temperatures near San Francisco reached record low levels prior to the 1997 El Niño.
Answer: True False

128) _____ refers to the passage of shortwave and longwave energy, either through the atmosphere or water. A portion of arriving energy bounces directly back into space without being converted into heat or performing any work. This returned energy is called _____, and it applies to both visible and ultraviolet light. The reflective quality of a surface is its _____. Insolation encounters an increasing density of atmospheric gases as it travels down to the surface. These molecules redirect the insolation, changing the direction of light's movement without altering its wavelengths. This phenomenon is known as _____ and represents 7 percent of Earth's albedo. When insolation enters the atmosphere, it passes from one medium to another (from virtually empty space to atmospheric gas) and is subject to a bending action called _____. _____ is the *assimilation* of radiation and its *conversion* from one form to another.
Answer: Transmission; reflection; albedo; scattering; refraction; absorption

129) Heat energy can be transferred through: _____; _____; _____; and _____.
Answer: conduction; convection; advection; radiation

130) As compared to land surfaces, water bodies tend to have _____ evaporation rates, _____ specific heat capacity, _____ transmissibility, and _____ flowing movements or currents. These characteristics together produce more _____ temperatures over the ocean as compared to more _____ temperature patterns over the continents. These conditions over the oceans are termed _____ whereas over land conditions are described with the term _____.
Answer: higher; greater; greater; moderate; extreme; marine; continental