

Name _____ Per _____

Weather and Climate Test Review

Energy From the Sun Drives the Weather on Earth

1. What happens to radiant energy that comes from the sun? P.H. 325
 - a. _____
 - b. _____
 - c. _____
 - d. _____
2. How is the energy from the sun spread throughout the atmosphere? P.H. 236
 - a. _____
 - b. _____
 - c. _____
3. Define conduction. P.H. 236
4. Define convection. P.H. 236
5. Define radiation. P.H. 236
6. What do conduction, convection, and radiation have to do with weather and climate?

Air Pressure

7. In which layer of the atmosphere is almost all the water, air and weather located? Holt. 599
8. What causes air pressure? Holt. 599
9. What 4 factors cause weather? P.H. 324
 - a. _____
 - b. _____
 - c. _____
 - d. _____
10. What instrument is used to measure air pressure? P.H. 330
11. How is air *moving* that results in high air pressure? (Lecture)
12. What does the sky look like when it is high pressure? (Lecture)
13. How is the air *moving* that results in low air pressure? (Lecture)
14. What does the sky look like when there is low air pressure? (Lecture)
15. Why does it rain so much at the equator? (Hint, look at #12) P.H. 334
16. Why is it dry at 30 degrees north and south latitude world-wide? (Hint, look at #11.) P.H. 334

Wind

17. What is the river of wind called that brings in weather to the central USA? (Lecture)
18. How does a land breeze work? P.H. 332 **STAR TEST QUESTION**

19. How does a sea breeze work? P.H 332 **STAR TEST QUESTION**
20. How are winds named? P.H 334
21. What are the global winds called between 60 and 90 degrees latitude? P.H 334
22. What are the winds called between 30 and 60 degrees latitude? P.H 334
23. What are the global winds called between the equator and 30 degrees latitude? P.H 334

Clouds

24. What 3 factors must be present for clouds to form? (Cloud in a bottle demonstration)
 - a.
 - b.
 - c.
25. What is relative humidity? P.H 339
26. Define dew point. P.H 339
27. Describe a stratus cloud. P.H 340
28. Describe a cumulus cloud. P.H 340
29. Describe a cirrus cloud. P.H 340
30. What does “nimbus” or “nimbo” mean? P.H 340

Air Masses

31. List the 4 air masses that affect the weather in the United States. P.H. 344
 - a.
 - b.
 - c.
 - d.
32. What is a front? Holt p. 613, P.H. 343
33. Which front is when a mass of warm air moves over a mass of cold air? Holt p. 613, P.H 345
34. What forms as the warm air gets pushed up over cold air, higher and higher? Holt p. 613
35. Which front is when a cold air mass moves under a warm air mass and quickly pushes air up?
36. Why is weather more severe at cold fronts? Holt p. 614, P.H 345

Thunder and Lightening

37. Where does lightning come from? Holt p. 614
38. What does lightning “jump” between? Holt p. 614
39. When lightning occurs, it _____ the air, making it _____ faster than the speed of sound. This creates _____ - _____ that we hear as thunder. Holt p. 614

- 40. What are funnels of high-speed wind called? P.H. 348
- 41. Which two air masses interact to cause many tornadoes above the Great Plains in USA? P.H. 348
- 42. What type of clouds do tornados come from? P.H. 348
- 43. What are hurricanes powered by?
- 44. Where do hurricanes begin and where are they weakened? P.H. 346
- 45. Where do meteorologists get information to predict the weather? P.H. 349
 - a.
 - b.
 - c.
 - d.
- 46. What is an isotherm? P.H. 351
- 47. What is the difference between weather and climate?

Climate

- 48. Which two factors determine climate *the most*? P.H. 362
 - a.
 - b.
- 49. How does latitude affect temperature? P.H. 363
- 50. How does altitude affect temperature? P.H. 363
- 51. How does the proximity to ocean currents affect temperature? P.H. 363
- 52. List the 3 major climate zones on Earth. P.H. 366
 - a.
 - b.
 - c.
- 53. What climate does California and southern Europe have? P.H. 371
- 54. Which region of Earth has the warmest climate? P.H. 368
- 55. Why to the question in #17?
- 56. List 4 factors that can cause the climate to change over time. P.H. 376
 - a.
 - b.
 - c.
 - d.
- 57. What is it called when the Earth is covered in an enormous sheet of ice? P.H. 377
- 58. When did the last Ice Age end? P.H. 377
- 59. What is the “ENSO cycle”? (web)
- 60. How does “El Nino” affect our local climate? P.H. 379
- 61. How does “La Nina” affect our local climate? (web)
- 62. Is the Earth closest to the sun in the summer? _____
- 63. When the Earth is tilted in a way that points us most directly at the sun, what season is it?

64. What is an equinox?
65. What is the rise and fall of land surface called?
66. What happens to the humid air that rises on the coastal side of a mountain that's near the ocean? P.H. 366
67. What happens to the air that goes over a mountain? P.H. 366

STAR Atmosphere Questions

68. Only about 50% of the solar energy directed toward Earth penetrates directly to the surface. What happens to the rest of the radiation?

- A. It is absorbed or reflected by the atmosphere
 B. It is reflected off the Moon and back into space
 C. It loses energy traveling through space
 D. It loses energy overcoming the Sun's gravity

69. Venus is warmed by solar radiation, but its thick cloud cover increases the temperature because the clouds...

- A. Prevent the escape of heat into space.
 B. Absorb short light wavelengths, leaving heat.
 C. Convert solar radiation into heat.
 D. Produce heat as they are pushed by strong winds.

70. Which of these could increase average global temperatures?

- A. Increased use of fossil fuels
 B. Decreased carbon dioxide emissions
 C. Increased ocean algal blooms
 D. Increased numbers of animal species

71. More solar energy reaches the equator than the polar regions because the equatorial regions...

- A. Are covered by a greater area of land.
 B. Have days with more hours of light.
 C. Have more vegetation to absorb sunlight.
 D. Receive sun rays closest to vertical.

72. What causes the wind deflection from the north and south poles?

- A. The rotation of Earth on its axis
 B. The oblate shape of Earth
 C. The tilt of Earth's axis relative to its orbital plane
 D. The difference in total land mass of the two hemispheres

73. Air moving from the poles toward the equator turns west. The primary cause of this global deflection of wind is...

- A. The shape and size of land masses.
 B. Changes in the magnetic field.
 C. Larger cities surrounded by farmlands.
 D. The rotation of the planet.

74. When a layer of cool air at the surface of Earth is found under a layer of warmer air above it, the result is known as...

- A. The Coriolis effect
 B. Temperature inversion
 C. The greenhouse effect.
 D. Upwelling.

75. Which of these effects generally occurs as the result of a warm air mass and a cooler air mass converging at Earth's surface?

- A. The sky becomes clear.
 B. Cloud formation decreases.
 C. Winds die down.
 D. Stormy weather patterns develop

76. Snow on the ground prevents polar climates from gaining heat by what mechanism?

- A. Heating by greenhouse gases
 C. Heat spread from the equator

B. Reflection of solar radiation

D. Release of heat from Earth's core

77. Shifts in Earth's continents most likely caused a change in Earth's:

A. Climatic regions

C. Mass

B. Orbital velocity

D. Atmospheric temperature

78. The Gulf Stream in the Northern Hemisphere and the Brazilian Current in the Southern Hemisphere move poleward. Compared to inland areas at the same latitude, the coastal areas bordering these currents will:

A. Be warmer

C. Be more arid

B. Have more advection fogs

D. Have shorter growing seasons

79. From Earth's atmosphere, carbon dioxide is used by plants, algae, and Cyanobacteria during the process of:

Photosynthesis

C. Respiration

B. Decomposition

D. Nitrogen fixation

80. Carbon in the atmosphere is most often found as which of the following compounds?

A. Stratospheric ozone

C. Fossil fuel

B. Carbon monoxide

D. Carbon dioxide

81. Earth's atmosphere is divided into layers that are based upon their:

A. Water content

C. Relative humidity

B. Gas content

D. Temperature gradient

82. Which is the correct sequence?

A Troposphere, stratosphere, mesosphere, thermosphere

B. Thermosphere, mesosphere, stratosphere, troposphere

C Troposphere, mesosphere, thermosphere, stratosphere

D. Mesosphere, troposphere, thermosphere, stratosphere

83. The primitive atmosphere of Earth was deficient in free oxygen. What process was primarily responsible for the development of the present percentage of free oxygen in the Earth's atmosphere?

A. Out gassing

C. Photosynthesis

B. Volcanic eruptions

D. Oxidation of iron-based minerals

84. Most of the molecular oxygen in the early atmosphere of Earth resulted from which of the following?

Photosynthesis in primitive plants

C. Decaying primitive plants and animals

B. Volcanic eruptions

D. Lightning striking the Earth

85. Which of the following human activities reduces the level of ozone in the atmosphere?

A. Using artificial lighting in scientific polar stations

B. Using large banks of solar cells for energy production

C. Releasing chlorofluorocarbons from aerosol cans

D. Destroying large areas of the equatorial rain forests