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Study Guide: The Atmosphere

1. Where is air pressure the greatest? (Sea level -troposphere)

2. What happens to the air pressure and molecules as you increase in altitude? (air pressure decreases and molecules become more spread out)

3. Name the most abundant gas in the atmosphere. What is the percentage? (Nitrogen – 78%)

4. Name the second most abundant gas in the atmosphere. What is the

percentage? (Oxygen – 21%)

5. List the 5 layers of the atmosphere in order, beginning from Earth’s surface. (troposphere, stratosphere, mesosphere, thermosphere, exosphere)

Match the layer of the atmosphere with the following characteristics:

6. where weather occurs (troposphere)

7. protects Earth from meteors (mesosphere)

8. hottest layer (thermosphere)

9. coldest layer (mesosphere)

10. where the space shuttle and satellites orbit (thermosphere)

11. where the ozone layer is located (stratosphere)

12. where the jet stream is located (top of troposphere, bottom of stratosphere)

13. the aurora borealis occurs here (thermosphere)

14. we live here (troposphere)

15. begins 50 km above Earth’s surface (mesosphere)

16. where radio waves are reflected back to the surface (thermosphere)

17. the ionosphere is located here (thermosphere)

18. Explain why a thermometer in the thermosphere would show a low temperature. (the molecules are so spread out that a temperature reading cannot be made)

19. What is the function of the ozone layer? (protects Earth from harmful ultraviolet rays by absorbing them)

20. What is the function of the ionosphere? (reflects radio waves back to Earth)

21. What would happen if the ionosphere did not exist? (radio waves would be lost in space)

22. List the three forms of heat transfer. (radiation, convection, conduction)

23. \_\_\_\_\_\_\_\_\_\_ is the transfer of heat energy by electromagnetic waves traveling through an empty space (radiation)

24. The transfer of heat energy by the movement/circulation of a fluid is \_\_\_\_\_\_\_\_\_. (convection)

25. \_\_\_\_\_\_\_\_\_ is the transfer of heat energy from one substance to another substance by direct contact. (conduction)

26. Convection works best in \_\_\_\_\_\_\_\_\_\_. (fluids – gases and liquids)

27. Conduction works best in \_\_\_\_\_\_\_\_\_\_. (solids especially metals)

Explain the type of heat transfer described below.

28. burning your feet on hot sand (conduction)

29. drying your boots over a hot-air vent (convection)

30. feeling the sun’s warmth on your face (radiation)

31. Explain how the three forms of heat transfer affect/cause weather.

(The sun heats the oceans/land by radiation. The ocean/land then heats the air above it by conduction. Heated air then rises and cooler air sinks by convection.)