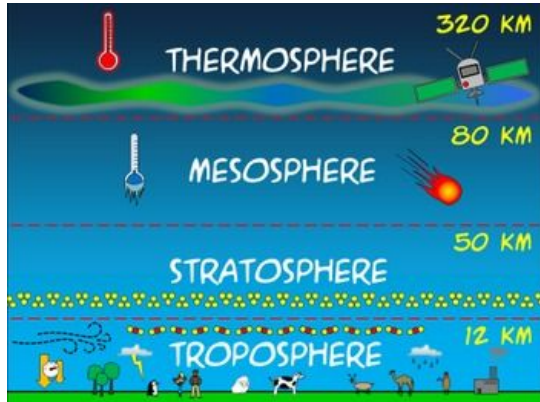


Atmosphere Study Guide

Name _____ **KEY** _____

1. List the main features (height/order, objects in it, temperatures, pressures, etc.) of each layer of the atmosphere:

I posted the drawing instructions and a great drawing example **on the class website** - use these to review



2. List the 4 major gases in Earth's current atmosphere and their percentages.

78% Nitrogen, 21% Oxygen, 0.93% Argon, 0.038% Carbon Dioxide

3. Oxygen was not present in Earth's early atmosphere. Explain where it came from.

Oxygen appeared when energy from the sun broke the water vapor into H & O. However, most of the oxygen came from photosynthesis when plants appeared.

4. How are the earth and atmosphere heated? **By the sun/solar radiation**

5. **51%** of solar radiation reaches earth. **19%** is absorbed by the atmosphere. **30%** is reflected back to space

6. Short wavelength radiation from the sun can easily pass through our atmosphere and heat the earth. Describe what happens next: **The shortwave radiation heats the earth. Heat waves have long wavelengths and some can escape back into space, but others are trapped by the earth's greenhouse gases. This warms the earth.**

7. Describe the greenhouse effect and list the 4 major greenhouse gasses.

When the sun's energy that is reflected back into space gets trapped by a layer of greenhouse gases and warms the earth, this is called the greenhouse effect. The 4 major greenhouse gases are CO₂, NO₂, water vapor, and CFCs.

8. Is the greenhouse effect a good or a bad thing? Why?

Both! If we didn't have the greenhouse effect earth would be too cold to sustain life. However, greenhouse gases are getting thicker and thicker, trapping more heat making earth warm up.

9. What are humans doing that cause more CO₂ to be added to the atmosphere?

In your Greenhouse notes

10. What are some things you can do to reduce the amount of CO₂ that you or your family is producing?

In your Greenhouse notes

11. What are some effects of the greenhouse effect that you have learned in class?

Review your Greenhouse notes and Climate Change WebQuest (posted on class website)

12. What has been done to try to reverse these effects? Has there been any success?

In your WebQuest (Part 4 #3) - the Montreal Protocol has led to a decrease in the ozone hole

Gas Test Review

13. What is effusion? Diffusion?

Effusion is the movement of molecules through a small hole. Diffusion is the gradual mixing of molecules of different gases.

14. Compare the rate of effusion of He gas to Ne gas.

Rate He = Square root: (20.18) = 2.2 = Helium effuses 2.2 times faster than Ne
Rate Ne Square root: (4.00)

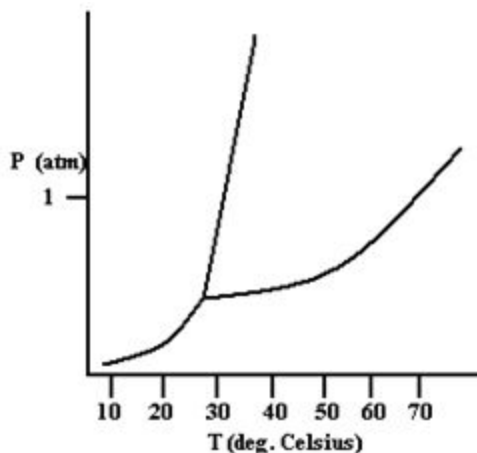
15. Convert 578 torr to kPa. 77 kPa

16. A sample of ammonia gas occupies 373 mL at 25°C. At what temperature will it occupy 482 mL if the pressure remains constant? 385K (or 112°C)

17. Explain the Kinetic Molecular Theory. Review your notes (Chapter 11.1 Gases) - gas particles are ALWAYS in motion

18. When do real gases behave like ideal gases? Review your notes (Chapter 11.2 Ideal Gases) - at high temperatures and low pressures, when they are small non-polar gas molecules

19. What is the pressure of a mixture of gases if the mixture contains He gas at 0.36 atm, Ne gas at 0.98 atm, and Ar gas at 0.16 atm? 1.5 atm



20. On the Phase Diagram to the left, label: **In your notes**

- The Solid (left), Liquid (middle), and Gas (right) sections
- All 6 phase changes - are they endothermic or exothermic?
- Put a star at 20°C and 1 atm - what phase is this? solid
- Triple point - what is this? In notes
- Critical point - what is this? In notes
- Boiling point at 1 atm about 70°C

21. What is the relationship between:

- P & V inversely proportional
- T & V directly proportional
- P & T directly proportional

22. In the Properties of Water Lab, why did the water level rise?

As the water was heated, the molecules spread out and took up more space (they became less dense).

23. In the Gas Over Water Lab, why did the CO₂ gas produced rise above the water in the graduated cylinder? Why does a hot air balloon rise?

In the lab, because gas is less dense than water, the gas rose above the water in the graduated cylinder. Hot air balloons rise because as the gas inside the balloon is heated, the gas molecules start moving faster (think about the KMT), spread out, and become less dense. Less dense air rises above more dense air (this is why hot air rises!).