

Unit 9: The Gas Laws

Name: _____
Text Questions from Wilbraham, et. al.

- 13.1
1. What does all matter consist of, according to the kinetic theory?
 2. Compared to the distance between particles in a liquid or solid, gas particles are...
 3. Why is the motion of one particle in a gas independent of the motion of the other particles?
 4. Why do gases fill their containers regardless of the shape and volume of the containers?
 5. How far is a gas particle's path of uninterrupted travel?
 6. What happens during an elastic collision?
 7. Gas pressure is the result of what?
 8. A vacuum DOESN'T have what two things?
 9. Why does air exert pressure on Earth?
 10. Atmospheric pressure is the result of what?
 11. What does a barometer measure?
 12. Write the numerical relationship between three common pressure units.
 13. An increase in kinetic energy causes an increase in _____.
 14. Why is average kinetic energy used when discussing the kinetic energy of a collection of particles?
 15. There is a wider range of kinetic energies when the temperature is _____.

16. In theory, what would happen to the motion of particles if we could cool them to absolute zero?

17. The Kelvin temperature of a substance is directly proportional to what?

13.2 18. What is vaporization?

19. A liquid-to-gas conversion at the surface of a liquid that ISN'T boiling is called _____.

20. Why does a liquid evaporate faster when heated?

21. Vapor pressure is a measure of what?

22. Why does an increase in the temperature of a contained liquid increase its vapor pressure?

23. The term "volatile" describes how easily a liquid _____.

24. For what do we use a manometer?

25. What is the boiling point?

26. Why doesn't a liquid always boil at the same temperature?

27. Why do boiling points decrease at higher altitudes?

28. The normal boiling point is defined as what?

14.1 29. Why are gases easily compressed?

30. Why can the particles in a gas move freely?

31. When we increase the number of particles, why does the gas pressure increase?

32. As the amount of gas is reduced, the pressure inside the container _____.
33. Gas will rush out of a container if its pressure is _____ than the outside air pressure.
34. You can raise the pressure by _____ the gas volume; to decrease the pressure, you _____ the volume.
35. An increase in temperature causes gas pressure to _____; as temperature decreases, the pressure _____.

14.2

36. Why does a hot air balloon pilot heat the air inside the balloon?

37. Boyle's law expresses the relationship between changes in what two variables?

38. Charles's law expresses the relationship between changes in what two variables?

39. When you solve gas law problems, the temperature must always be expressed in _____.

40. Gay-Lussac's law expresses the relationship between changes in what two variables?

41. To use the combined gas law, the amount of gas must _____.

42. Write the combined gas law equation.

43. When the temperature remains the same, the ratio of T_1 to T_2 is equal to ____.

14.3

44. With the combined gas law, you can solve problems involving what three variables?

45. What is the value of the ideal gas constant?

46. Write the equation for the ideal gas law.

47. An ideal gas follows the gas laws at...

48. Why does an ideal gas NOT exist?

49. Under what two conditions do real gases differ MOST from ideal gases?

- 14.4 50. Gas pressure depends only on what two things?
51. In a mixture of gases, why do the particles have the same average kinetic energy?
52. What is meant by the partial pressure exerted by a gas?
53. Write the equation for Dalton's law of partial pressures.
54. What is diffusion?
55. What is effusion?
56. Which types of gas diffuse and effuse faster?
57. Graham's law of effusion states that the rate of effusion of a gas is...
58. If two objects have the same kinetic energy, which one must be moving faster?
59. Write the equation for Graham's law.