

**WKS**  
**Kinetic Molecular Theory of Gases**

NAME Answer Key  
Period \_\_\_\_\_ Date \_\_\_\_\_

Watch the video “Kinetic Molecular Theory of Gases” and the other videos in the Kinetic Molecular Theory playlist at <https://www.youtube.com/playlist?list=PLzy4QGtywlo8ohJfVvy3K0rlenriCPN9JG> (open this document online to click on the link or go to my YouTube channel at <https://www.youtube.com/user/doccasagrande>).

*Read section 13.1 in your textbook.*

Complete each statement.

1. The kinetic molecular theory describes the behavior of gases in terms of particles in motion.
2. The kinetic-molecular theory makes the following assumptions.
  - a. In a sample of a gas, the volume of the gas particles themselves is very small compared to the volume of the sample.
  - b. Because gas particles are far apart, there are no significant attractive or repulsive forces between gas particles.
  - c. Gas particles are in constant, rapid and random motion.
  - d. The collisions between gas particles are elastic; that is, no kinetic energy is lost.
3. The kinetic energy of a particle is represented by the equation  $KE = \frac{1}{2}mv^2$ .
4. Temperature is a measure of the average kinetic energy of the particles in a sample of matter.

*In your textbook, read about explaining the behavior of gases.*

**For each statement below, write *true* or *false*.**

- |              |   |
|--------------|---|
| <u>True</u>  | 5. Gases are less dense than solids because there is a lot of space between the particles of a gas.                               |
| <u>True</u>  | 6. The random motion of gas particles causes a gas to expand until it fills its container.  |
| <u>False</u> | 7. The density of a gas decreases as it is compressed.  |
| <u>True</u>  | 8. A gas can flow into a space occupied by another gas.   |
| <u>True</u>  | 9. The diffusion of a gas is caused by the random motion of the particles of the gas.   |
| <u>False</u> | 10. Lighter gas particles diffuse less rapidly than do heavier gas particles.   |
| <u>True</u>  | 11. During effusion, a gas escapes through a tiny opening into a vacuum.  |
| <u>False</u> | 12. Graham's law of effusion states that the rate of effusion for a gas is directly related to the square root of its molar mass. |
13. What assumption of the kinetic-molecular theory explains why a gas can expand to fill a container?  
The assumption that gas particles are in constant, rapid, random motion.
14. How does the mass of a gas particle affect its rate of effusion?  
The rate of effusion decreases as its mass increases (or increases as its mass decreases).