

# States of Matter

## Section Quiz: The Kinetic-Molecular Theory of Matter

In the space provided, write the letter of the term or phrase that best completes each statement or answers each question.

- \_\_\_\_\_ 1. A hypothetical gas that perfectly fits all the assumptions of the kinetic-molecular theory is known as
- a real gas.
  - an ideal gas.
  - an imaginary gas.
  - a perfect gas.
- \_\_\_\_\_ 2. Which of the following is *not* true about the volume of a gas?
- Most of the volume is empty space.
  - The volume is occupied by particles in continuous, rapid, random motion.
  - The volume is about 10 times greater than that occupied by an equal number of particles in the liquid or solid state.
  - Generally, the volume can be easily changed.
- \_\_\_\_\_ 3. Which of the following is an assumption of the kinetic-molecular theory of gases?
- Collisions between gas particles are inelastic.
  - Gases consist of closely spaced particles.
  - Gas particles move around in an orderly manner.
  - The temperature of a gas depends on the average kinetic energy of the gas particles.
- \_\_\_\_\_ 4. Which of the following is the equation needed to calculate the kinetic energy, KE, of a moving particle?
- $KE = \frac{1}{2} mv^2$
  - $KE = 2mv$
  - $KE = mv$
  - $KE = \frac{1}{2} m^2v$
- \_\_\_\_\_ 5. If a gas has the same temperature throughout, which gas molecule has the highest average velocity?
- O<sub>2</sub>
  - H<sub>2</sub>O
  - H<sub>2</sub>
  - Xe

**Section Quiz, *continued***

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- \_\_\_\_\_ 6. Which condition is necessary for most gases to behave nearly ideally?
- high pressure
  - high temperature
  - low compressibility
  - low expansion
- \_\_\_\_\_ 7. Which of the following is *not* a physical property of gases?
- absence of definite volume
  - large density
  - high compressibility
  - fluidity
- \_\_\_\_\_ 8. Rates of effusion of different gases are proportional to their
- polarity.
  - particle charge.
  - particle velocities.
  - compressibility.
- \_\_\_\_\_ 9. Which states of matter are fluid?
- gases and liquids
  - liquids and solids
  - gases only
  - liquids only
- \_\_\_\_\_ 10. Which gas deviates the most from ideal behavior?
- CH<sub>4</sub>
  - H<sub>2</sub>O
  - Cl<sub>2</sub>
  - He