1. Compared to liquids and solids, gases are easily compressed because the particles in a gas
   A. attract each other.
   B. are spaced relatively far apart.
   C. are very small.
   D. repel each other.

2. For gases, the SI units for volume (V), pressure (P), and temperature (T) are, respectively,
   A. liters, kilopascals, and °C.
   B. liters, kilopascals, and kelvins.
   C. cm³, kilopascals, and kelvins.
   D. liters, atmospheres, and °C.

3. A balloon appears slightly smaller when it is moved from the mountains to the seashore at constant temperature. The best gas law to explain this observation would be
   A. Gay-Lussacs's Law.
   B. Graham's Law.
   C. Boyle's Law.
   D. Charles's Law.

4. A helium balloon is filled on the ground, where the atmospheric pressure is 768 mm Hg. The volume of the balloon is 8.00 m³. When the balloon reaches an altitude of 4200 m, its volume is 16.8 m³. Assuming that the temperature remains constant, what is the air pressure at 4200 m in mm Hg?
   A. $1.61 \times 10^3$ mm Hg
   B. 366 mm Hg
   C. 543 mm Hg
   D. 111 mm Hg
5. An automobile owner's manual tells the owner to check tire pressure when the tires are cool because a tire that has been heated has a
   A. larger volume.
   B. lower volume.
   C. lower gas pressure.
   D. higher gas pressure.

6. A sample of a gas at constant pressure has a temperature of 22.0 °C and a volume of .570 L. What would the volume be at 52.0 °C?
   A. .986 L
   B. .886 L
   C. .628 L
   D. .599 L

7. At 46°C and 0.880 atm pressure, a gas occupies a volume of 0.600 L. How many liters will it occupy at 0°C and 0.205 atm?
   A. 0.600 L
   B. 2.58 L
   C. 0.140 L
   D. 2.20 L

8. Find the volume of a gas in liters if 2.95 mol has a pressure of 0.760 atm at a temperature of 52°C.
   A. 22.4 L
   B. 66.1 L
   C. 104 L
   D. 50.2 L

9. Consider four identical 1.00-L flasks containing the following gases, each at 25°C and 1 atm pressure: H₂, O₂, NH₃, and SO₂. Which gas would effuse the fastest if identical pinholes were made in all four flasks?
   A. H₂
   B. O₂
   C. NH₃
   D. SO₂

10. An ideal gas differs from a real gas in that the molecules of an ideal gas have
    A. no attraction for one another.
    B. a significant volume.
    C. a molar mass of zero.
    D. no kinetic energy.
11 Choose the correct words for the spaces. When a real gas is _________ or __________, it can condense.
A heated, compressed
B cooled, compressed
C cooled, allowed to expand
D heated, allowed to expand

12 When a gas-filled container is cooled, the pressure in the container decreases because the particles in the gas
A have more kinetic energy.
B have less kinetic energy.
C attract each other.
D move faster.

13 A real gas differs most from an ideal gas at
A high temperatures and low pressures.
B low temperatures and high pressures.
C low temperatures and low pressures.
D high temperatures and high pressures.

14 Calculate the effusion ratio of fluorine to chlorine gas.
A .7321
B 1.099
C .9931
D 1.337

answers
1. b
2. b
3. c
4. b
5. d
6. c
7. d
8. c
9. a
10. a
11. b
12. b
13. b
14. d