

Unit 8 Free Response Questions

Your class will select three questions from the following set that you must answer. Your answer to each question is worth a maximum of ten points each. Points are earned in the following ways:

3 pts: English writing conventions – the student writes complete sentences with proper punctuation and grammar. The question is restated in the context of the answer.

4 pts: The answer addresses the question that was asked. Required examples, explanations and illustrations are provided, though they might not be correct.

3 pts: The answer is conceptually correct.

1. Explain in terms of kinetic molecular theory why heating a sealed container of a gas raises the pressure inside the container.
2. Explain in terms of kinetic molecular theory why the puncturing of a tire lowers the pressure inside the tire. What will be the pressure inside the tire when it has gone completely “flat”?
3. Why does the pressure exerted by a confined gas increase as the volume of the container decreases? Explain your answer in terms of kinetic molecular theory.
4. A sealed container contains one mole of a gas. What will happen to the pressure inside the container if another mole of a different gas is added to the container, but the temperature and volume do not change? Explain your answer in terms of kinetic molecular theory.
5. Why must all gas law problems involving temperature be solved using the Kelvin (absolute) temperature scale? Give an example of the inadequacy of the Celsius temperature scale for gas laws.
6. The boiling point of pure water at sea level is 100°C . The boiling point of water at the top of Mt. Whitney (the mountain, not the high school) is 87°C . At 14,505 feet in elevation, Mt. Whitney is the tallest mountain in the United States outside of Alaska. Explain why water boils at a lower temperature at higher altitude.