

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:

As many as 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.

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

As many as 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. At room temperature, gas molecules are moving at more than 1000 meters per second. Imagine that a student walks into your classroom wearing really strong smelling cologne: What is the process called by which the molecules of cologne move across the room? Why might it take several minutes for the smell to reach the back of the room when the back of the room is no more than 15 meters away from the door?