**Kinetic Molecular Theory of Gases Fun!**

Answer the following questions about your favorite kinetic molecular theory:

1) Why isn’t it unreasonable for the kinetic molecular theory to say that molecules are in constant, random motion?

2) When the temperature of a gas increases, the kinetic energies of the gas particles increase. Does this mean that the kinetic energy of a gas molecule is negative when the temperature is -50 degrees Celsius? Explain.

3) Helium behaves very much like an ideal gas. Explain why, using your knowledge of the kinetic molecular theory.

4) Are gas molecules *really* in constant random motion? Doesn’t the concept of wind suggest that they can move in one direction more than another? Explain.

**More Kinetic Molecular Theory of Gases Practice Fun!**

Answer the following questions about your favorite kinetic molecular theory:

1) Why isn’t it unreasonable for the kinetic molecular theory to say that molecules are in constant, random motion?

**Because they are. If you give energy to a molecule, it will tend to want to move around all over the place – and if the temperature is greater than absolute zero, there will be energy that the molecule can absorb. We can also say that the motion of molecules is random because there’s no particular reason that they should go more in one direction than another.**

2) When the temperature of a gas increases, the kinetic energies of the gas particles increase. Does this mean that the kinetic energy of a gas molecule is negative when the temperature is -50 degrees Celsius? Explain.

**No. The kinetic energies of gas molecules increases according to their temperature in Kelvin, not in degrees Celsius. This is because temperature (and hence, energy) is always positive on the Kelvin scale, while the Celsius scale allows for negative temperatures (which implies negative energy, which isn’t a thing).**

3) Helium behaves very much like an ideal gas. Explain why, using your knowledge of the kinetic molecular theory.

* **Helium molecules are small. Not infinitely small, but really small.**
* **Helium molecules don’t have much in the way of intermolecular forces. There are van der Waals forces that can cause helium molecules to attract to each other, but they’re extremely weak.**

4) Are gas molecules *really* in constant random motion? Doesn’t the concept of wind suggest that they can move in one direction more than another? Explain.

**Let’s say that the motion is *mostly* random. Let’s say that we have wind that’s travelling at the highest level on the Beaufort scale, which is 56 m/s. Even with wind that awful, it’s still only about a fifth of the speed of the gas molecules within the gas. In other words, if wind is blowing that hard, you still have a huge number of molecules of gas moving at very high speed in the direction opposite to it. Wind may occur when gas molecules preferentially move in one direction, but just because they move more one way than another doesn’t mean that they’re still not *mostly* random.**