WS 6.2 Kinetic Theory - Temperature & Volume

1. What is kinetic energy? What is the equation for calculating it?

2. What is temperature, as defined in class?

3. If the kinetic energy of a gas is increased, which variable in the equation for K.E. is also increased?

4. Explain how a gas may react in response to being heated up!

5. What temperature units best represent the average kinetic energy of a gas?

6. Convert the following temperatures into Kelvin:
   a) 125˚C ---> b) 15.5˚C ---> c) -108˚C --->

7. Convert the following temperatures into Celsius:
   a) 0 K ---> b) 422 K ---> c) 215.5 K --->

8. What is the freezing point of water in K? _____ The boiling point? _____

9. Explain why it is not possible to have a temperature of 0 K, in terms of kinetic energy.

10. When the **kinetic energy** of a gas is increased, its _____ will increase.
    - If the gas is inside a solid, rigid container, what ALSO will increase? _____
    - If the gas is inside a flexible container, what ALSO will increase? _____

11. When the **kinetic energy** of a gas in increased, its _____ will *never* change.

12. What is STP? What's so special about the volume of a gas at STP?

13. State **Avogadro's Law**, as stated on Wikipedia:

14. Calculate the volume of each gas sample at STP conditions:
    a) 2 moles of He

    b) 0.75 moles of O_2

    c) 68.0 grams of CO_2

    d) 114 grams of SO_3

Ans (IRO+2): -273 -57.5 16.8 31.9 34.6 44.8 106 149 165 218 273 288.5 373 398