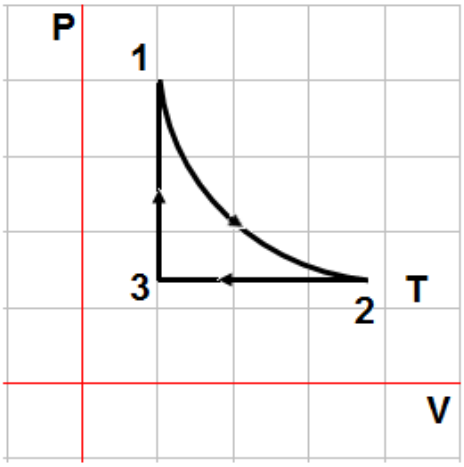
11. A container with rigid walls filled with a sample of ideal gas. The absolute temperature of the gas is doubled. What happens to the pressure of the gas?
    (A) Doubles
    (B) Quadruples
    (C) Triples
    (D) Decreased to one-half
    (E) Decreased to one-fourth

12. The absolute temperature of an ideal diatomic gas is quadrupled. What happens to the average speed of molecules?
    (A) Quadruples
    (B) Doubles
    (C) Triples
    (D) Increases by a factor of 1.41
    (E) Stays the same

13. Two containers are filled with diatomic hydrogen gas and diatomic oxygen gas. The gases have the same temperature. Compare the average speed of hydrogen molecules to the average speed of oxygen molecules.
    (A) 1/16
    (B) 1/4
    (C) 16/1
    (D) 1/2
    (E) 1/1

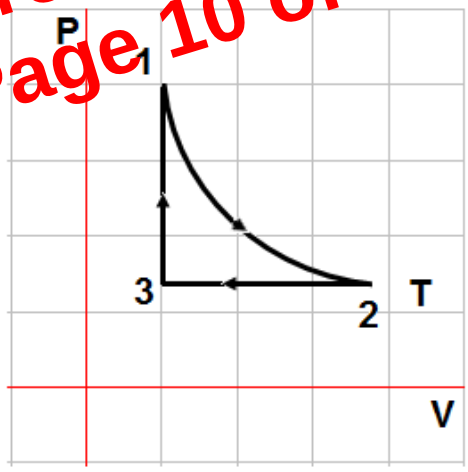
14. The average molecular kinetic energy of a gas depends on:
    (A) Pressure
    (B) Volume
    (C) Temperature
    (D) Number of moles
    (E) None of the above

15. Kinetic Theory is based on an ideal gas model. The following statements about the ideal gas are true EXCEPT:
    (A) The average molecular kinetic energy is directly proportional to the absolute temperature
    (B) All molecules move with the same speed
    (C) All molecules make elastic collisions with each other and the walls of the container
    (D) The attractive force between the molecules can be ignored
    (E) All molecules obey laws of classical mechanics



35. A sample of an ideal gas taken through a closed cycle is presented by the P-V diagram. The process 1-2 is perfectly isothermal. Which of the following is true about the change in internal energy and work done by the gas during the process 1-2?

(A) $\Delta U = 0$ $W_{\text{by the gas}} > 0$
(B) $\Delta U > 0$ $W_{\text{by the gas}} = 0$
(C) $\Delta U < 0$ $W_{\text{by the gas}} < 0$
(D) $\Delta U = 0$ $W_{\text{by the gas}} = 0$
(E) $\Delta U = 0$ $W_{\text{by the gas}} < 0$



36. A sample of an ideal gas is taken through a closed cycle presented by P-V diagram. The process 1-2 is perfectly isothermal. Which of the following is true about the change in internal energy and heat added to the gas during the process 3-1?

(A) $\Delta U = 0$ $Q > 0$
(B) $\Delta U > 0$ $Q > 0$
(C) $\Delta U < 0$ $Q < 0$
(D) $\Delta U = 0$ $Q = 0$
(E) $\Delta U = 0$ $Q < 0$