



Class 11 Physics | Kinetic Theory

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Mean translational kinetic energy of an ideal-gas molecule is:

- A. $kT/2$ B. $3RT/2$ C. $3kT/2$ D. kT^2

2. The rms speed of gas molecules is:

- A. $\sqrt{3M/RT}$ B. $3RT/M$ C. $\sqrt{RT/3M}$ D. $\sqrt{3RT/M}$

3. If absolute temperature becomes four times, rms speed becomes:

- A. Sixteen times B. Half C. Four times D. Twice

4. At the same temperature, H_2 and O_2 rms-speed ratio is (molar masses 2 and 32):

- A. 2 B. 4 C. 16 D. $1/4$

5. Gas pressure according to kinetic theory equals:

- A. $p_{rms}/3$ B. $p_{rms}^2/3$ C. $3p_{rms}^2$ D. p_{rms}^2

6. At fixed number density, doubling absolute temperature makes pressure:

- A. Unchanged B. Half C. Four times D. Twice

7. An ideal gas contains N molecules. Its equation of state is:

- A. $PV=Nk/T$ B. $P/V=NkT$ C. $PV=NkT$ D. $PV=NRT$

8. Equipartition assigns energy to each active quadratic degree of freedom as:

- A. $kT/2$ B. RT C. kT D. $3kT/2$

9. A rigid diatomic molecule at ordinary temperatures has approximately how many active degrees of freedom?

- A. 6 B. 5 C. 7 D. 3

10. For a rigid diatomic ideal gas without vibration, C_v is:

- A. $3R/2$ B. $5R$ C. $5R/2$ D. $7R/2$

11. For a monatomic ideal gas, C_p/C_v is:

- A. $5/3$ B. $4/3$ C. $7/5$ D. $3/2$

12. Two ideal gases at the same temperature have equal mean:

- A. Translational kinetic energy per molecule
B. Molecular mass
C. Molecular momentum magnitude
D. Molecular speed

13. Gas molecules exert pressure by:

- A. Transferring momentum to container walls
B. Losing all kinetic energy at walls
C. Attracting the walls continuously
D. Remaining at rest near walls

14. For fixed temperature, an ideal gas's internal energy is proportional to:

- A. Pressure squared
B. Number of molecules
C. Container shape
D. Volume alone

15. If molecular rms speed doubles at fixed gas density, pressure becomes:

- A. Unchanged B. Four times C. Half D. Twice

ANSWER KEY — check after completing all 15 questions

1.C 2.D 3.D 4.B 5.B 6.D 7.C 8.A 9.B 10.C 11.A 12.A 13.A 14.B 15.B

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper