



SIR PRATEEK JAIN

- . Founder @Physicsaholics
- . Top Physics Faculty on Unacademy (IIT JEE & NEET)
- . 8+ years of teaching experience in top institutes like FIITJEE (Delhi, Indore), CP (KOTA) etc.
- . Produced multiple Top ranks.
- . Research work with HC Verma sir at IIT Kanpur
- . Interviewed by International media.



Prateek Jain

#1 Educator in Physics · IIT JEE

Senior Physics Faculty (KOTA) | 8+ yrs exp. | Produced AIR 6, AIR 10 etc. | Research work with HC VERMA sir at IIT K.

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Prateek Jain

#1 Educator in Physics · NEET UG

Senior Physics Faculty (KOTA) | 8+ yrs exp. | Produced AIR 6, AIR 10 etc. | Research work with HC VERMA sir at IIT K.

Following

124M Watch mins

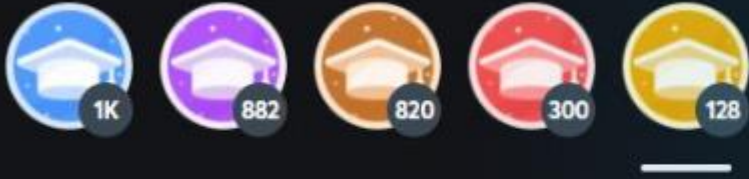
9M Watch mins (last 30 days)

71K Followers

7K Dedications



Dedications



Gold Hat

Dedicated at 100k minutes



Pjj Mudassir Hussain BTS • 12 minutes ago

A good teacher is like a candle it consumes itself to light the way for others.Thanks sir



Medha Mishra • 3 hours ago

Sir you are best physics faculty that i have seen in my life i like your teaching style i like your way of explanation of concept and you make me capable to solving the physics problem thanku 😊
sir

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DR. AMIT GUPTA



PRATEEK JAIN



RAMESH SHARDA



SHUBHKARAN
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← NEET UG Educators Overall ▾

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9	 Shailendra Tanwar ✓	Follow
10	 Baibhav Kumar ✓	Follow

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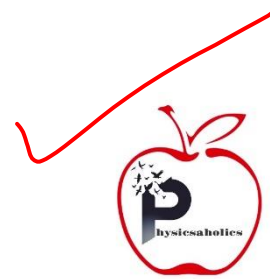
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H.C. Verma Physics

Questions for Short Answers

C-24 Kinetic Theory of Gases

By PRATEEK JAIN SIR



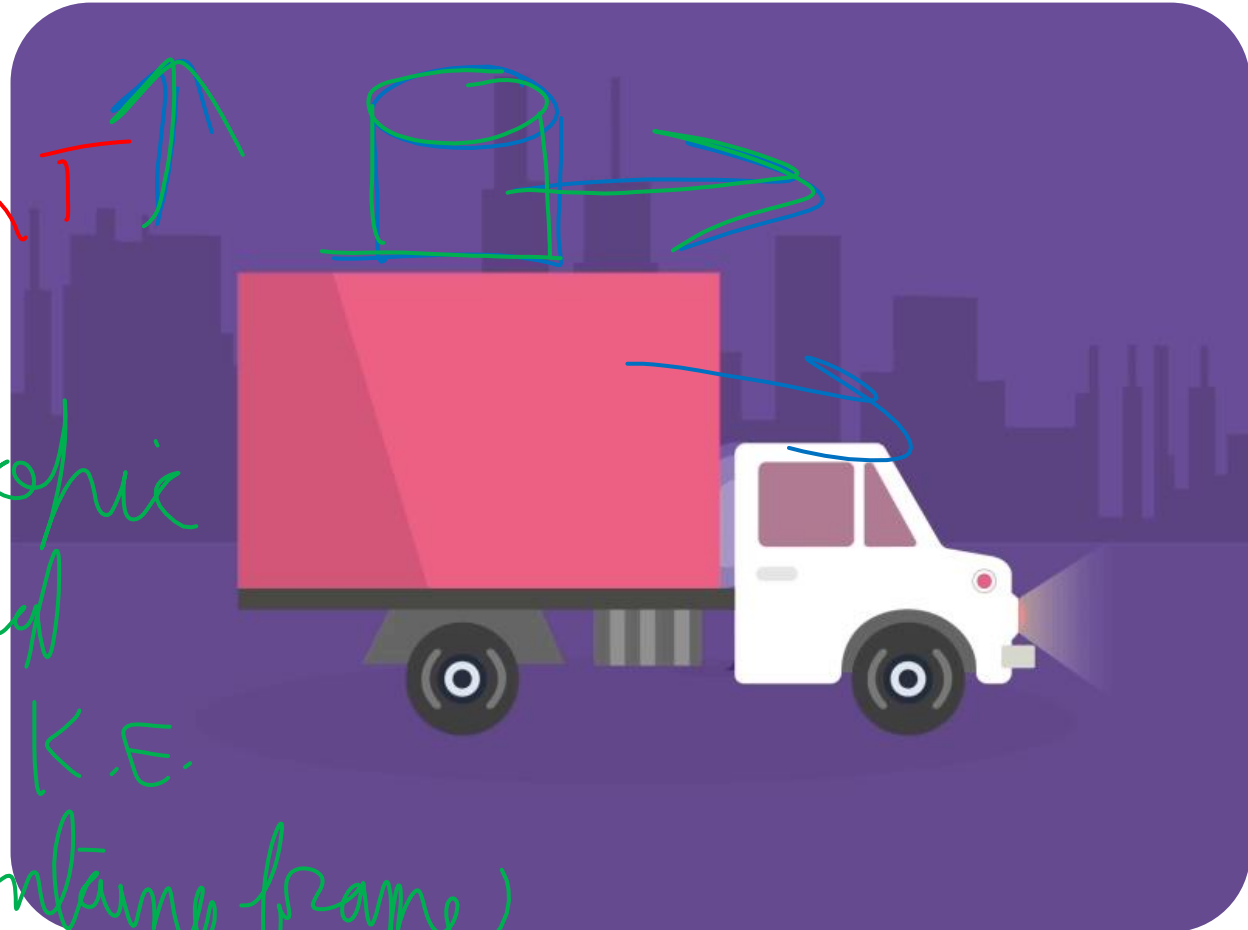
Q) When we place a gas cylinder on a van and the van moves, does the kinetic energy of the molecules increase? Does the temperature increase?

→ No

Yes

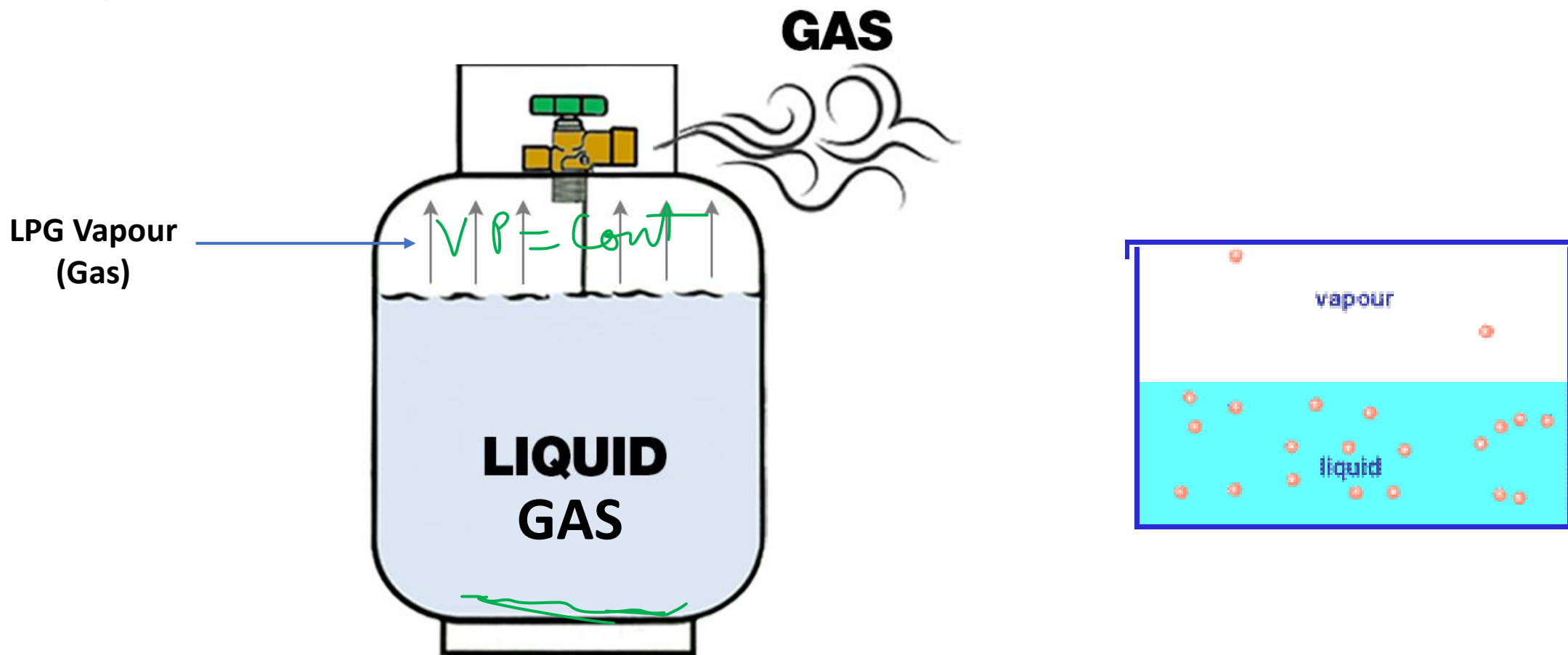
$$K E_{\text{gas}} = \frac{3}{2} n R T$$

Microscopic
translational
& random K.E.
(w.r.t container frame)

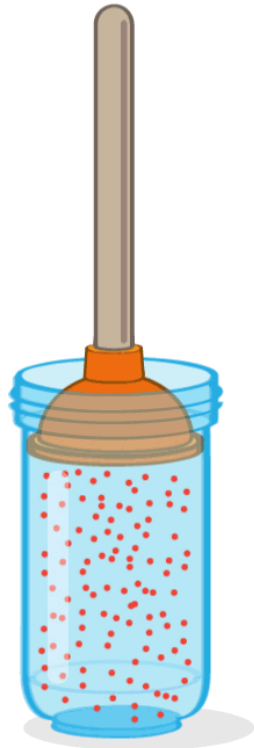




Q) While gas from a cooking gas cylinder is used, the pressure does not fall appreciably till the last few minutes. Why?



expect
Q) Do you ~~expect~~ the gas in a cooking gas cylinder to obey the ideal gas equation? → *No*



T ↑ *P* ↓

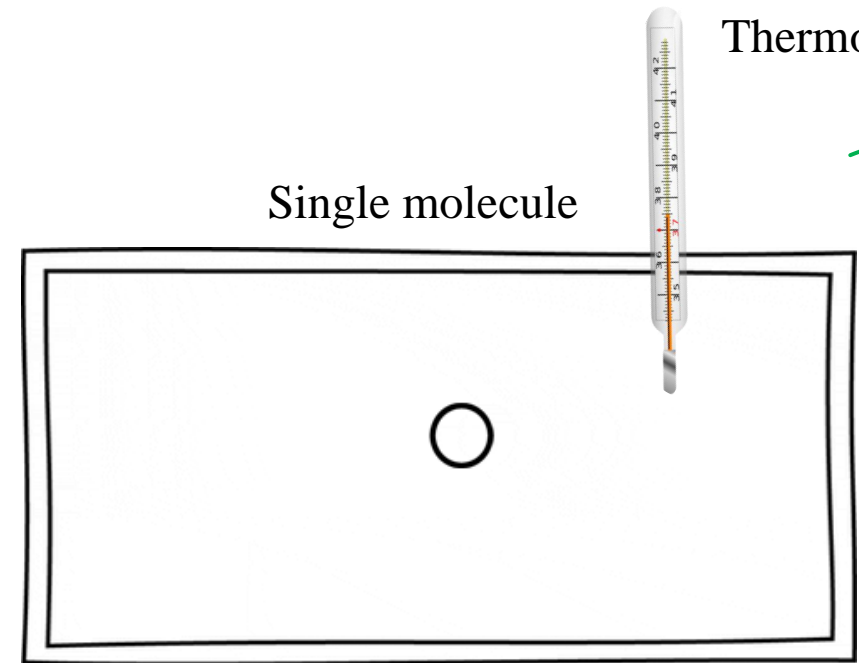
LPG Vapour
(Gas)



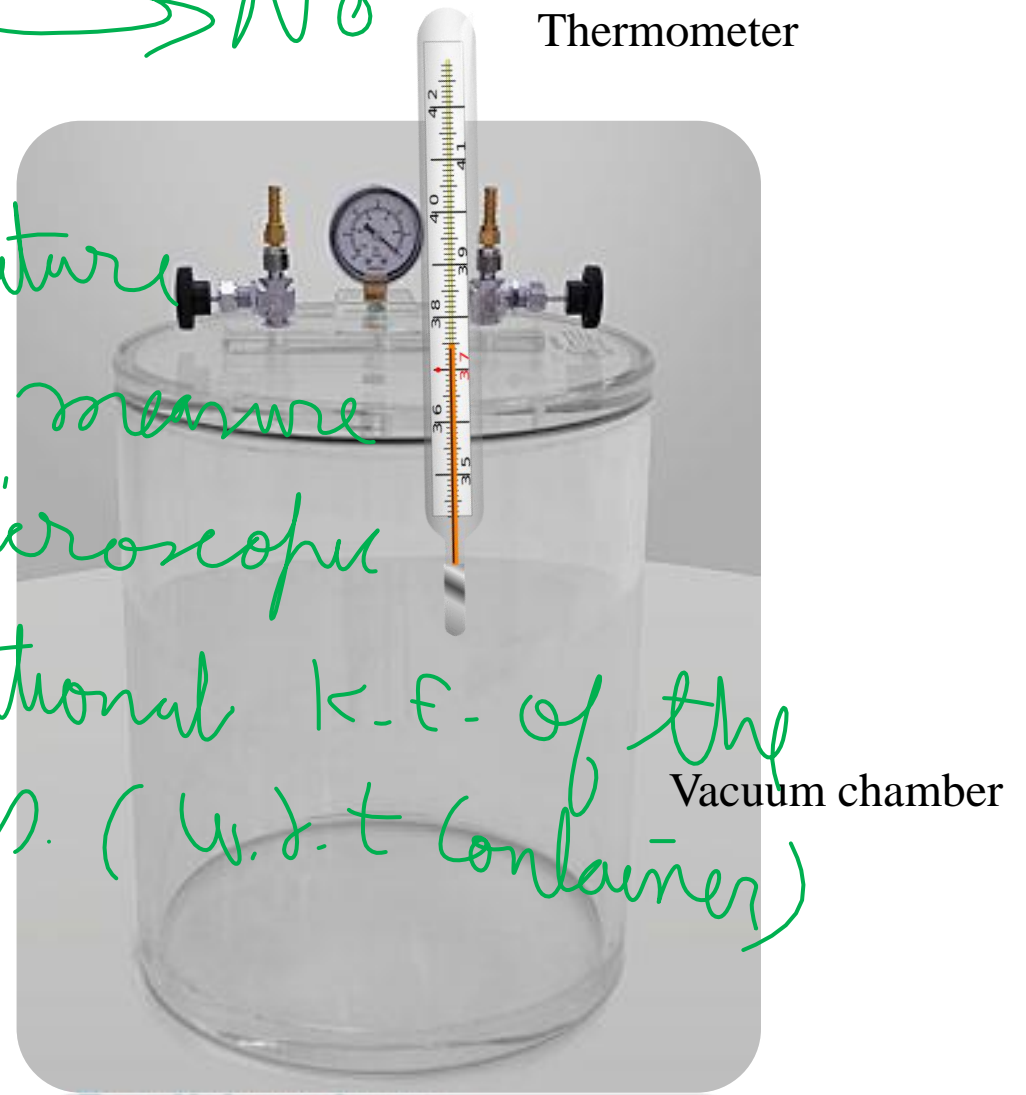
Q) Can we define the temperature of vacuum? The temperature of a single molecule?

→ No.

→ No



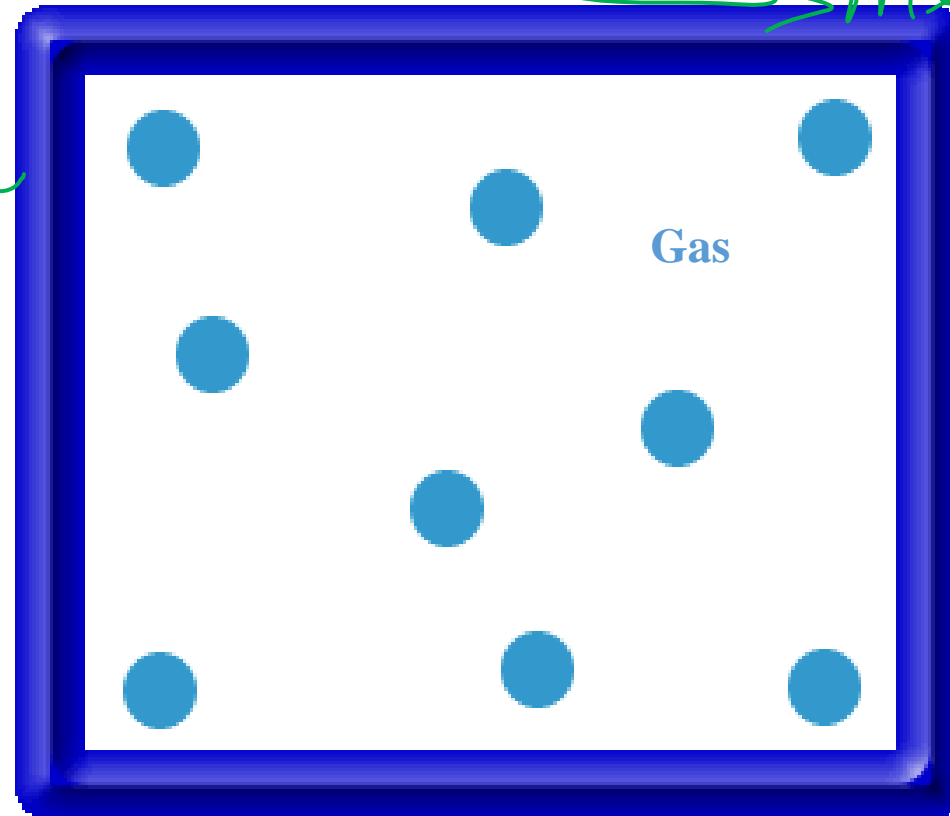
Temperature is the measure of microscopic translational K.E. of the gas. (w.r.t container)



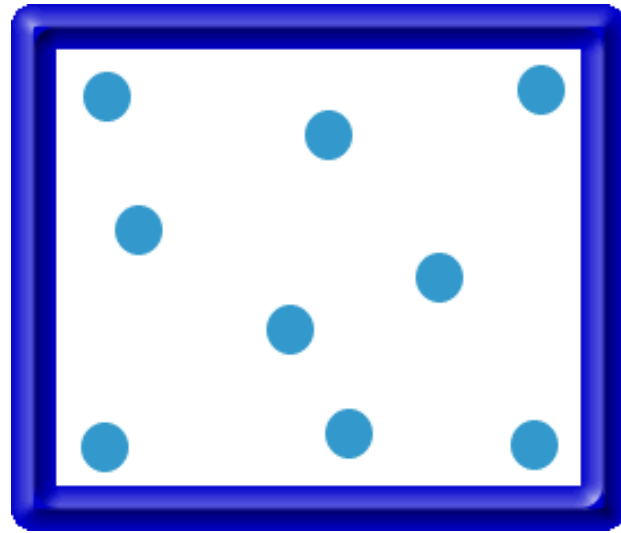
Q) Comment on the following statement. The temperature of all the molecules in a sample of a gas is the same.

Meaningless

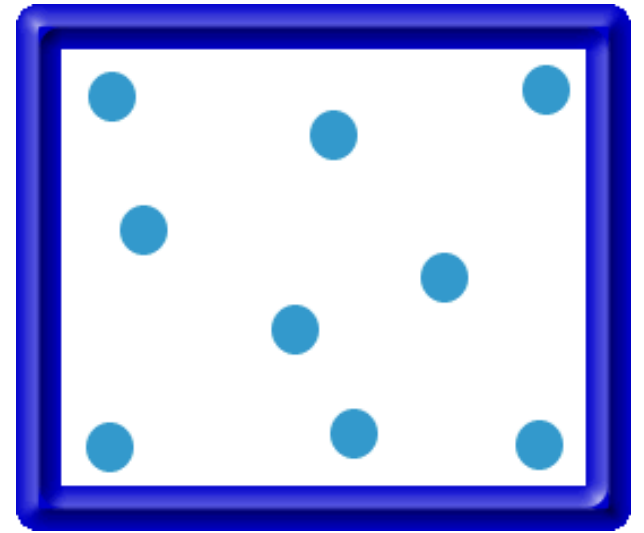
T → *avg. KE per molecule*
 $= \frac{1}{2} m v_{rms}^2$



Q) Consider a gas of neutrons. Do you ~~expect~~ it to behave much better as an ideal gas as compared to hydrogen gas at the same pressure and temperature? \rightarrow Yes



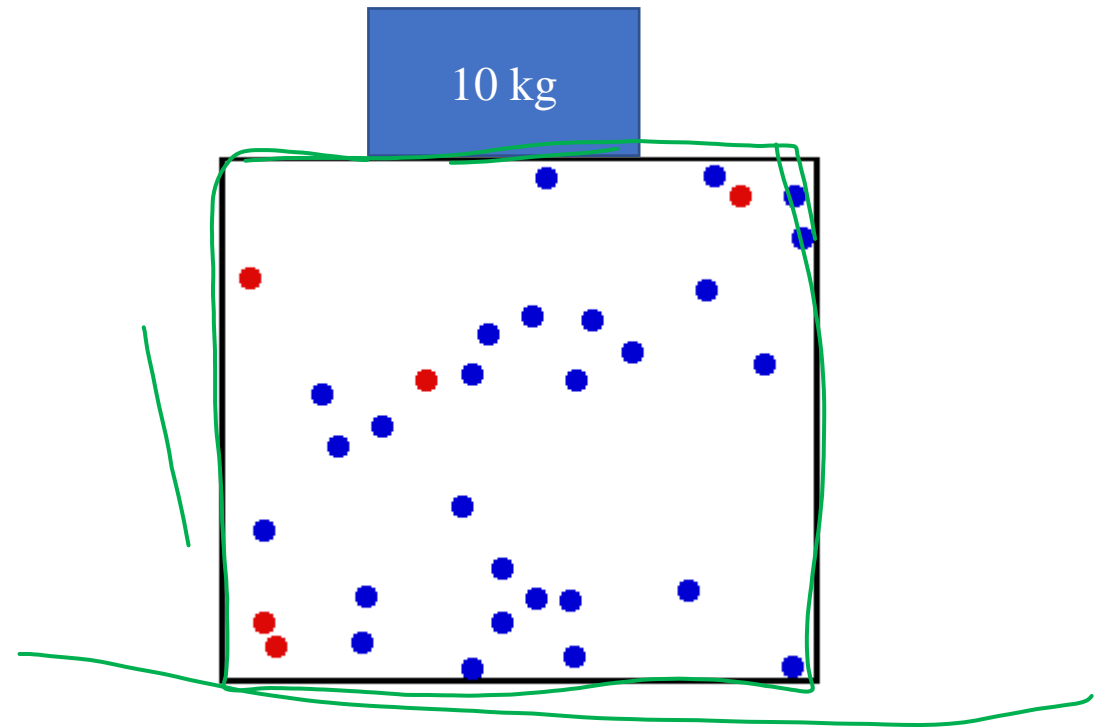
H_2 gas



Neutrons gas

$r_g = 0$
 $F_c = 0$
expect

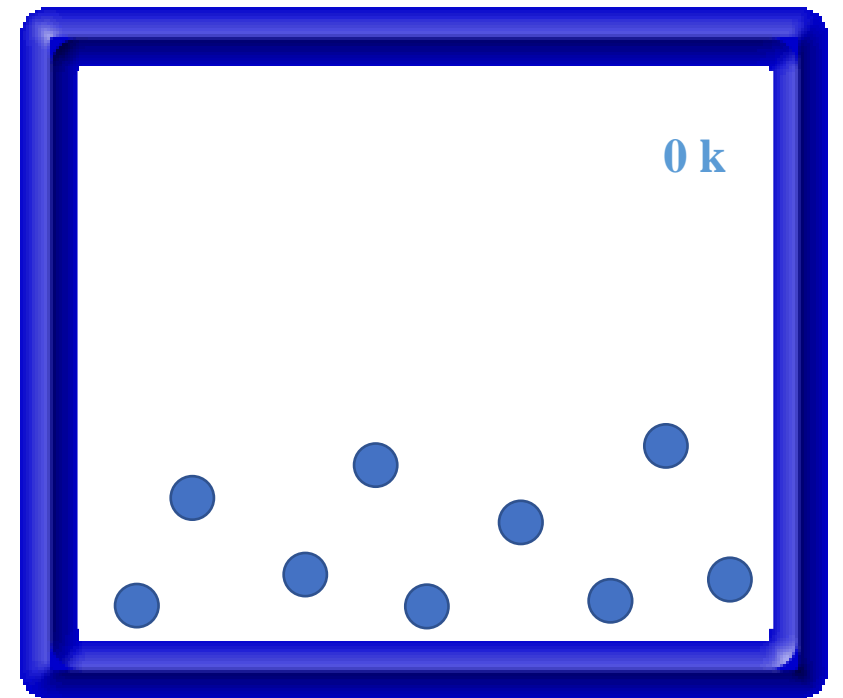
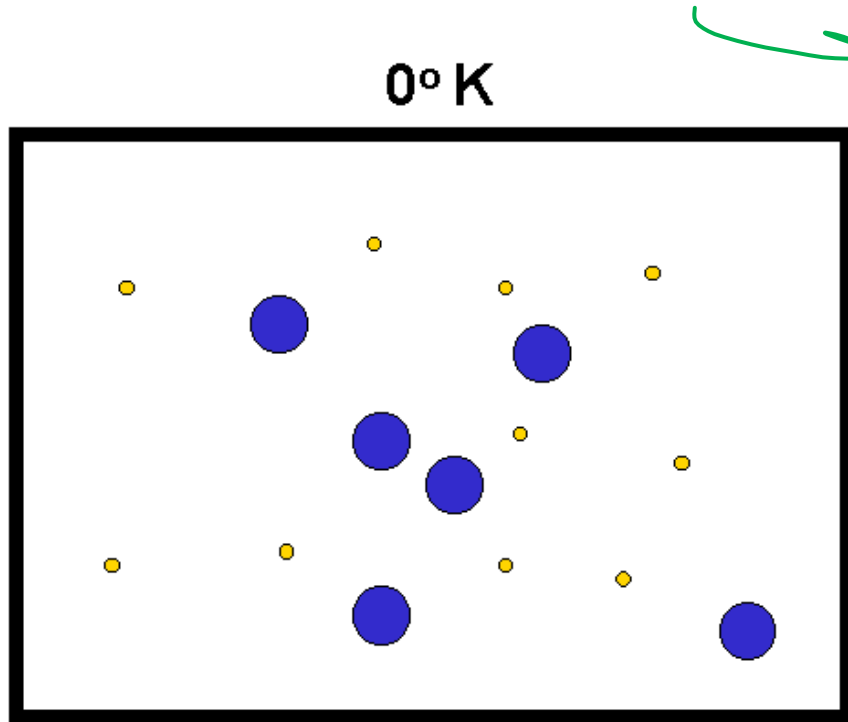
Q) A gas is kept in a rigid cubical container. If a load of 10 kg is put on the top of the container, does the pressure increase? → No



Q) If it were possible for a gas in a container to reach the temperature 0 K , its pressure would be ~~zero~~. Would the molecules not collide with the walls? Would they not transfer momentum to the walls?

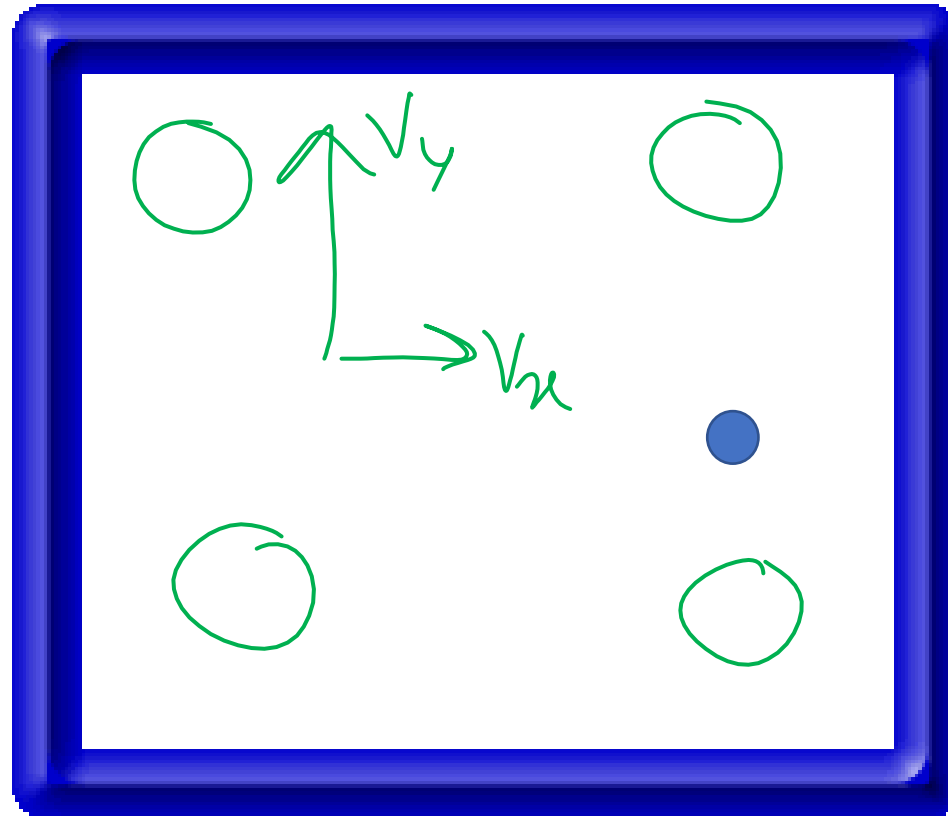
→ No

→ No



5✓

Q) It is said that the assumptions of kinetic theory are good for gases having low densities. Suppose a container is so evacuated that only one molecule is left in it. Which of the assumptions of kinetic theory will not be valid for such a situation? Can we assign a temperature to this gas? \rightarrow No



$$PV = nRT$$

Q) A gas is kept in an enclosure. The pressure of the gas is reduced by the pumping out some gas. Will the temperature of the gas decrease by Charles' law?

→ No

$$V = \frac{C_{\text{ont}}}{P \propto T} \quad n = \text{const}$$

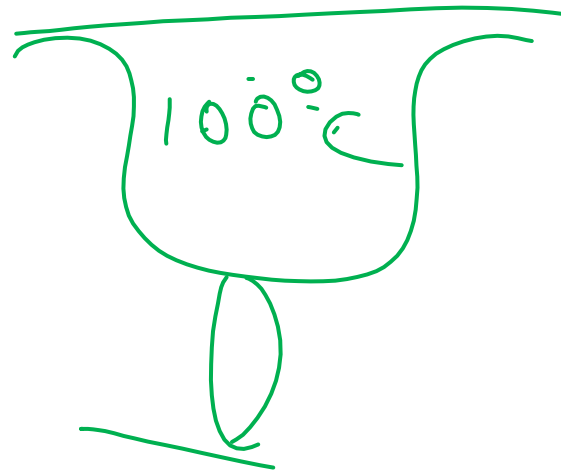
This is not Charles' law.

$$P \downarrow V = n \downarrow R T$$

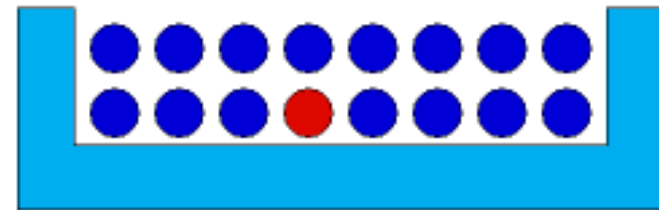
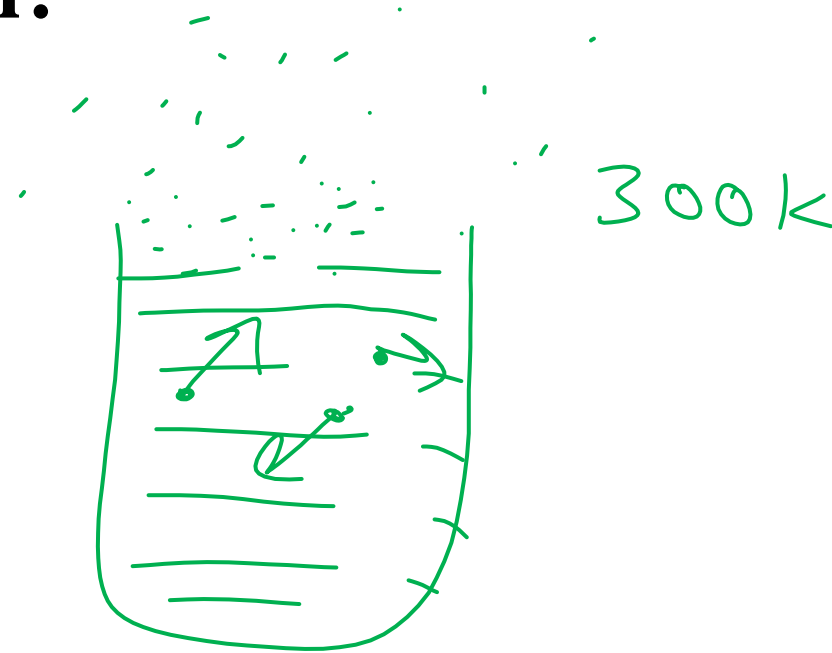


Q) Explain why cooking is faster in a pressure cooker.

$P \uparrow \Rightarrow B.P. \uparrow$
 $T \rightarrow 120^{\circ}\text{C to } 130^{\circ}\text{C}$



Q) If the molecules were not allowed to collide among themselves, would you expect more evaporation or less evaporation?



Yes. *P ↓ B P ↓* *Say*
Q) Is it possible to boil water at room temperature, ~~any~~ 30°C? If we touch a flask containing water boiling at this temperature, will it be hot?

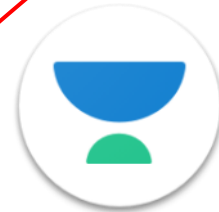
↳ Cold



**Q) When you come out of a river after a dip, you feel cold.
Explain?**



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Chalo Niklo