

Instructions: Complete the following problems. SHOW ALL WORK in the empty space below the questions. Remember the units. Round to the correct number of significant figures if needed.

Concept Questions

1. Arrange the following gases in order of increasing average molecular speed at 25.00°C (Cl₂, O₂, F₂, N₂). Explain your answer.
2. Circle the property of a gas that would effuse out of the hole better.
 - a) Heavy or light molecules
 - b) Smaller or large molecules
 - c) Slower or faster molecules
3. Diffusion of a gas will have a short mean free path with _____ pressure, and a long mean free path with _____ pressure.

Root-Mean-Square Speed

4. Calculate the rms speed of NF₃ molecules at 25.00°C.
5. What is the RMS speed for hydrogen gas at 30.00°C?
6. **Calculate AND compare** the rms speed of CO and Cl₂ molecules at 300.0 K.