

Unit 10 Review/Help/Summary

CATEGORY: Stoichiometry Problems

YOU CAN RECOGNIZE THIS TYPE OF PROBLEM BY: you are given a chemical equation (which may or may not be balanced for you)

STEPS: 1.) Find moles of given substance. (if necessary)
2.) Use mole ratio/coefficients.
3.) Find answer. (if asked for something other than moles)

REMINDERS: - When unit is "grams", use molar mass (decimal number from PT).
- When unit is "liters", use 22.4 in front of "liters".

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CATEGORY: Graham's Law

YOU CAN RECOGNIZE THIS TYPE OF PROBLEM BY: seeing some form of the word "effusion" or "diffusion"

GIVEN THE EQUATION: $\frac{\text{rate A}}{\text{rate B}} = \sqrt{\frac{\text{MM B}}{\text{MM A}}}$

REMINDERS: - gas A = lighter gas
- lighter gases effuse faster than heavier gases

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CATEGORY: Dalton's Law

YOU CAN RECOGNIZE THIS TYPE OF PROBLEM BY: seeing the words "partial pressure" and/or something about a mixture of gases

GIVEN THE EQUATION: $P_{\text{total}} = P_1 + P_2 + \dots$

KNOW THIS EQUATION: $P_x = \frac{\text{moles } x}{\text{total moles}} \cdot P_{\text{total}}$ ← This equation will be given to 4th period.

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CATEGORY: Ideal Gas Equation

YOU CAN RECOGNIZE THIS TYPE OF PROBLEM BY: you're given 3 of these: P, V, n, T and you're asked for the other (missing one)

GIVEN THE EQUATION: $PV = nRT$

REMINDERS: - P must be in atm
- V must be in L
- n must be in moles
- T must be in Kelvins
- R = 0.0821 (given on Reference Tables)
- watch out for STP

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CATEGORY: Gas Laws

YOU CAN RECOGNIZE THIS TYPE OF PROBLEM BY: given more than one pressure, more than one volume, and/or more than one temperature

GIVEN THE EQUATION: $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$

REMINDERS: - T must be in Kelvins, but P and V can be any unit (as long as there is the same unit on both sides of the equation)
- If P, V, or T "remains constant" or is not mentioned, it can be eliminated from the equation.
- Watch for "STP"

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CATEGORY: Ideal Gas Equation Applications – MOLAR MASS

RECOGNIZE THIS TYPE OF PROBLEM BY: problem asks for molar mass and you're given grams, P, V, and T

KNOW THIS EQUATION: $MM = \frac{gRT}{PV}$

REMINDERS:

- P must be in atm
- V must be in L
- T must be in K
- watch for "STP"

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CATEGORY: Ideal Gas Equation Applications – DENSITY

RECOGNIZE THIS TYPE OF PROBLEM BY: problem involves density

KNOW THIS EQUATION: $D = \frac{P \cdot MM}{RT}$

REMINDERS:

- P must be in atm
- MM has units of g/mole
- T must be in K
- watch for "STP"