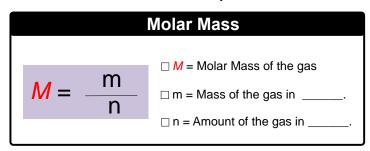
CONCEPT: THE IDEAL GAS LAW: MOLAR MASS

Molar Mass

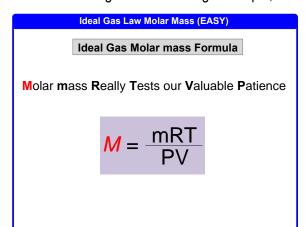
• Recall, *molar mass* represents the mass of a substance divided by the amount of that substance.

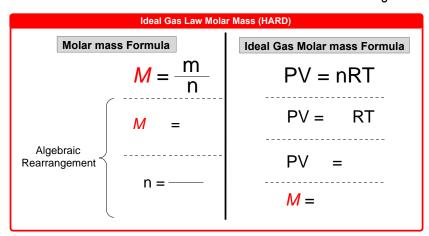


EXAMPLE: Calculate the molar mass of a gas if 2.50 g occupies 0.995 L at 715 torr and 40 °C.

Ideal Gas Law Derivation

• Besides finding the moles of a gas sample, the Ideal Gas Law can be extended further to find the molar mass of a gas.





EXAMPLE: An unknown gas with mass of 0.1727 g is placed into a 125-mL flask. If its pressure is 0.833 atm at 20.0 °C, what is the identity of the gas?

a) N₂

b) Ar

c) O₂

d) Ne

e) CH₄

| CONCEPT: THE IDEAL GAS LAW: MOLAR MASS |
|--|
| PRACTICE: To identify a homonuclear diatomic gas, a chemist weighted an evacuated flask with a volume of 3.9 L then |
| filled it with the gas at a pressure of 2.00 atm and 29.0 °C. The chemist then re-weighted the flask and recorded the |
| difference in mass as 8.81 g. Identify the gas. |
| |
| |
| |
| |
| |
| |

PRACTICE: What is the molecular formula of a compound that contains 39.0% carbon, 16.0% hydrogen, and 45.0% nitrogen, if 0.1576 g of the compound occupies 125 mL with a pressure of 0.9820 atm at 295.15 K?