

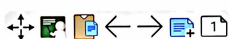
Ideal Gas Law

$$PV = nRT$$

$$P(\text{atm}) \quad V(\text{L})$$

$$n(\text{mol}) \quad T(\text{K})$$

$$R = 0.0821 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}}$$



$$P = \frac{nRT}{V}$$

$$V = \frac{nRT}{P}$$

$$n = \frac{PV}{RT}$$

$$T = \frac{PV}{nR}$$



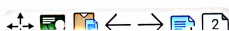
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Steps to Solve

- ① Determine Unknown
- ② Pick form of Ideal gas law
- ③ Plug in variables
- ④ Don't forget Unit.
- ⑤ Solve!

S. $P = 2.00 \text{ atm}$ $V = 1.20 \text{ L}$ $T = 300 \text{ K}$
 $\text{mol CO}_2(\text{g}) = \underline{\hspace{1cm}} \text{ mol}$ $R = 0.0821 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}}$
 $PV = nRT$ (solve for n)

$$n = \frac{PV}{RT} = \frac{2.00 \cancel{\text{atm}} \cdot 1.20 \cancel{\text{L}}}{300 \cancel{\text{K}} \cdot 0.0821 \frac{\cancel{\text{L}} \cdot \cancel{\text{atm}}}{\text{mol} \cdot \cancel{\text{K}}}}$$
$$= 0.097 \text{ mol CO}_2(\text{g})$$



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7. $n = 1.20 \text{ mol}$ $P = 1.30 \text{ atm}$ $T = 290.0 \text{ K}$

$V_{\text{SO}_2(g)} = \underline{\hspace{2cm}} \text{ L}$ $R = 0.0821 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}}$

$PV = nRT$

$$V = \frac{nRT}{P} = \frac{1.20 \cancel{\text{mol}} \cdot 0.0821 \frac{\text{L} \cdot \cancel{\text{atm}}}{\cancel{\text{mol}} \cdot \text{K}} \cdot 290.0 \cancel{\text{K}}}{1.30 \cancel{\text{atm}}}$$
$$= \underline{21.98 \text{ L SO}_2(g)}$$

