Example Problem:
How many grams of P₄ is needed to react with 20.0 g of Cl₂ in the above reaction?

Example Problem:
How many grams of P₄ is needed to react with 50.0 ml of 1.20 M solution of Cl₂ in the above reaction?

Example Problem:
How many grams of P₄ is needed to react with 50.0 ml of 1.20 atm Cl₂ gas in the above reaction at 25 °C?

Note: Don’t forget to convert mmHg to atm, ml to L, and °C to K.

Answer on next page!
P: 1.20 atm

V: $50.0 ml \left( \frac{1 L}{1000 ml} \right) = 0.0500 L$

T: $25 ^\circ C + 273 = 298 K$

$PV = nRT$

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

$n = \frac{(1.20 \text{ atm})(0.0500 L)}{0.082 \frac{L \cdot \text{atm}}{\text{mol} \cdot K}(298 K)} = 0.00246 \text{ mol}$

$0.00246 \text{ mol} \left( \frac{1 \text{ mol} P_4}{6 \text{ mol} \text{ Cl}_2} \right) \left( \frac{124 g}{1 \text{ mol} P_4} \right) = 0.0507 g$