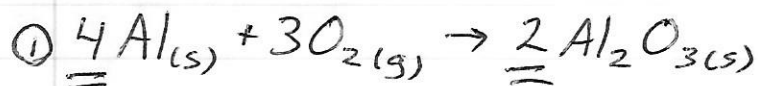


## Mole ratios

### Sample Problem



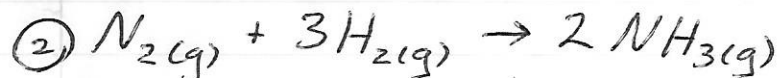
How many moles of aluminum are needed to form 3.7 mol  $\text{Al}_2\text{O}_3$ ?

mol  $\text{Al}_2\text{O}_3 \rightarrow$  mol Al

$$3.7 \text{ mol } \cancel{\text{Al}_2\text{O}_3} \times \frac{4 \text{ mol Al}}{2 \text{ mol } \cancel{\text{Al}_2\text{O}_3}} = 7.4 \text{ mol Al}$$

start with what you know  $\nearrow$

what you are getting rid of - on bottom (mol  $\text{Al}_2\text{O}_3$ )  
what you want to be left with - on top (mol Al)  
numbers are coefficients in balanced chemical equation



How many moles of  $\text{N}_{2(g)}$  are needed to react with 8.74 mol  $\text{H}_{2(g)}$ ?

mol  $\text{H}_2 \rightarrow$  mol  $\text{N}_2$

$$8.74 \text{ mol } \cancel{\text{H}_{2(g)}} \times \frac{1 \text{ mol } \text{N}_{2(g)}}{3 \text{ mol } \cancel{\text{H}_{2(g)}}} = 2.91 \text{ mol } \text{N}_{2(g)}$$



How many moles of  $\text{O}_{2(g)}$  are needed to produce 17.86 mol of  $\text{SO}_{2(g)}$ ?

mol  $\text{SO}_{2(g)} \rightarrow$  mol  $\text{O}_{2(g)}$

$$17.86 \text{ mol } \cancel{\text{SO}_{2(g)}} \times \frac{3 \text{ mol } \text{O}_{2(g)}}{2 \text{ mol } \cancel{\text{SO}_{2(g)}}} = 26.79 \text{ mol } \text{O}_{2(g)}$$