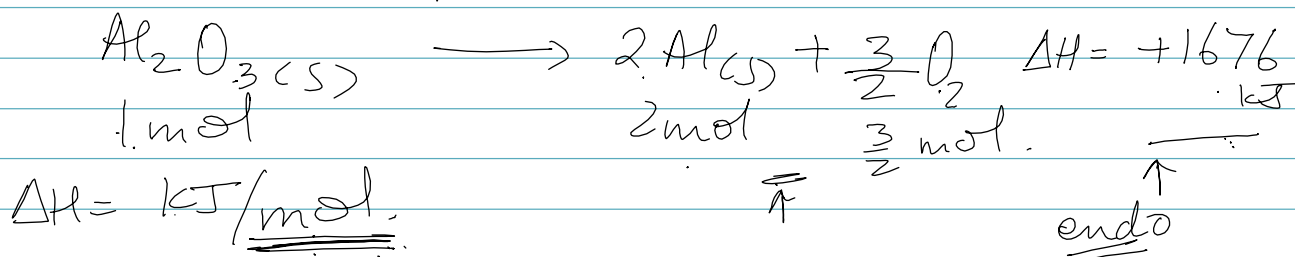


Stoichiometry in Thermochemistry



Q How many grams of Al can form when 1.000×10^3 kJ is transferred?

* eqn is balanced

* strategy: energy \rightarrow mol ratio \rightarrow gram

$$\begin{array}{c}
 \downarrow \\
 1.000 \times 10^3 \text{ kJ} \times \frac{2 \text{ mol Al}}{1676 \text{ kJ}} \times \frac{26.98 \text{ g Al}}{1 \text{ mol Al}} \\
 \text{from (PT)} \\
 = \boxed{32.20 \text{ g Al}}
 \end{array}$$

Q How much energy is released during the combustion of 3.62g Al?

* strategy: g Al \rightarrow mol ratio \rightarrow energy

Al + O₂
conversion factor.

$$\begin{array}{c}
 3.62 \text{ g Al} \times \frac{1 \text{ mol Al}}{26.98 \text{ g}} \times \frac{(-1676) \text{ kJ}}{2 \text{ mol Al}} \\
 = 224.87 = \boxed{-225 \text{ kJ}}
 \end{array}$$