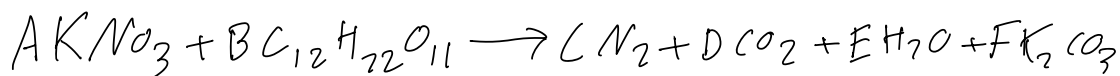
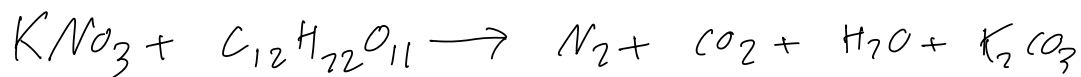


strategy for hard balancing example



Find relationships

$$A = 2F \quad \text{b/c} \quad \text{K only appears once on each side}$$

$$A = 2C \quad \text{b/c} \quad \text{N only appears once on each side}$$

$$\text{so } C = F$$

$$E = 11B \quad \text{b/c} \quad \text{H only appears once on each side}$$

$$D + F = 12B \quad \text{Carbon balance}$$

$$2D + E + 3F = 3A + 11B \quad \text{oxygen balance}$$

B is likely the smallest coefficient so set it to some number $\rightarrow$ 1 or 10 is easy

$$B = 10 \quad \text{so } E = 110$$

$$2D + 110 + 3F = 3A + 110$$

$$\text{so } A = 2F$$

$$2D + 3F = 6F$$

$$2D = 3F$$

$$D = 1.5F$$

We also know $D + F = 12 B$

$$\text{so } 1.5F + F = 120$$

$$2.5F = 120$$

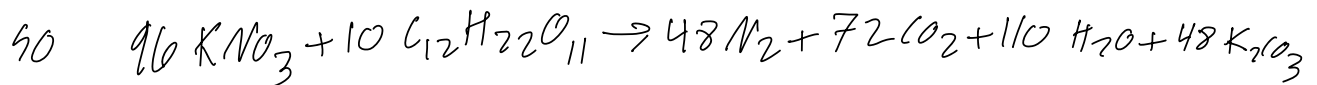
$$F = 48$$

$$A = 2F \text{ so } A = 96$$

$$C = F \text{ so } C = 48$$

$$D + F = 12 B$$

$$D + 48 = 120 \text{ so } D = 72$$



or divide everything by 2

