

Name: _____ Date: _____

Mole Relations in Balanced Equations

1. For the reaction $2 \text{N}_2\text{H}_4 (\text{l}) + \text{N}_2\text{O}_4 (\text{l}) \rightarrow 3 \text{N}_2 (\text{g}) + 4 \text{H}_2\text{O} (\text{l})$:
- a: 2.1 mol of N_2O_4 is needed to react with 4.2 mol N_2H_4
- b: 5 mol N_2H_4 yields 7.5 mol N_2
- c: 2.3 mol of N_2O_4 produces 9.2 mol of H_2O
2. For the reaction $\text{Ca}_3\text{N}_2 (\text{s}) + 6 \text{H}_2\text{O} \rightarrow 3 \text{Ca}(\text{OH})_2 (\text{s}) + 2 \text{NH}_3 (\text{g})$
- a: 15 mol of H_2O is needed to react with 2.5 mol Ca_3N_2
- b: 1.6 mol Ca_3N_2 yields 3.2 mol NH_3
- c: 0.62 mol H_2O produces 0.31 mol $\text{Ca}(\text{OH})_2$
3. For the reaction $\text{B}_2\text{O}_3 (\text{s}) + 6 \text{HF} (\text{l}) \rightarrow 2 \text{BF}_3 (\text{s}) + 3 \text{H}_2\text{O} (\text{l})$
- a: 4.2 mol HF yields 1.4 mol BF_3
- b: 5.1 mol B_2O_3 produces 15.3 mol H_2O
- c: 139 g of B_2O_3 yields 271.2 g BF_3
- d: 278.4 g of B_2O_3 produces 216 ml H_2O