

Stoich Practice Sets Work in small groups, help each other. Check answers when done.

A. Balance this equation, use it to answer the following questions



1. What is the mole ratio for this equation? What is the type of reaction?
2. If you were to use up 11.0 moles of aluminum, how many moles of copper would form?
3. If you use up 912 grams of aluminum, how many grams of copper would form?

B. Balance this equation, use it to answer the following questions



1. What is the mole ratio for this equation? What is the type of reaction?
2. If 14.3 moles of rubidium are consumed in a complete reaction, how many moles of rubidium sulfate form?
3. If you use up 8.40×10^{26} atoms of Rb, how many gm of Mg form (use scientific notation)?

A1. MR = 2:3:1:3 This is a single replacement reaction (table J)

A2.

$$\text{MR} \quad \frac{\text{Al}}{\text{Cu}} \quad \frac{2}{3} \quad \frac{11.0}{x} \quad 2x = 33.0 \quad x = 16.5 \text{ moles copper}$$

A3. $\frac{912\text{g Al}}{1} \times \frac{1 \text{ mole Al}}{27 \text{ g Al}} = 33.8 \text{ moles Al}$

$$\text{MR} \quad \frac{\text{Al}}{\text{Cu}} \quad \frac{2}{3} \quad \frac{33.8}{x} \quad 2x = 101.4 \longrightarrow x = 50.7 \text{ moles copper}$$

$$\frac{50.7 \text{ moles Cu}}{1} \times \frac{64 \text{ g Cu}}{1 \text{ mole Cu}} = 3244.8 \longrightarrow 3240 \text{ g Cu}$$

B1. MR = 2:1:1:1 This is also a single replacement reaction (table J)

B2.

$$\text{MR} \quad \frac{\text{Rb}}{\text{Rb}_2\text{SO}_4} \quad \frac{2}{1} \quad \frac{14.3}{x} \quad 2x = 14.3 \quad x = 7.20 \text{ moles rubidium sulfate}$$

B3.

$$\frac{8.49 \times 10^{26} \text{ atoms Rb}}{1} \times \frac{1 \text{ mole of Rb}}{6.02 \times 10^{23} \text{ atoms Rb}} = \frac{8.49}{6.02} \times \frac{10^{26}}{10^{23}} = 1.41 \times 10^3 = 1410 \text{ moles Rb}$$

$$\text{MR} \quad \frac{\text{Rb}}{\text{Mg}} \quad \frac{2}{1} \quad \frac{1410}{x} \quad 2x = 1410 \longrightarrow x = 705 \text{ moles Mg}$$

$$\frac{705 \text{ moles Mg}}{1} \times \frac{24 \text{ g Mg}}{1 \text{ mole Mg}} = 16920 \text{ g Mg} \longrightarrow 16900 \text{ g Mg} \longrightarrow 1.69 \times 10^4 \text{ g Mg}$$