Stoich Practice QUIZ with answers Put your answers below. All work must be shown on white paper. Be neat.

1. Balance this equation ____ $Al_{(S)}$ + ___ $CuSO_{4(AQ)}$ → ___$Al_2(SO_4)_{3(AQ)}$ + ___ $Cu_{(S)}$

2. What is the mole ratio for this equation? _____

What type of reaction does this represent? _____

3. 3. If you were to use up 11.0 moles of Al, how many moles of Cu would form? _____

4. If you use up 912 grams of Al, how many grams of Cu would form? _____

5. Balance this equation ____ $Rb_{(S)}$ + ____ $MgSO_{4(AQ)}$ → ____ $Mg_{(S)}$ + ____ $Rb_2SO_{4(AQ)}$

6. What is the mole ratio for this equation? _____

What type of reaction does this represent? _____

7. When 41.3 grams of Rb are used in a complete reaction, how many moles of Rb_2SO_4 form? _____

8. If you use up 8.49×10^{26} atoms of Rb, how many atoms of Mg form? _____

1. $2Al_{(S)} + 3CuSO_{4(AQ)} \rightarrow Al_2(SO_4)_{3(AQ)} + 3Cu_{(S)}$

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

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

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

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

$\frac{50.7\ moles\ Cu}{1} \times \frac{64\ g\ Cu}{1\ mole\ Cu} = 3244.8 \longrightarrow 3249$ g Cu

5. $2Rb_{(S)} + MgSO_{4(AQ)} \rightarrow Mg_{(S)} + Rb_2SO_{4(AQ)}$

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

7. $\frac{41.3\ g\ Rb}{1} \times \frac{1\ mole}{85\ g\ Rb} = 0.486$ moles Rb

MR $\frac{Rb}{Rb_2SO_4}$ $\frac{2}{1}$ $\frac{0.486}{x}$ $2x = 0.486$ $x = 0.243$ moles rubidium sulfate

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

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

$\frac{705\ moles\ Mg}{1} \times \frac{6.02 \times 10^{23}\ atoms\ Mg}{1\ mole\ Mg} = 4424.1 \times 10^{23} \longrightarrow 4.2441 \times 10^{26} \longrightarrow 4.24 \times 10^{26}$ atoms Mg