Name: **Period:**   **Seat#:**

- **Show work for ANY math problem.**
- **Include ALL units.**
- **Use a SINGLE DIMENSIONAL ANALYSIS line method set ups for ALL conversions.**

1) Write and balance the equation for the combustion of ethane (C_2H_6)

2) What is the mole ratio of O_2 to CO_2?	**3)** What is the mole ratio of CO_2 to H_2O?	**4)** What is the mole ratio of C_2H_6 to H_2O?

5) How many moles of C_2H_6 are used up when 3.27 moles of H_2O are produced?

6) How many moles of CO_2 are produced when 6.45 moles of O_2 are used?

7) Write and balance the equation for the reaction of aluminum chloride and lithium sulfate.

8) What is the mole ratio of aluminum chloride to aluminum sulfate?	**9)** What is the mole ratio of aluminum chloride to lithium sulfate

10) How many moles of aluminum sulfate are produced in a complete reaction of 0.478 moles of lithium sulfate?

11) How many moles of lithium sulfate are used up when 1.84 moles of lithium chloride react?

12) Write and balance: aluminum metal and hydrogen chloride reacting to form aluminum chloride and hydrogen gas.

13) How many moles of aluminum metal are needed to produce 2.75 moles of aluminum chloride?

14) How many GRAMS of hydrogen chloride are needed to react with 5 moles of aluminum?
  Pathway: moles A → moles B → grams B
    (mole ratio)   (molar mass of B)

15) How many GRAMS of hydrogen gas are produced from 3.65 moles of hydrogen chloride?
  Pathway: moles A → moles B → grams B
    (mole ratio)   (molar mass of B)

16) How many GRAMS of aluminum chloride can you make from 25.5 grams of aluminum metal?
  Pathway: grams A → moles A → moles B → grams B
    (molar mass A)   (mole ratio)   (molar mass B)

17) How many MOLECULES of hydrogen chloride are needed to make 17 grams of hydrogen gas?
  Pathway: grams A → moles A → moles B → molecules B
    (molar mass A)   (mole ratio)   (Avo. #)