Name: _____ Period: _____ Assigned on Wednesday, April 29, 2026

16.2 Lab: Stoichiometry Rotation **Due Friday, May 01, 2026**

Form A

Station 1: Zinc (Zn) reacts with oxygen gas (O_2). Given this mass of zinc, how many moles of zinc oxide (ZnO) could be produced?

Balanced Equation: _____

Calculation:

Station 2: Calcium carbonate reacts with hydrochloric acid (hydrogen monochloride). Given this mass of calcium carbonate, what mass of carbon dioxide could be produced? (**Important hint!** H_2CO_3 spontaneously decomposes to water and carbon dioxide! So, if H_2CO_3 is a product, it should be erased and written as H_2O and CO_2 instead.)

Balanced Equation: _____

Calculation:

Station 3: This is sample of tin. Assume that it reacts with fluorine gas. (Note: The tin will form 4+ ions.) How many molecules of fluorine gas could react with this mass of tin?

Balanced Equation: _____

Calculation:

Station 4: Calcium chloride can react with lead(II) acetate to form a precipitate. Given this mass of calcium chloride, how many grams of precipitate could be formed? (Hint: Use your solubility chart to determine which product is insoluble.)

Balanced Equation: _____

Calculation:

Station 5: This sample of copper(II) sulfate can react with the calcium chloride in our water. How many formula units of calcium sulfate could be produced?

Balanced Equation: _____

Calculation:

Station 6: How many moles of silver (Ag) could be produced in the reaction of this sample of copper when it reacts with silver(I) nitrate ($AgNO_3$)? (The copper will form 2+ ions)

Balanced Equation: _____

Calculation:

♦♦ Station 7: When calcium acetate decomposes, it forms acetone (C_3H_6O) and calcium carbonate. How many formula units of calcium acetate would be needed to create this volume of acetone? ($D_{acetone}$ = 0.79 g/mL)

Balanced Equation: _____

Calculation:

♦♦ Station 8 (no measurement): If 124.5 g of methane (carbon tetrahydride) is burned, what volume of carbon dioxide would be produced if each mole of carbon dioxide has a volume of 22.4 L?

Balanced Equation: _____

Calculation:

Data Table

Fill in the following data table. Show all of your work on the front side of this sheet using dimensional analysis. Your answers should be reported in the proper number of significant digits.

Station	Substance	Measurement	Calculated Value
1	Zn	_____ g	_____ moles ZnO
2	$CaCO_3$	_____ g	_____ g CO_2
3	Sn	_____ g	_____ molecules F_2
4	$CaCl_2$	_____ g	_____ g precipitate
5	$CuSO_4$	_____ g	_____ formula units $CaSO_4$
6	Cu	_____ g	_____ moles Ag
7	C_3H_6O	_____ mL	_____ formula units $Ca(C_2H_3O_2)_2$
8	CH_4	124.5 g	_____ L CO_2

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Form B

Station 1: Zinc reacts with oxygen gas. Given this mass of zinc, how many formula units of zinc oxide (ZnO) could be produced?

Balanced Equation: _____

Calculation:

Station 2: Calcium carbonate ($CaCO_3$) reacts with hydrochloric acid (hydrogen monochloride, HCl). Given this mass of calcium carbonate, how many moles of carbon dioxide (CO_2) could be produced? (**Important hint!** H_2CO_3 spontaneously decomposes to water and carbon dioxide! So, if H_2CO_3 is a product, it should be erased and written as H_2O and CO_2 instead.)

Balanced Equation: _____

Calculation:

Station 3: This is sample of tin (Sn). Assume that it reacts with fluorine gas (F_2). (Note: The tin will form 2+ ions.) How many moles of fluorine gas could react with the sample tin?

Balanced Equation: _____

Calculation:

Station 4: Calcium chloride can react with lead(II) acetate to form a precipitate. Given this mass of calcium chloride, how many grams of precipitate could be formed? (Hint: Use your solubility chart to determine which product is insoluble.)

Balanced Equation: _____

Calculation:

Station 5: This sample of copper(II) sulfate can react with the calcium chloride in our water. How many grams of calcium sulfate could be produced?

Balanced Equation: _____

Calculation:

Station 6: How many atoms of silver could be produced in the reaction of this sample of copper when it reacts with silver(I) nitrate? (The copper will form 2+ ions)

Balanced Equation: _____

Calculation:

♦♦ Station 7: When calcium acetate decomposes, it forms acetone (C_3H_6O) and calcium carbonate. How many grams of calcium acetate would be needed to create this volume of acetone? ($D_{acetone}$ = 0.79 g/mL)

Balanced Equation: _____

Calculation:

♦♦ Station 8 (no measurement): If 212.5 g of methane (carbon tetrahydride) is burned, what volume of carbon dioxide would be produced if each mole of carbon dioxide has a volume of 22.4 L?

Balanced Equation: _____

Calculation:

Data Table

Fill in the following data table. Show all of your work on the front side of this sheet using dimensional analysis. Your answers should be reported in the proper number of significant digits.

Station	Substance	Measurement	Calculated Value
1	Zn	_____ g	_____ formula units ZnO
2	$CaCO_3$	_____ g	_____ moles CO_2
3	Sn	_____ g	_____ moles F_2
4	$CaCl_2$	_____ g	_____ mol precipitate
5	$CuSO_4$	_____ g	_____ g $CaSO_4$
6	Cu	_____ g	_____ atoms Ag
7	C_3H_6O	_____ mL	_____ g $Ca(C_2H_3O_2)_2$
8	CH_4	212.5 g	_____ L CO_2

Name: _____ Period: _____ Assigned on Wednesday, April 29, 2026

16.2 Lab: Stoichiometry Rotation **Due Friday, May 01, 2026**

Form C

■ Station 1: Zinc reacts with oxygen gas. Given this mass of zinc, how many grams of zinc oxide (ZnO) could be produced?

Balanced Equation: _____

Calculation:

■ Station 2: Calcium carbonate reacts with hydrochloric acid (hydrogen monochloride). Given this mass of calcium carbonate, how many molecules of carbon dioxide could be produced? (**Important hint!** H_2CO_3 spontaneously decomposes to water and carbon dioxide! So, if H_2CO_3 is a product, it should be erased and written as H_2O and CO_2 instead.)

Balanced Equation: _____

Calculation:

● Station 3: This is sample of tin (Sn). Assume that it reacts with fluorine gas (F_2). (Note: The tin will form 4+ ions.) How many moles of fluorine gas could react with the sample of tin?

Balanced Equation: _____

Calculation:

♦ Station 4: Calcium chloride can react with lead(II) acetate to form a precipitate. Given this mass of calcium chloride, how many formula units of precipitate could be formed? (Hint: Use your solubility chart to determine which product is insoluble.)

Balanced Equation: _____

Calculation:

● Station 5: This sample of copper(II) sulfate ($CuSO_4$) can react with the calcium chloride ($CaCl_2$) in our water. How many moles of calcium sulfate ($CaSO_4$) could be produced?

Balanced Equation: _____

Calculation:

■ Station 6: How many grams of silver could be produced in the reaction of this sample of copper when it reacts with silver(I) nitrate? (The copper will form 2+ ions)

Balanced Equation: _____

Calculation:

♦♦ Station 7: When calcium acetate decomposes, it forms acetone (C_3H_6O) and calcium carbonate. How many grams of calcium acetate would be needed to create this volume of acetone? ($D_{acetone}$ = 0.79 g/mL)

Balanced Equation: _____

Calculation:

♦♦ Station 8 (no measurement): If 424.5 g of methane (carbon tetrahydride) is burned, what volume of carbon dioxide would be produced if each mole of carbon dioxide has a volume of 22.4 L?

Balanced Equation: _____

Calculation:

Data Table

Fill in the following data table. Show all of your work on the front side of this sheet using dimensional analysis. Your answers should be reported in the proper number of significant digits.

Station	Substance	Measurement	Calculated Value
1	Zn	_____ g	_____ g ZnO
2	$CaCO_3$	_____ g	_____ molecules CO_2
3	Sn	_____ g	_____ moles F_2
4	$CaCl_2$	_____ g	_____ formula units of precipitate
5	$CuSO_4$	_____ g	_____ mol $CaSO_4$
6	Cu	_____ g	_____ g Ag
7	C_3H_6O	_____ mL	_____ mol $Ca(C_2H_3O_2)_2$
8	CH_4	424.5 g	_____ L CO_2