

Name: _____ Date: _____ Mods: _____

Key

Unit 7: Limiting & Excess Reactants

1) Copper combines with aqueous silver nitrate to form aqueous copper (II) nitrate and silver.

a. Write a balanced equation for this reaction.



b. If you combined 100 g of copper with 200 g of silver nitrate, how many grams of silver would theoretically be produced?

100 g Cu	1 mol Cu	2 mol Ag	107.9 g Ag	= 339.3 g Ag
(ER) ←	63.6 g Cu	1 mol Cu	1 mol Ag	

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200 g AgNO ₃	1 mol AgNO ₃	2 mol Ag	107.9 g Ag	= 127 g Ag
(LR) ←	169.9 g AgNO ₃	2 mol AgNO ₃	1 mol Ag	

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c. How many grams of the excess reactant would be left over?

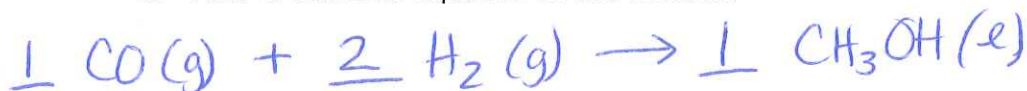
200 g AgNO ₃	1 mol AgNO ₃	1 mol Cu	63.6 g Cu	= 37.4 g Cu used
(LR) ←	169.9 g AgNO ₃	2 mol AgNO ₃	1 mol Cu	

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HAD - USED : 100 g - 37.4 g = 62.6 g Cu left over (ER)

2) Gaseous carbon monoxide combines with hydrogen gas to produce liquid methanol, CH₃OH.

a. Write a balanced equation for this reaction.



b. If you combined 152.5 g of carbon monoxide and 24.5 g of hydrogen, how many grams of methanol would theoretically be produced?

152.5 g CO	1 mol CO	1 mol CH ₃ OH	32 g CH ₃ OH	= 174.3 g CH ₃ OH
(LR) ←	28 g CO	1 mol CO	1 mol CH ₃ OH	

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24.5 g H ₂	1 mol H ₂	1 mol CH ₃ OH	32 g CH ₃ OH	= 196 g CH ₃ OH
(ER) ←	2 g H ₂	2 mol H ₂	1 mol CH ₃ OH	

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c. How many grams of the excess reactant would be left over?

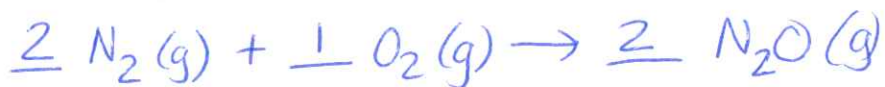
152.5 g CO	1 mol CO	2 mol H ₂	2 g H ₂	→ (ER) = 21.78 g H ₂ used
(LR) ←	28 g CO	1 mol CO	1 mol H ₂	

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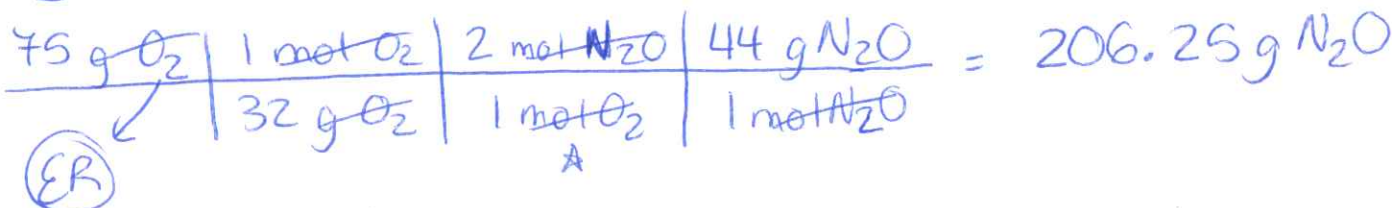
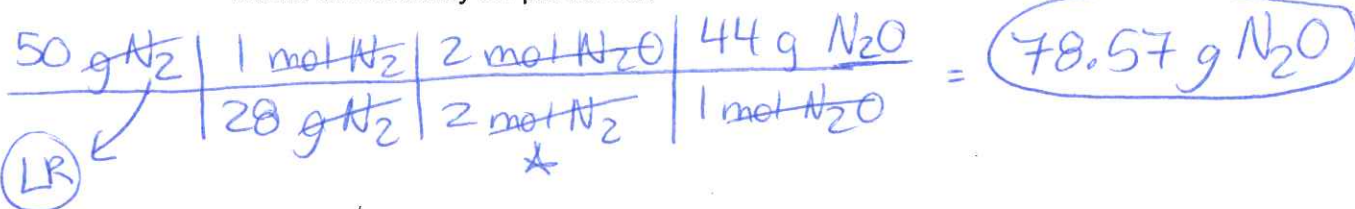
HAD - USED : 24.5 g - 21.78 g = 2.72 g H₂ left over

3) Nitrogen gas and oxygen gas combine to form dinitrogen monoxide (laughing gas).

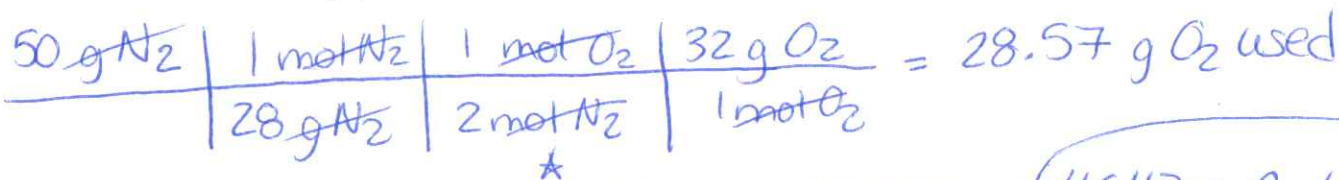
a. Write a balanced equation for this reaction.



b. If you combined 50 g of nitrogen gas with 75 g of oxygen gas, how many grams of laughing gas would theoretically be produced?



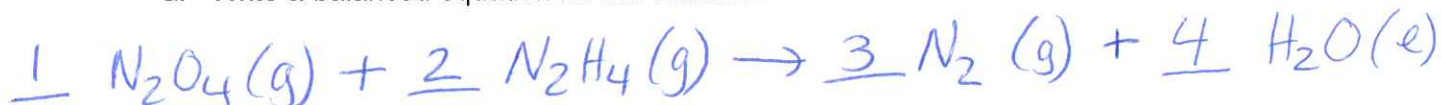
c. How many grams of the excess reactant would be left over?



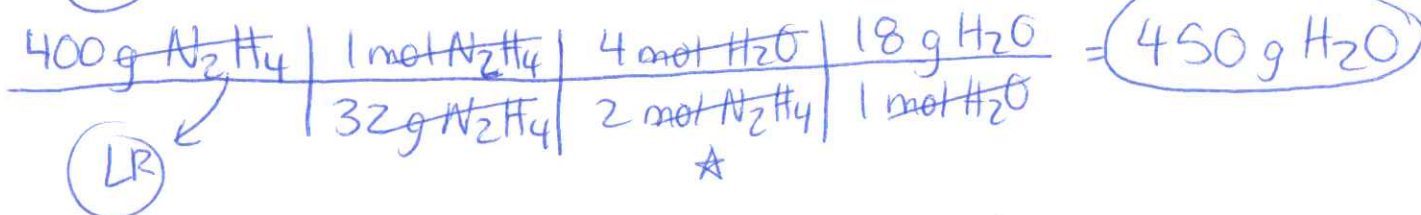
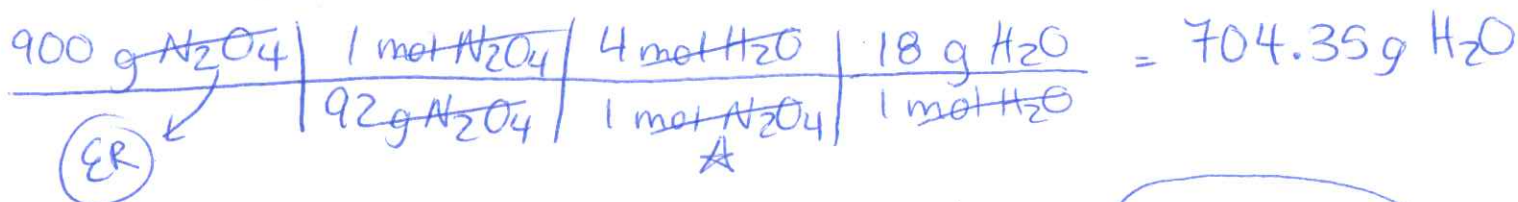
HAD - USED : 75 g - 28.57 g = 46.43 g O₂ left over

4) Gaseous dinitrogen tetroxide combines with gaseous dinitrogen tetrahydride to form nitrogen gas and water.

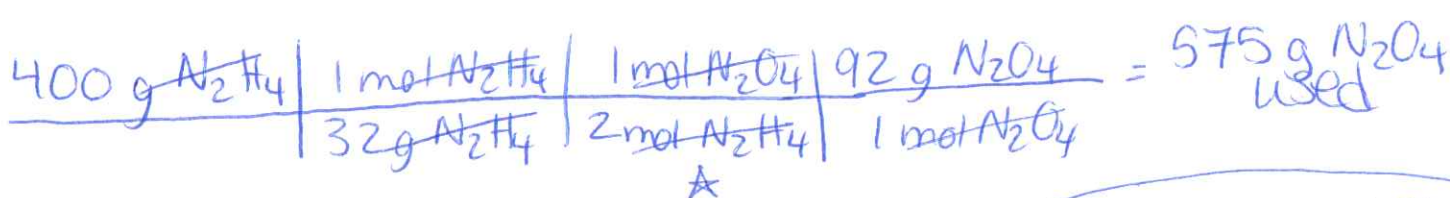
a. Write a balanced equation for this reaction.



b. If you combined 900 g of dinitrogen tetroxide and 400 g of dinitrogen tetrahydride, how many grams of water would theoretically be produced?



c. How many grams of the excess reactant would be left over?



HAD - USED : 900 g - 575 g = 325 g N₂O₄ left over