

Name Key Name _____
 (print name) (sign name)

NA = not attempted NW = no work

Please show all work for full credit & for partial credit for all questions. Avogadro's number = 6.022×10^{23}

1. Complete the following naming question by either providing the name or providing the formula. (4 pts)

prefix for 5 penta

carbonate CO_3^{-2} bromide $-\frac{1}{2}$

SO_4^{-2} sulfate

HBr hydrobromic acid

2. Name the following SO_3 (2 pts)

sulfur trioxide (binary covalent, needs # prefix)

1pt $-\frac{1}{2}$ 1pt oxygen trioxide

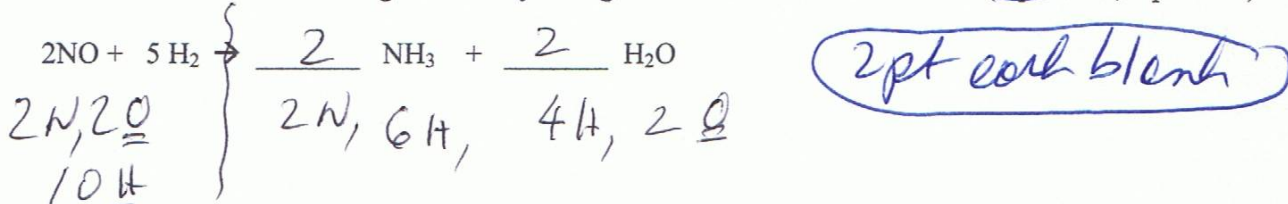
3. Calculate the molar mass (also sometimes called molecular weight or formula weight) for the formula given below. $\text{Ca}(\text{OH})_2$ (4 pts)

NW-2

$$\text{MW} = 40.08 + 2(16.00 + 1.01) = 74.10 \text{ g/mol Ca(OH)}_2$$

1pt 1pt 1pt 1pt

4. Balance the following reaction by filling in the blank with a number. (2 pts each, 4 pts total)



5. For your reaction to work, if you need 79.2 grams of LiCl and you have a 2.57 M solution of the LiCl in water, how many mL of the LiCl solution do you need? (FW LiCl = 42.39 g/mol) (6 pts)

$$79.2 \text{ g LiCl} \times \frac{1 \text{ mol LiCl}}{42.39 \text{ g LiCl}} \times \frac{1000 \text{ mL LiCl soln}}{2.57 \text{ mol LiCl}} = 727 \text{ mL LiCl soln.}$$

1pt 2pt 2pt

attempt -2 bad attempt -4 1pt NW-3 upside down 1/2 off extra wrong -1pt

Extra Credit (3 pts) The following molecule is [(soluble) or (insoluble)] (circle one) in water.

PbI_2 I⁻ is soluble except for Pb^{2+}
among others which are insoluble

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1. Complete the following naming question by either providing the name or providing the formula. (4 pts)

prefix for 3 tri hydroxide OH^-
 NO_3^- nitrate H_2SO_4 sulfuric acid

2. Name the following PBr_5 (2 pts) binary covalent need # prefix

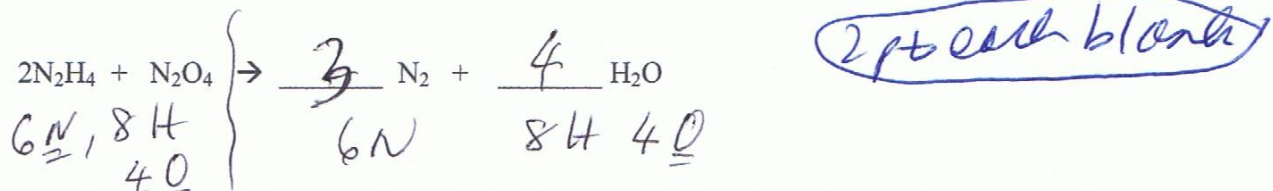
1 pt 1/2 pt bromine + ide
phosphorus pentabromide - (1 pt)

3. Calculate the molar mass (also sometimes called molecular weight or formula weight) for the formula given below. $\text{Al}(\text{NO}_3)_3$ (4 pts) NW = -2

$$\text{MW} = 26.98 + 3(14.01 + (16.00) \times 3) = 213.01 \text{ g Al}(\text{NO}_3)_3$$

Al (1 pt) N (1 pt) O (1 pt) 1 pt mol $\text{Al}(\text{NO}_3)_3$

4. Balance the following reaction by filling in the blank with a number. (2 pts each blank, 4 pts total)



5. For your reaction to work, if you need 98.2 grams of LiCl and you have a 5.24 M solution of the LiCl in water, how many mL of the LiCl solution do you need? (FW LiCl = 42.39 g/mol) (6 pts)

$$98.2 \text{ g LiCl} \times \frac{\text{mol LiCl}}{42.39 \text{ g}} \times \frac{1000 \text{ mL LiCl soln}}{5.24 \text{ mol LiCl}} =$$

1 pt 2 pt 2 pt attempt -2 bad attempt -4

442 mL of LiCl soln. 1 pt NW -3 pt

Extra Credit (3 pts) The following molecule is [(soluble) or (insoluble)] (circle one) in water.

Al_2S_3 S^{2-} are insoluble, Al is not an exception

Orange

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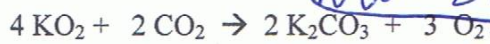
prefix for 8 Octa acetate $C_2H_3O_2^-$ either OK
 NH_4^+ ammonium ammonia H_2SO_4 sulfuric acid
ionic

2. Name the following NH_4F (2 pts) ammonium fluoride fluorine tide

3. Calculate the molar mass (also sometimes called molecular weight or formula weight) for the formula given below. $(NH_4)_2S$ (4 pts)

$NW-2pt$
 $NW-2pt$
 N H S
 $mw = 2[14.00 + 4(1.01)] + 32.07 = 68.15 \text{ g/mol}$
1pt 1pt 1pt 1pt

4. Given the reaction below, what is the theoretical yield of K_2CO_3 in grams if you start out with 1.78 moles of KO_2 . (FW of K_2CO_3 is 138.21 g/mol) (5 pts)



NW-2pt attempt-2 bad attempt-3
 $1.78 \text{ mol } KO_2 \times \frac{2 \text{ mol } K_2CO_3}{4 \text{ mol } KO_2} \times \frac{138.21 \text{ g } K_2CO_3}{1 \text{ mol } K_2CO_3} = 123.01 \text{ g } K_2CO_3$
1pt 2pt 1pt 1pt

5. If you start out with 35.7 g of $LiCl$ and dissolve it in enough water to make up 250 mL aqueous solution, what is the molarity of the solution? (FW $LiCl = 42.39 \text{ g/mol}$) (5 pts)

2 ways to do
NW-2pt attempt-2 bad attempt-3
 $\# \text{ moles} = 35.7 \text{ g } LiCl \times \frac{1 \text{ mol } LiCl}{42.39 \text{ g } LiCl} = 0.842 \text{ mol } LiCl$
 $\# \text{ l} = 250 \text{ ml} \times \frac{1 \text{ l}}{1000 \text{ ml}} = 0.250 \text{ l}$
 $m = \frac{0.842 \text{ mol}}{0.250 \text{ l}} = 3.37$
 $\frac{35.7 \text{ g } LiCl}{250 \text{ ml soln}} \times \frac{1 \text{ mol } LiCl}{42.39 \text{ g } LiCl} \times \frac{1000 \text{ ml soln}}{1 \text{ l soln}} = 3.37 \frac{\text{mol}}{\text{l}}$
1pt 1pt 1pt 1pt 1pt 1pt 1pt 1pt

Extra Credit (3 pts) The following molecule is (soluble) or (insoluble) (circle one) in water.

$NaCO_3$ CO_3^{2-} are insoluble except for alkali metal & Na is alkali metal

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1. Complete the following naming question by either providing the name or providing the formula. (4 pts)

prefix for 5 _____ carbonate _____

SO_4^{-2} _____ HBr _____

2. Name the following SO_3 (2 pts)

3. Calculate the molar mass (also sometimes called molecular weight or formula weight) for the formula given below. $\text{Ca}(\text{OH})_2$ (4 pts)

4. Balance the following reaction by filling in the blank with a number. (2 pts each, 4 pts total)



5. For your reaction to work, if you need 79.2 grams of LiCl and you have a 2.57 M solution of the LiCl in water, how many mL of the LiCl solution do you need? (FW LiCl = 42.39 g/mol) (6 pts)

Extra Credit (3 pts) The following molecule is [(soluble) or (insoluble)] (circle one) in water.

PbI_2

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1. Complete the following naming question by either providing the name or providing the formula. (4 pts)

prefix for 3 _____ hydroxide _____

NO_3^- _____ H_2SO_4 _____

2. Name the following PBr_5 (2 pts)

3. Calculate the molar mass (also sometimes called molecular weight or formula weight) for the formula given below. $\text{Al}(\text{NO}_3)_3$ (4 pts)

4. Balance the following reaction by filling in the blank with a number. (2 pts each blank, 4 pts total)



5. For your reaction to work, if you need 98.2 grams of LiCl and you have a 5.24 M solution of the LiCl in water, how many mL of the LiCl solution do you need? (FW LiCl = 42.39 g/mol) (6 pts)

Extra Credit (3 pts) The following molecule is [(soluble) or (insoluble)] (circle one) in water.



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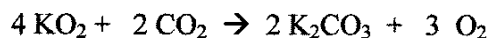
prefix for 8 _____ acetate _____

NH_4^+ _____ H_2SO_4 _____

2. Name the following NH_4F (2 pts)

3. Calculate the molar mass (also sometimes called molecular weight or formula weight) for the formula given below. $(\text{NH}_4)_2\text{S}$ (4 pts)

4. Given the reaction below, what is the theoretical yield of K_2CO_3 in grams if you start out with 1.78 moles of KO_2 . (FW of K_2CO_3 is 138.21 g/mol) (5 pts)



5. If you start out with 35.7 g of LiCl and dissolve it in enough water to make up 250 mL aqueous solution, what is the molarity of the solution? (FW $\text{LiCl} = 42.39 \text{ g/mol}$) (5 pts)

Extra Credit (3 pts) The following molecule is [(soluble) or (insoluble)] (circle one) in water.



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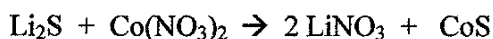
prefix for 6 _____ phosphate _____

OH _____ CH_3COOH _____

2. Name the following Na_2SO_4 (2 pts)

3. Calculate the molar mass (also sometimes called molecular weight or formula weight) for the formula given below. $\text{Ba}_3(\text{PO}_4)_2$ (4 pts)

4. Given the reaction below, what is the theoretical yield of LiNO_3 in grams if you start out with 8.23 moles of Li_2S . (FW of LiNO_3 is 68.95 g/mol) (5 pts)



5. If you start out with 18.9 g of KCl and dissolve it to make ~~250~~ 450 mL aqueous solution, what is the molarity of the solution? (FW KCl = 74.55 g/mol) (5 pts)

Extra Credit (3 pts) The following molecule is [(soluble) or (insoluble)] (circle one) in water.
 $\text{Mg}(\text{OH})_2$