

Name Key print _____ Name _____ sign _____

For long answer type questions, you must show all work for partial credit. Please write legibly. (I cannot grade what I cannot read.) Please print your name on the top back of the quiz so that I can return the quiz in a self serve fashion. (2 pts. for writing name on the back & front)

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Show work if the question requires some work to come up with the final answer. (2 pts each)

1) a mole of Co weighs 58.93 1 mol weighs 58.93g 1) 58.93

1 atom of Co weighs 58.93 amu

2) How many molecules of NH₃ is in 1 mole of NH₃ 2) 6.02 x 10²³

1 mol of molecules has N_A (Avogadro's #) of molecules, 1 mol of atoms has N_A # of atoms

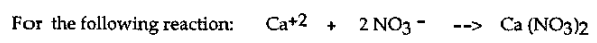
3) How many atoms of N is in one mole of NH₃ 3) 6.02 x 10²³

1 molecule NH₃ equivalent to 1 atom of N

4) How many atoms of H is in one mole of NH₃ 4) 1.80 x 10²⁴

1 molecule of NH₃ equivalent to 3 atoms of H 1 molecule NH₃ has 3 H atoms

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)



MW (calcium nitrate) = 40.08 + 2(14.01) + 6(16.00) = 164.1 g/mol

6) From 32.5 g of Ca, how many grams of the product, Ca(NO₃)₂ would the reaction produce?

$$32.5g \text{ Ca} \times \frac{1 \text{ mol Ca}}{40.08g \text{ Ca}} \times \frac{1 \text{ mol Ca(NO}_3)_2}{1 \text{ mol Ca}} \times \frac{164.1g \text{ Ca(NO}_3)_2}{1 \text{ mol Ca(NO}_3)_2} = 133.6g \text{ Ca(NO}_3)_2$$

7) From 32.5 g of Ca, how many atoms of oxygen (O) would be produced? (in the product Ca(NO₃)₂)

$$32.5g \text{ Ca} \times \frac{1 \text{ mol Ca}}{40.08g \text{ Ca}} \times \frac{6 \text{ mol O}}{1 \text{ mol Ca}} \times \frac{6.02 \times 10^{23} \text{ atoms O}}{1 \text{ mol O}} = 2.93 \times 10^{24} \text{ atoms O}$$

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SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Show work if the question requires some work to come up with the final answer. (2 pts each)

1) a mole of P weighs 30.97 g 1 mol weighs 30.97 1) 30.97

1 atom weighs 30.97 amu

2) How many molecules of H₂O is in 1 mole of H₂O?

1 mol of molecules has N_A (Avogadro's #) of molecules, 1 mol of atoms of element has N_A # of atoms 2) 6.02 x 10²³

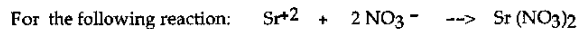
3) How many atoms of O is in one mole of H₂O?

1 molecule of H₂O is equivalent to 1 atom of O 3) 6.02 x 10²³

4) How many atoms of H is in one mole of H₂O?

1 molecule of H₂O is equivalent to 2 atoms of H of H₂O 2 (6.02 x 10²³) 4) 1.20 x 10²⁴

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)



MW (strontium nitrate) = 87.62 + 2(14.01) + 6 (16.00) = 211.6 g/mol

6) From 32.5 g of Sr, how many grams of the product, Sr(NO₃)₂ would the reaction produce?

$$32.5 \text{ g Sr} \times \frac{1 \text{ mol Sr}}{87.62 \text{ g Sr}} \times \frac{1 \text{ mol Sr}(\text{NO}_3)_2}{1 \text{ mol Sr}} \times \frac{211.6 \text{ g Sr}(\text{NO}_3)_2}{1 \text{ mol Sr}(\text{NO}_3)_2} = 78.5 \text{ g Sr}(\text{NO}_3)_2$$

7) From 32.5 g of Sr, how many atoms of oxygen (O) would be produced?

$$32.5 \text{ g Sr} \times \frac{1 \text{ mol Sr}}{87.62 \text{ g Sr}} \times \frac{6 \text{ mol O}}{1 \text{ mol Sr}} \times \frac{6.02 \times 10^{23} \text{ atoms O}}{1 \text{ mol O}} = 1.34 \times 10^{24} \text{ atoms O}$$

(in the product Sr(NO₃)₂)

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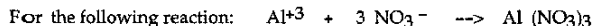
1) a mole of Rb weighs 85.47 1) 85.47

2) How many molecules of CH₄ is in 1 mole of CH₄? 2) 6.02 x 10²³
 1 mol of molecules has N_A (Avogadro's #) of molecules, 1 mol of atoms of element has N_A # of atoms

3) How many atoms of C is in one mole of CH₄? 3) 6.02 x 10²³
 1 molecule of CH₄ has 1 atom C
 1 mol CH₄ = 1 mol C

4) How many atoms of H is in one mole of CH₄? 4) 2.41 x 10²⁴
 1 molecule of CH₄ has 4 H atoms
 1 mol CH₄ = 4 mol H 4(6.02 x 10²³)

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)



MW (aluminum nitrate) = 26.98 + 3(14.00) + 9(16.00) = 213.0 g/mol

6) From 32.5 g of Al how many grams of the product, Al(NO₃)₃ would the reaction produce?

$$32.5 \text{ g Al} \times \frac{1 \text{ mol Al}}{26.98 \text{ g Al}} \times \frac{1 \text{ mol Al(NO}_3)_3}{1 \text{ mol Al}} \times \frac{213.0 \text{ g Al(NO}_3)_3}{1 \text{ mol Al(NO}_3)_3} = 259 \text{ g}$$

7) From 32.5 g of Al, how many atoms of oxygen (O) would be produced?

$$32.5 \text{ g Al} \times \frac{1 \text{ mol Al}}{26.98 \text{ g Al}} \times \frac{6 \text{ mol O}}{1 \text{ mol Al}} \times \frac{6.02 \times 10^{23} \text{ atoms O}}{1 \text{ mol O}} = 4.35 \times 10^{24} \text{ atoms O}$$

(in the product Al(NO₃)₃)

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SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Show work if the question requires some work to come up with the final answer. (2 pts each)

1) a mole of S weighs 32.07 g 1) 32.07

2) How many molecules of $\text{Ca}(\text{OH})_2$ is in 1 mole of $\text{Ca}(\text{OH})_2$? 2) 6.02×10^{23}

1 mol of molecules has N_A (Avogadro's #) of molecules, 1 mol of atoms of element has N_A # of atoms.

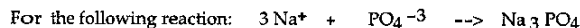
3) How many atoms of Ca is in one mole of $\text{Ca}(\text{OH})_2$? 3) 6.02×10^{23}

1 molecule of $\text{Ca}(\text{OH})_2$ has 1 atom of Ca
1 mol $\text{Ca}(\text{OH})_2$ has 1 mol Ca

4) How many atoms of H is in one mole of $\text{Ca}(\text{OH})_2$? 4) 1.20×10^{24}

1 molecule of $\text{Ca}(\text{OH})_2$ has 2 H atoms
1 mol $\text{Ca}(\text{OH})_2 = 2 \text{ mol H}$ $2(6.02 \times 10^{23})$

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)



MW (sodium phosphate) = $3(22.99) + 30.97 + 4(16.00) = 163.94 \text{ g/mol}$

6) From 32.5 g of Na how many grams of the product, Na_3PO_4 would the reaction produce?

$$32.5 \text{ g Na} \times \frac{1 \text{ mol Na}}{22.99 \text{ g Na}} \times \frac{1 \text{ mol Na}_3\text{PO}_4}{3 \text{ mol Na}} \times \frac{163.94 \text{ g Na}_3\text{PO}_4}{1 \text{ mol Na}_3\text{PO}_4} = 77.3 \text{ g Na}_3\text{PO}_4$$

7) From 32.5 g of Na, how many atoms of oxygen (O) would be produced?

$$32.5 \text{ g Na} \times \frac{1 \text{ mol Na}}{22.99 \text{ g Na}} \times \frac{4 \text{ mol O}}{3 \text{ mol Na}} \times \frac{6.02 \times 10^{23} \text{ atoms O}}{1 \text{ mol O}} = 1.13 \times 10^{24} \text{ atoms O}$$

in the product Na_3PO_4

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SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Show work if the question requires some work to come up with the final answer. (2 pts each)

1) a mole of Co weighs _____ g 1) _____

2) How many molecules of NH_3 is in 1 mole of NH_3 2) _____

3) How many atoms of N is in one mole of NH_3 3) _____

4) How many atoms of H is in one mole of NH_3 4) _____

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)

For the following reaction: $\text{Ca}^{+2} + 2\text{NO}_3^- \rightarrow \text{Ca}(\text{NO}_3)_2$

MW (calcium nitrate) = $40.08 + 2(14.01) + 6(16.00) = 164.1 \text{ g/mol}$

6) From 32.5 g of Ca, how many grams of the product, $\text{Ca}(\text{NO}_3)_2$ would the reaction produce?

7) From 32.5 g of Ca, how many atoms of oxygen (O) would be produced?

in the molecule
 $\text{Ca}(\text{NO}_3)_2$

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SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Show work if the question requires some work to come up with the final answer. (2 pts each)

1) a mole of P weighs _____ g 1) _____

2) How many molecules of H₂O is in 1 mole of H₂O? 2) _____

3) How many atoms of O is in one mole of H₂O? 3) _____

4) How many atoms of H is in one mole of H₂O 4) _____

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)

For the following reaction: $\text{Sr}^{+2} + 2\text{NO}_3^- \rightarrow \text{Sr}(\text{NO}_3)_2$

MW (strontium nitrate) = $87.62 + 2(14.01) + 6(16.00) = 211.6 \text{ g/mol}$

6) From 32.5 g of Sr, how many grams of the product, Sr(NO₃)₂ would the reaction produce?

7) From 32.5 g of Sr, how many atoms of oxygen (O) would be produced?

in the molecule
 $\text{Sr}(\text{NO}_3)_2$

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SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Show work if the question requires some work to come up with the final answer. (2 pts each)

1) a mole of Rb weighs _____ g 1) _____

2) How many molecules of CH_4 is in 1 mole of CH_4 ? 2) _____

3) How many atoms of C is in one mole of CH_4 ? 3) _____

4) How many atoms of H is in one mole of CH_4 ? 4) _____

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)

For the following reaction: $\text{Al}^{+3} + 3 \text{NO}_3^- \rightarrow \text{Al}(\text{NO}_3)_3$

MW (aluminum nitrate) = $26.98 + 3(14.00) + 9(16.00) = 213.0 \text{ g/mol}$

6) From 32.5 g of Al how many grams of the product, $\text{Al}(\text{NO}_3)_3$ would the reaction produce ?

7) From 32.5 g of Al, how many atoms of oxygen (O) would be produced ?

in the molecule
 $\text{Al}(\text{NO}_3)_3$

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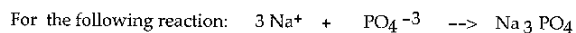
- 1) a mole of S weighs _____ g 1) _____

- 2) How many molecules of Ca(OH)_2 is in 1 mole of Ca(OH)_2 ? 2) _____

- 3) How many atoms of Ca is in one mole of Ca(OH)_2 ? 3) _____

- 4) How many atoms of H is in one mole of Ca(OH)_2 ? 4) _____

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (6 pts each)



MW (sodium phosphate) = $3(22.99) + 30.97 + 4(16.00) = 163.94 \text{ g/mol}$

6) From 32.5 g of Na how many grams of the product, Na_3PO_4 would the reaction produce ?

7) From 32.5 g of Na, how many atoms of oxygen (O) would be produced ?

in the molecule
 Na_3PO_4