

**WS 4.2.1 Mole Conversions**

**• SHOW ALL WORK using DIMENSIONAL ANALYSIS**

• Circle the leftover answer & units in answer bank when done

**1. Please convert these measurements into moles:**

a)  $9.03 \times 10^{23}$  C atoms

Ans: \_\_\_\_\_

b)  $6.02 \times 10^{23}$  Li atoms

Ans: \_\_\_\_\_

c)  $2.44 \times 10^{23}$  H<sub>2</sub>O molecules

Ans: \_\_\_\_\_

**2. Please convert these measurements into atoms / molecules:** ('cules = unofficial abbrev. for molecules)

a) 0.573 moles NF<sub>3</sub>

Ans: \_\_\_\_\_

b) 62.5 moles CO<sub>2</sub>

Ans: \_\_\_\_\_

c)  $7.90 \times 10^4$  moles H<sub>2</sub>O

Ans: \_\_\_\_\_

**3. Please convert these measurements into moles:**

a) 56.7 g C

Ans: \_\_\_\_\_

b) 44.0 g CO<sub>2</sub>

Ans: \_\_\_\_\_

c)  $8.43 \times 10^5$  g Ag

Ans: \_\_\_\_\_

**Circle leftover answers and units**

**Ans (IRO + 2):** 0.405 1.00 1.00 1.50 4.72 8.42 7810  $1.76 \times 10^{23}$   $3.45 \times 10^{23}$   $3.76 \times 10^{25}$   $4.78 \times 10^{28}$   
**Units (IRO + 2):** mol mol mol mol mol mol 'cules 'cules 'cules grams grams

**WS 4.2.2**

**4. Please convert these measurements into mass (grams)**

a) 0.573 moles  $\text{NF}_3$

Ans: \_\_\_\_\_

b) 62.5 moles  $\text{CO}_2$

Ans: \_\_\_\_\_

c)  $7.9 \times 10^9$  moles  $\text{H}_2\text{O}$

Ans: \_\_\_\_\_

**5. Please convert these measurements into atoms / molecules:**

a) 17.4 g K

Ans: \_\_\_\_\_

b) 0.564 g  $\text{NF}_3$

Ans: \_\_\_\_\_

c)  $3.90 \times 10^4$  g  $\text{H}_2\text{O}$

Ans: \_\_\_\_\_

**6. Please convert these measurements into mass (grams):**

a)  $4.076 \times 10^{23}$  C atoms

Ans: \_\_\_\_\_

b)  $6.98 \times 10^{21}$   $\text{CO}_2$  molecules

Ans: \_\_\_\_\_

c) 1  $\text{H}_2\text{O}$  molecule

Ans: \_\_\_\_\_

**Circle leftover answers**

**Ans (IRO + 2):** 3E-23 0.510 8.12 13.5 40.7 2750 1.4x10<sup>11</sup> 4.78x10<sup>21</sup> 2.68x10<sup>23</sup> 9.18x10<sup>25</sup> 1.30x10<sup>27</sup>  
**Units (IRO + 0):** grams grams grams grams grams grams atoms 'cules 'cules

**WS 4.2.3**

7. How many molecules are present in 15.4 g of CO<sub>2</sub>?

Ans: \_\_\_\_\_

8.

a) What would be the mass of a 16.9 mole sample of propane (C<sub>3</sub>H<sub>8</sub>)?

Ans (a) \_\_\_\_\_

b) How many propane molecules would it contain?

Ans (b): \_\_\_\_\_

c) How many C atoms would it contain?

*(hint- multiply ans. in 'b' by # of C atoms in formula)*

Ans (c): \_\_\_\_\_

9. How many Au atoms are there in a 2.3 cm x 5.6 cm x 12.7 cm block of gold? (D = 19.3 g/mL)

*(hint- use density formula to find mass. Then convert mass into atoms)*

Ans: \_\_\_\_\_

10.

a) How much would  $3.45 \times 10^{21}$  C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> molecules weigh?

Ans (a): \_\_\_\_\_

b) How many total atoms (C, H & O combined) would it contain?

*(hint- multiply 3.45 E 21 by total # of atoms in formula)*

Ans (b): \_\_\_\_\_

11. 2.00 moles of O<sub>2</sub> gas has a volume of 44.8 L at standard conditions. What would be oxygen's density under those conditions? (D=m/V)

*(hint- change moles to grams. Then use density equation)*

Ans: \_\_\_\_\_

**Circle leftover answers**

**Ans (IRO + 2):** 1.03   1.43   1.79   744    $8.28 \times 10^{22}$     $2.11 \times 10^{23}$     $3.09 \times 10^{23}$     $9.6 \times 10^{24}$     $1.02 \times 10^{25}$     $3.06 \times 10^{25}$   
**Units (IRO + 0):** grams   grams   atoms   atoms   atoms   'cules   'cules   g/L