

Chemistry  
Molar Conversion Worksheet

Name \_\_\_\_\_

For all conversions, follow this general formula:

$$\# \text{ and label given} \times \frac{X \text{ label wanted}}{X \text{ label given}} = \text{answer}$$

Fill in "X" with these numbers:

<u>number</u>	<u>label</u>
1	mole
$6.02 \times 10^{23}$	atoms, molecules, formula units
Molar mass	grams
22.4	L or $\text{dm}^3$

Grams to Moles

Example:  $2.3 \text{ g Na} = ? \text{ mole}$        $2.3 \text{ g Na} \times \frac{1 \text{ mole Na}}{23 \text{ g Na}} = .10 \text{ mole Na}$

1.  $5 \text{ g H} = ? \text{ mole H}$
2.  $.19 \text{ g F} = ? \text{ mole F}$
3.  $710 \text{ g Cl}_2 = ? \text{ mole Cl}_2$

Mole to Grams

Example:  $.25 \text{ mole Cu} = ? \text{ g Cu}$        $.25 \text{ mole Cu} \times \frac{63.5 \text{ g Cu}}{1 \text{ mole Cu}} = 16 \text{ g Cu}$

4.  $1.75 \text{ mole AgNO}_3 = ? \text{ g}$
5.  $.05 \text{ mole BaCl}_2 = ? \text{ g}$
6.  $10 \text{ mole I}_2 = ? \text{ g}$

Atoms to Grams

Example:  $1 \text{ atom C} = ? \text{ g}$        $1 \text{ atom C} \times \frac{12 \text{ g C}}{6.02 \times 10^{23} \text{ atoms C}} = 2 \times 10^{-23} \text{ g C}$

7.  $10 \text{ atoms C} = ? \text{ g}$
8.  $3000 \text{ atoms C} = ? \text{ g}$
9.  $1 \text{ atom P} = ? \text{ g}$
10.  $1 \text{ molecule HCl} = ? \text{ g}$
11.  $5 \times 10^{23} \text{ atoms Zn} = ? \text{ g}$
12.  $2 \times 10^{20} \text{ molecules HF} = ? \text{ g}$

### Grams to Molecules

Example:  $.0002 \text{ g H}_2 = ? \text{ molecules}$       $.0002 \text{ g H}_2 \times \frac{6.02 \times 10^{23} \text{ molecules H}_2}{2.0 \text{ g H}_2} = 6.0 \times 10^{19} \text{ molecules}$

13.  $4.4 \text{ g O} = ? \text{ atoms}$

14.  $400 \text{ g Ca} = ? \text{ atoms}$

15.  $.00016 \text{ g CH}_4 = ? \text{ molecules}$

### Molecules to Liters

Example:  $1.5 \times 10^{23} \text{ molecules H}_2\text{S} = ? \text{ L}$       $1.5 \times 10^{23} \text{ molecules H}_2\text{S} \times \frac{22.4 \text{ L}}{6.02 \times 10^{23} \text{ molecules H}_2\text{S}} = 5.6 \text{ L}$

16.  $1.2 \times 10^{15} \text{ atoms Ne} = ? \text{ L}$

17.  $3.6 \times 10^{18} \text{ molecules CH}_4 = ? \text{ L}$

18.  $4.8 \times 10^{20} \text{ atoms S} = ? \text{ L}$

### Liters to Grams

Example:  $5.6 \text{ L CH}_4 = ? \text{ g}$       $5.6 \text{ L CH}_4 \times \frac{16.0 \text{ g CH}_4}{22.4 \text{ L CH}_4} = 4.0 \text{ g CH}_4$

19.  $112 \text{ L O}_2 = ? \text{ g}$

20.  $33.6 \text{ L Ar} = ? \text{ g}$

21.  $89.6 \text{ L N}_2 = ? \text{ g}$

### Answers

1. 5 mole H

2. 0.010 mole F

3. 10. mole  $\text{Cl}_2$

4. 297 g  $\text{AgNO}_3$

5. 10 g  $\text{BaCl}_2$  (10.41)

6. 3000 g (2538)

7.  $2 \times 10^{-22} \text{ g}$

8.  $6 \times 10^{-20} \text{ g}$

9.  $5 \times 10^{-23} \text{ g}$

10.  $6 \times 10^{-23}$

11. 50 g (54.3)

12. 0.007 g (0.00664)

13.  $1.7 \times 10^{23}$  atoms

14.  $6 \times 10^{24}$  atoms

15.  $6.0 \times 10^{18}$  molecules

16.  $4.5 \times 10^{-8} \text{ L}$

17.  $1.3 \times 10^{-4} \text{ L}$

18. 0.018 L

19. 160. g

20. 59.9 g

21. 112 g