Name Date Mole to Grams, Gran		ate ams to	Per Moles Conversions Worksheet							
To find moles divide molar mass			To find grams multiply molarmass							
What are the molecular weights of the following compounds?										
1)	NaOH	2)	H ₃ PO ₄							
3)	H ₂ O	4)	Mn ₂ Se ₇							
5)	MgCl ₂	6)	(NH ₄) ₂ SO ₄							

There are three definitions (equalities) of mole. They are: 1 mole = 6.02×10^{23} particles

1 mole = 6.02×10^{23} particles 1 mole = molar mass (could be atomic mass from periodic table or molecular mass) 1 mole = 22.4 L of a gas at STP (You do not need to worry about this yet)

Each definition can be written as a set of two conversion factors. They are:



Solve of the following:

1) **How many moles** are in 15 grams of lithium?

- 2) How many grams are in 2.4 moles of sulfur?
- 3) How many moles are in 22 grams of argon?
- 4) **How many grams** are in 88.1 moles of magnesium?
- 5) **How many moles** are in 2.3 grams of phosphorus?

- 6) **How many grams** are in 11.9 moles of chromium?
- 7) **How many moles** are in 9.8 grams of calcium?
- 8) **How many grams** are in 238 moles of arsenic?

Solve he following:

- 9) How many grams are in 4.5 moles of sodium fluoride, NaF?
- 10) How many moles are in 98.3 grams of aluminum hydroxide, Al(OH)₃?
- 11) How many grams are in 0.02 moles of beryllium iodide, BeI₂?
- 12) How many moles are in 68 grams of copper (II) hydroxide, Cu(OH)₂?
- 13) How many grams are in 3.3 moles of potassium sulfide, K_2S ?
- 14) How many moles are in 1.2×10^3 grams of ammonia, NH₃?
- 15) How many grams are in 2.3 x 10^{-4} moles of calcium phosphate, Ca₃(PO₃)₂?
- 16) How many moles are in 3.4×10^{-7} grams of silicon dioxide, SiO₂?
- 17) How many grams are in 1.11 moles of manganese sulfate, $Mn_3(SO_4)_7$?

Mole Calculation Worksheet – Answer Key

What a	re the molecular weights of the following	g compo	unds?											
1)	NaOH 23 + 16 + 1 = 40.1 grams	2)	H_3PO_4	3	+	31 + 0	64 =	98.) gra	ms				
3)	H ₂ O $2 + 16 = 18.0$ grams	4)	Mn ₂ Se ₇	7	66	3.0 gr	ams							
5)	MgCl ₂ 95.3 grams	6)	(NH ₄) ₂ S	SO	4	132.	l gra	ms						
Solve a	any 15 of the following:													
1)	How many moles are in 15 grams of lith	nium? 1	5/7 = 2.1	14	mo	les								
2)	How many grams are in 2.4 moles of sulfur? $2.4 \times 32 = 76.8$ grams													
3)	How many moles are in 22 grams of argon? $22/40 = 0.55$ moles													
4)	How many grams are in 88.1 moles of magnesium? 88.1 x 24 = 2114.4 grams													
5)	How many moles are in 2.3 grams of phosphorus? $2.3/31 = 0.074$ moles													
6)	How many grams are in 11.9 moles of chromium? $11.9 \times 52 = 618.8$ grams													
7)	How many moles are in 9.8 grams of calcium? $9.8/40 = 0.25$ moles													
8)	How many grams are in 238 moles of arsenic? $238 \times 75 = 17,850$ grams													
9)	How many grams are in 4.5 moles of sodium fluoride, NaF? $4.5 \times 42 = 189$ grams													
10)	How many moles are in 98.3 grams of aluminum hydroxide, $Al(OH)_3$? 98.3/78 = 1.26 moles													
11)	How many grams are in 0.02 moles of beryllium iodide, BeI_2 ? 0.02 x 263 = 5.26 grams													
12)	How many moles are in 68 grams of co	pper (II)) hydroxi	de,	, Cı	u(OH)2? 6	58/99	=	0.69) mo	oles		
13)	How many grams are in 3.3 moles of po	otassium	sulfide,	K ₂	S?	3.3 x	x 110	=	363.0) gra	ms			
14)	How many moles are in 1.2×10^3 grams	s of amn	nonia, NI	H ₃ ʻ	? 1	.2 x 1	$0^3 x$	17	= 7	0.59	mo	les		
15)	How many grams are in 2.3 x 10^{-4} mole	s of calc	cium pho	spl	hate	e, Ca ₃	(PO ₃) ₂ ? 2	2.3x1	0 ⁻⁴ x	278	3 = 0 .	.064 g	rams
16)	How many moles are in 3.4×10^{-7} gram	s of silic	con dioxi	ide	, Si	$O_2?$	3.4 x1	l 0 -7 /	60	= 6.(00 x	(10⁻⁹)	moles	5
17)	How many grams are in 1.11 moles of i	nangane	ese sulfat	e, l	Mn	3(SO	ı) ₇ ?	1.11 :	x 83	57	= 9)29.07	/ grar	ns