

ATOMIC CHART 1 WORKSHEET

	Symbol	Name	Atomic #	Mass #	# of protons	# of neutrons	# of electrons
1.)		calcium - 40					
2.)	$^{201}_{80}\text{Hg}$						
3.)			53	127			
4.)					19	20	
5.)				40		22	
6.)	$^{207}_{82}\text{Pb}^{+2}$						
7.)		barium - 137					
8.)			14	28			
9.)				19		10	10
10.)			26			30	

ATOMIC CHART 2 WORKSHEET

	Symbol	Name	# of p ⁺	# of n ^o	Atomic #	Mass #	# of e ⁻	Period	Group
1.)	$^{14}\text{N}^{-3}$								
2.)	$^{27}\text{Al}^{+3}$								
3.)			47			108			
4.)				45		80			
5.)					55	134			
6.)				18	17				
7.)			92			238			----
8.)					38	86			
9.)		phosphorus - 31							
10.)	$^{87}\text{Rb}^{+1}$								
11.)						75		4	15
12.)				118				6	11

AVERAGE ATOMIC MASS WORKSHEET

Determine the average atomic mass of the following mixtures of isotopes.

- 1.) 75% ^{133}Cs , 20% ^{132}Cs , and 5% ^{134}Cs

2.) 80% ^{127}I , 17% ^{126}I , 3% ^{128}I

3.) 50% ^{197}Au , 50% ^{198}Au

4.) 15% ^{55}Fe , 85% ^{56}Fe

5.) 99% ^1H , 0.8% ^2H , 0.2% ^3H

6.) 95% ^{14}N , 3% ^{15}N , 2% ^{16}N

7.) 98% ^{12}C , 2% ^{14}C

MOLES AND MOLECULES WORKSHEET

Part 1 - Determine the number of moles in each of the quantities below.

- 1.) 2.50×10^{23} molecules of NaCl
- 2.) 1.25×10^{23} molecules of H_2SO_4
- 3.) 1.00×10^{24} molecules of KMnO_4
- 4.) 7.4×10^{24} molecules of KCl
- 5.) 3.5×10^{25} molecules of CuSO_4

Part 2 - Determine the number of molecules in each of the quantities below.

- 6.) 2.5 moles of NaCl
- 7.) 0.50 moles of H_2SO_4
- 8.) 1.70 moles of KMnO_4
- 9.) 0.25 moles of KCl
- 10.) 3.2 moles of CuSO_4

MOLES AND MASS WORKSHEET

Part 1 - Determine the number of moles in each of the quantities below.

- 1.) 25.0 grams of NaCl
- 2.) 125 grams of H_2SO_4
- 3.) 100. grams of KMnO_4
- 4.) 74.5 grams of KCl
- 5.) 35 grams of CuSO_4

Part 2 - Determine the mass (number of grams) in each of the quantities below.

- 6.) 2.5 moles of NaCl
- 7.) 0.50 moles of H_2SO_4
- 8.) 1.70 moles of KMnO_4
- 9.) 0.25 moles of KCl

10.) 3.2 moles of CuSO_4

PRACTICE WITH MOLE CONVERSIONS WORKSHEET

1. How many moles are equal to 2.548 grams of boron trifluoride, BF_3 ?
2. How many grams are there in 2.45×10^{24} molecules of ammonia, NH_3 ?
3. How many moles are equal to 5.29×10^{23} atoms of carbon?
4. What is the mass (in grams) of 6.759 moles of sodium chloride, NaCl ?
5. How many molecules of H_3PO_4 are contained in 0.257 moles of H_3PO_4 ?
6. How many atoms of copper are equal to 49.5 grams of copper?
7. What is the mass (in grams) of 7.14×10^{23} molecules of $\text{C}_6\text{H}_{12}\text{O}_6$?
8. How many moles are equal to 8.392×10^{23} atoms of uranium?
9. What is the mass (in grams) of 5.685 moles of sodium bicarbonate, NaHCO_3 ?
10. How many molecules are equal to 0.027 moles of calcium carbonate, CaCO_3 ?
11. How many moles are equal to 93.75 grams of sodium sulfate, Na_2SO_4 ?
12. How many molecules are equal to 103.74 grams of lead nitrate, $\text{Pb}(\text{NO}_3)_2$?
- *13. A large piece of aluminum foil has a mass of 35.25 grams. What mass of pure tin would contain the same number of atoms as the aluminum foil?

UNIT 3 REVIEW WORKSHEET

Part 1 - Fill in the blanks

Atoms are made up of electrons, which have a 1 charge; 2, which have a positive charge; and 3, which are neutral. The latter two particles are found in the 4 of the atom.

It was 5 who discovered the nucleus of the atom. The nucleus has a 6 charge and it occupies a very small volume in the atom. In contrast, the negatively-charged 7 occupies most of the volume of the atom.

The number of 8 in the nucleus of the atom is the atomic 9 of that element. Because the atom is electrically neutral, the number of protons and 10 are equal. The sum of the 11 and neutrons is the mass number. Atoms of the same element are identical in most respects, but they can differ in the number of 12 in the nucleus. Atoms that have the same number of protons but different mass numbers are called 13.

The 14 of an element is the weighted average of the masses of the isotopes of that element. Two isotopes of sulfur are ^{32}S and ^{34}S . An atom of the sulfur-32 isotope contains 15 protons and 16 neutrons. The sulfur-34 isotope has 17 protons and 18 neutrons.

Each of the three known isotopes of hydrogen has 19 proton(s) in the nucleus.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____

The most common hydrogen isotope has 20 neutrons. It has a mass number of 21 and is called hydrogen-1.

19. _____
 20. _____
 21. _____

Part 2 - Solve the following problems.

22. Calculate the average atomic mass of oxygen given the percent abundance of each of its naturally-occurring isotopes: oxygen-16 is 99.76%, oxygen-17 is 0.037%, and oxygen-18 is 0.204%.
23. What is the mass of 6.00 moles of aluminum?
24. How many moles contain 8.53×10^{23} atoms of platinum?
25. How many atoms of carbon are in 3.25 moles of carbon?
26. How many moles of SO_2 are in 160.0 grams of SO_2 ?
27. What is the mass of 3.58×10^{24} atoms of nitrogen?
28. How many molecules does 80.0 grams of K_2O contain?

Part 3 - Fill in the following chart.

<u>Name</u>	<u># of e⁻</u>	<u>Atomic #</u>	<u>Mass #</u>	<u># of n^o</u>	<u># of p⁺</u>	<u>Symbol</u>
arsenic - 76						
	25	27	58			
				48	36	
						¹¹ B
			56		25	
				8	6	
		7		7		

MOLES AND MOLECULES WORKSHEET ANSWERS:

- 1.) 0.415 moles 2.) 0.208 moles 3.) 1.66 moles 4.) 12 moles
 5.) 58 moles 6.) 1.5×10^{24} mcs 7.) 3.0×10^{23} mcs 8.) 1.02×10^{24} mcs
 9.) 1.5×10^{23} mcs 10.) 1.9×10^{24} mcs

MOLES AND MASS WORKSHEET ANSWERS:

- | | | | |
|-----------------|----------------|-----------------|-----------------|
| 1.) 0.427 moles | 2.) 1.27 moles | 3.) 0.633 moles | 4.) 0.999 moles |
| 5.) 0.22 moles | 6.) 150 g | 7.) 49 g | 8.) 269 g |
| 9.) 19 g | 10.) 510 g | | |

PRACTICE WITH MOLE CONVERSIONS WORKSHEET ANSWERS:

- | | | | |
|----------------------------------------|-------------------------------------|-------------------|-----------------|
| 1.) 0.03758 moles | 2.) 69.2 grams | 3.) 0.878 moles | 4.) 395.0 grams |
| 5.) 1.55×10^{23} molecules | 6.) 4.69×10^{23} atoms | 7.) 214 grams | 8.) 1.394 moles |
| 9.) 477.6 grams | 10.) 1.6×10^{22} molecules | 11.) 0.6600 moles | |
| 12.) 1.8861×10^{23} molecules | *13.) 155.1 grams | | |

UNIT 3 REVIEW WORKSHEET Answers to # 23 - 28:

- | | | | |
|-----------------|--------------------------------------|----------------------------------|------------------|
| 23.) 162 grams | 24.) 1.42 moles | 25.) 1.96×10^{24} atoms | 26.) 2.497 moles |
| 27.) 83.3 grams | 28.) 5.11×10^{23} molecules | | |

Duncan