## CHEMISTRY 116 - Fall 2021 Dr. Audrey Dell Hammerich Worksheet Week 1 - Chapters 1-2

1. Perform the following operations using the correct number of significant figures:

a) 11.99 + 0.250 (10.95)	7.01600 - 6.941	151.96 - 0.47820 (150.9196)
	1.00088	0. 52180

2. For the following data:

Volume	$3.25 \text{ cm}^3$	$6.22 \text{ cm}^3$	15.45 cm
Mass	14.2 g	26.7 g	66.5 g
Density			

Determine the density for each of the three sets of data, the average density of the data, and its standard deviation.

3. How many cubic millimeters of water are in 135 mL?  $[1.35 \times 10^5]$ 

4. What is the mass of a cube of gold ( $d = 19.32 \text{ g cm}^{-3}$ ) whose side is 0.55 in? (1 in = 2.54 cm) [53 g]

5. A 9.85 g piece of jewelry containing only silver and gold has a volume of 0.675 cm<sup>3</sup>. What is the mass % of gold in the jewelry? Densities of gold and silver are 19.3 g cm<sup>-3</sup> and 10.5 g cm<sup>-3</sup>, respectively. [61.61]

6. If 36 g of water yields 4.0 g of hydrogen, how many kg of hydrogen can be obtained from  $4.35 \times 10^4$  mg of water? [ $4.8 \times 10^{-3}$ ]

symbol	# of protons	# of neutrons	# of electrons	charge
	33	42		3+
$^{128}_{52}$ Te <sup>2-</sup>				
	16	16	16	
	81	123		1+
<sup>195</sup> <sub>78</sub> Pt				

7. Complete the following table:

- 8. What is the general trend in the periodic table (period, group) for
  - a) metals, nonmetals, semimetals
  - b) electronegativity
  - c) number of valence electrons
- 9. Give the formula of a likely compound formed between each of the following pairs:

Li and N	Ga and O	C and Si	As and Cd
Ge and Mg	F and O	Ba and P	Rb and S

10. Circle those of the following which are most likely molecular compounds

SiH <sub>4</sub>	SbBr <sub>3</sub>	AlN	IBr	H <sub>2</sub> Se	CaH <sub>2</sub>	$Cs_2O_2$
Na <sub>3</sub> P	$H_2S$	$SF_6$	$Ni_2S_3$	BCl <sub>3</sub>	CrI <sub>3</sub>	$SnF_2$

11. Complete the following table by predicting the empirical formula of the compound formed by each cation with each anion. Name all cations, anions, and compounds.

	I <sup>-</sup>	$Cr_2O_7^{2-}$	PO <sub>4</sub> <sup>3–</sup>	H_	ClO <sup>-</sup>	NO <sub>2</sub>	S <sup>2–</sup>	HCO <sub>3</sub>
Ag <sup>+</sup>								
Al <sup>3+</sup>								
Fe <sup>2+</sup>								
re								
2								
Ca <sup>2+</sup>								
K <sup>+</sup>								