

CP Chemistry Summer Assignment

Name: _____ Class Period: _____

There are **two** sections for the CP Chemistry summer assignment

Section 1: The following items need to be learned and remembered for the first quiz
This first quiz will be during the 2nd week of classes

1. Read the following link and be able to explain the difference between accuracy and precision and be able to provide an example *Reading link* → [Accuracy vs Precision Reading](#)
 - a. *Reading link* → [Accuracy vs Precision Reading](#)
 - b. <https://flexbooks.ck12.org/cbook/ck-12-middle-school-physical-science-f>
2. Writing scientific notation
3. Learn the element and element symbol for #1-36 (page 3)
4. Name and formula for polyatomic ions and their charges (page 4)
5. Be able to convert units using the metric system conversions
6. Be able to calculate the density using mass and volume ($D = m / V$)
7. Understand significant figures and when to use them in calculations

There is a periodic table on page 3

Section 2: The following practice items will be due the first friday of the first week of classes
These items will be graded for accuracy (*starts on page 4*)

- ★ Please read the following link → [Accuracy vs Precision Reading](#)
- a. <https://flexbooks.ck12.org/cbook/ck-12-middle-school-physical-science-f>

Density: the degree of compactness of a substance

$$D = m / V$$

Density = D (g/L) or (g/cm³)

Mass = m (grams = g)

Volume = V (liter = L or cm³)

The practices can be found following the periodic table

CP Chemistry Summer Assignment

Periodic Table of the Elements

1 hydrogen H 1.00794	2 helium He 4.002602	3 lithium Li 6.941	4 beryllium Be 9.0122	5 boron B 10.811	6 carbon C 12.011	7 nitrogen N 14.007	8 oxygen O 15.999	9 fluorine F 18.998	10 neon Ne 20.180	11 sodium Na 22.990	12 magnesium Mg 24.305	13 aluminum Al 26.982	14 silicon Si 28.086	15 phosphorus P 30.974	16 sulfur S 32.065	17 chlorine Cl 35.453	18 argon Ar 39.948	
19 potassium K 39.098	20 calcium Ca 40.078	21 scandium Sc 44.956	22 titanium Ti 47.867	23 vanadium V 50.942	24 chromium Cr 51.996	25 manganese Mn 54.938	26 iron Fe 55.845	27 cobalt Co 58.933	28 nickel Ni 58.693	29 copper Cu 63.546	30 zinc Zn 65.38	31 gallium Ga 69.723	32 germanium Ge 72.61	33 arsenic As 74.922	34 selenium Se 78.96	35 bromine Br 79.904	36 krypton Kr 83.80	
37 rubidium Rb 85.468	38 strontium Sr 87.62	39 yttrium Y 88.906	40 zirconium Zr 91.224	41 niobium Nb 92.906	42 molybdenum Mo 95.94	43 technetium Tc [98]	44 ruthenium Ru 101.07	45 rhodium Rh 102.91	46 palladium Pd 106.42	47 silver Ag 107.87	48 cadmium Cd 112.41	49 indium In 114.82	50 tin Sn 118.71	51 antimony Sb 121.76	52 tellurium Te 127.60	53 iodine I 126.90	54 xenon Xe 131.29	
55 cesium Cs 132.91	56 barium Ba 137.33	57-70 lanthanoids	71 hafnium Hf 178.49	72 tantalum Ta 180.95	73 tungsten W 183.84	74 rhenium Re 186.21	75 osmium Os 190.23	76 iridium Ir 192.22	77 platinum Pt 195.08	78 gold Au 196.97	79 mercury Hg 200.59	80 thallium Tl 204.38	81 lead Pb 207.2	82 bismuth Bi 208.98	83 polonium Po [209]	84 astatine At [210]	85 astatine At [210]	
87 francium Fr [223]	88 radium Ra [226]	89-102 actinoids	103 thorium Th [232]	104 protactinium Pa [231]	105 uranium U [238.03]	106 neptunium Np [237]	107 plutonium Pu [244]	108 americium Am [243]	109 curium Cm [247]	110 berkelium Bk [247]	111 californium Cf [251]	112 einsteinium Es [252]	113 fermium Fm [257]	114 mendelevium Md [258]	115 nobelium No [259]	116 livermorium Lv [260]	117 tennessine Ts [261]	118 oganesson Og [264]

CP Chemistry Summer Assignment

VSEPR number	Shape (molecular geometry)	Activity Series	Prefix	Selected Polyatomic Ions			
2 2 0	Linear	Li	Mono - 1	H_3O^+	hydronium	CrO_4^{2-}	chromate
3 3 0	Trigonal Planar	K	Di - 2	Hg_2^{2+}	dimercury(I)	$Cr_2O_7^{2-}$	dichromate
3 2 1	Bent	Ba	Tri - 3	NH_4^+	ammonium	MnO_4^-	permanganate
4 4 0	Tetrahedral	Ca	Tetra - 4	$C_2H_3O_2^-$	acetate	NO_2^-	nitrite
4 3 1	Trigonal Pyramidal	Na	Quint - 5	CH_3COO^-	acetate	NO_3^-	nitrate
4 2 2	Bent	Mg	Hexa - 6	CN^-	cyanide	O_2^{2-}	peroxide
5 5 0	Trigonal Bipyramidal	Al	Hepta - 7	CO_3^{2-}	carbonate	OH^-	hydroxide
5 4 1	See Saw	Mn	Octa - 8	HCO_3^-	hydrogen carbonate	PO_4^{3-}	phosphate
5 3 2	T Shape	Zn	Nona - 9	$C_2O_4^{2-}$	oxalate	SCN^-	thiocyanate
5 2 3	Linear	Cr	Deca - 10	ClO^-	hypochlorite	SO_3^{2-}	sulfite
6 6 0	Octahedral	Fe		ClO_2^-	chlorite	SO_4^{2-}	sulfate
6 5 1	Square Pyramidal	Co		ClO_3^-	chlorate	HSO_4^-	hydrogen sulfate
6 4 2	Square Planar	Ni		ClO_4^-	perchlorate	$S_2O_3^{2-}$	thiosulfate
		Sn					
		Pb					
		H ₂					
		Cu					
		Hg					
		Ag					
		Pt					
		Au					

ELEMENT SYMBOLS

Name _____

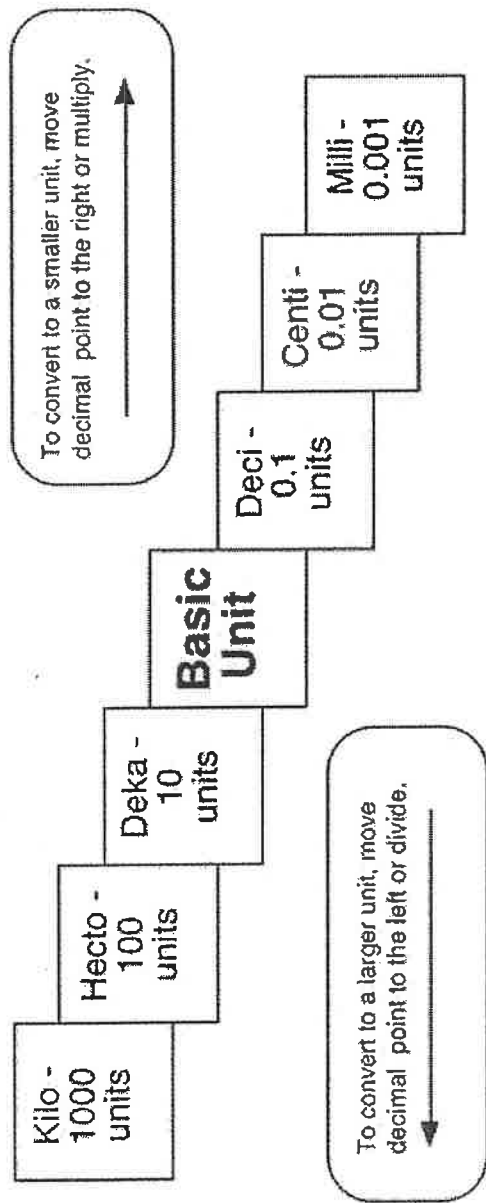
An element symbol can stand for one atom of the element or one mole of atoms of the element. (One mole = 6.02×10^{23} atoms of an element.)

Write the symbol for the following elements.

- | | |
|-------------------|---------------------|
| 1. oxygen _____ | 11. plutonium _____ |
| 2. hydrogen _____ | 12. americium _____ |
| 3. chlorine _____ | 13. radium _____ |
| 4. mercury _____ | 14. germanium _____ |
| 5. fluorine _____ | 15. zinc _____ |
| 6. barium _____ | 16. arsenic _____ |
| 7. helium _____ | 17. lead _____ |
| 8. uranium _____ | 18. iron _____ |
| 9. radon _____ | 19. calcium _____ |
| 10. sulfur _____ | 20. cobalt _____ |

Write the name of the element that corresponds to each of the following symbols.

- | | |
|--------------|--------------|
| 21. Kr _____ | 31. Cu _____ |
| 22. K _____ | 32. Ag _____ |
| 23. C _____ | 33. P _____ |
| 24. Ne _____ | 34. Mn _____ |
| 25. Si _____ | 35. I _____ |
| 26. Zr _____ | 36. Au _____ |
| 27. Sn _____ | 37. Mg _____ |
| 28. Pt _____ | 38. Ni _____ |
| 29. Na _____ | 39. Br _____ |
| 30. Al _____ | 40. Hg _____ |



In addition, you should know the prefix micro- (μ), which means $1/1,000,000$ or 0.000001 , (three times smaller than milli-), for example,

$$5.0 \text{ g} = 5,000,000 \text{ } \mu\text{g}$$

Practice:

1) Write the equivalent measurement: (.5 pt each)

- | | | |
|----------------------------------|----------------------|--|
| a) 5 dm = _____ m | b) 4 mL = _____ L | c) 8 g = _____ mg |
| d) 9 mg = _____ g | e) 2 mL = _____ L | f) 6 kg = _____ g |
| g) 4 cm = _____ m | h) 12 mg = _____ g | i) $6.5 \text{ cm}^3 = \text{_____ L}$ |
| j) 7.02 mL = _____ cm^3 | k) .03 hg = _____ dg | l) 6035 mm = _____ cm |
| m) .32 m = _____ cm | n) 38.2 g = _____ kg | |

Scientific Notation

Convert the following numbers into scientific notation:

- 1) 3,400 _____
- 2) 0.000023 _____
- 3) 101,000 _____
- 4) 0.010 _____
- 5) 45.01 _____
- 6) 1,000,000 _____
- 7) 0.00671 _____
- 8) 4.50 _____

Convert the following numbers into standard notation:

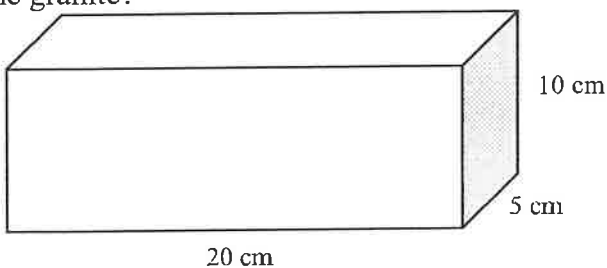
- 9) 2.30×10^4 _____
- 10) 1.76×10^{-3} _____
- 11) 1.901×10^{-7} _____
- 12) 8.65×10^{-1} _____
- 13) 9.11×10^3 _____
- 14) 5.40×10^1 _____
- 15) 1.76×10^0 _____
- 16) 7.4×10^{-5} _____

SCIENCE 8 – DENSITY CALCULATIONS WORKSHEET

NAME: _____

- 1) A student measures the mass of an 8 cm^3 block of brown sugar to be 12.9 g. What is the density of the brown sugar?
- 2) A chef fills a 50 mL container with 43.5 g of cooking oil. What is the density of the oil?
- 3) Calculate the mass of a liquid with a density of 2.5 g/mL and a volume of 15 mL.
- 4) Calculate the volume of a liquid with a density of 5.45 g/mL and a mass of 65 g.
- 5) A machine shop worker records the mass of an aluminum cube as 176 g. If one side of the cube measures 4 cm, what is the density of the aluminum?
- 6) A teacher performing a demonstration finds that a piece of cork displaces 23.5 mL of water. The piece of cork has a mass of 5.7 g. What is the density of the cork?

- 7) A carver begins work on the following block of granite that weighs 2700 g. What is the density of the granite?



- 8) A piece of PVC plumbing pipe displaces 60 mL when placed into a container of water. If the pipe has a mass of 78 g, what is the density of PVC?
- 9) A solid magnesium flare has a mass of 1300 g and a volume of 743 cm^3 . What is the density of the magnesium?

10) A graduated cylinder has a mass of 50 g when empty. When 30 mL of water is added, the graduated cylinder has a mass of 120 g. If a rock is added to the graduated cylinder, the water level rises to 75 mL and the total mass is now 250 g. What is the density of the rock?

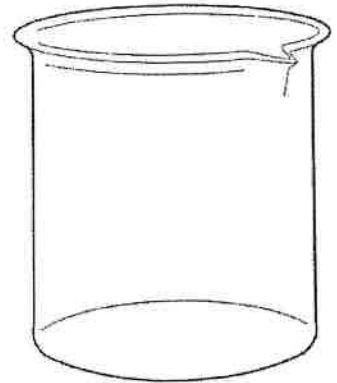
11) A student performs an experiment with three unknown fluids and obtains the following measurements:

Fluid A: $m = 2060$ g, $V = 2000$ mL

Fluid B: $m = 672$ g, $V = 850$ mL

Fluid C: $m = 990$ g, $V = 1100$ mL

Draw how the fluids would be layered if they were combined in a beaker.



12) Use your density skills to find the identity of the following mystery objects.

Table of Densities			
Solids	Density g/cm^3	Solids	Density g/cm^3
Marble	2.56	Copper	8.92
Quartz	2.64	Gold	19.32
Diamond	3.52	Platinum	21.4



While digging in the backyard, you find an old coin. Its mass is 26.76 g and its volume is 3 cm.

What is the coin made of? _____



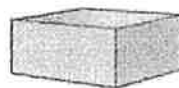
You think you have found a diamond. Its mass is 5.28 g and its volume is 2 cm^3 .

What did you find? _____



You find a ring with a mass of 107 g. You fill a graduated cylinder up with 10 mL of water and put the ring into the cylinder. The water rises up to the 15 mL mark.

What is the ring made of? _____



There is a block on your desk that acts as a paperweight. Its measurements are 3 cm by 4 cm by 6 cm. The block has a mass of 184.32 g.

What is the block made of? _____

