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/cm^3)
Mass = m (grams = g)
Volume = V (liter = L or gm^3)

The practices can be found following the periodic table

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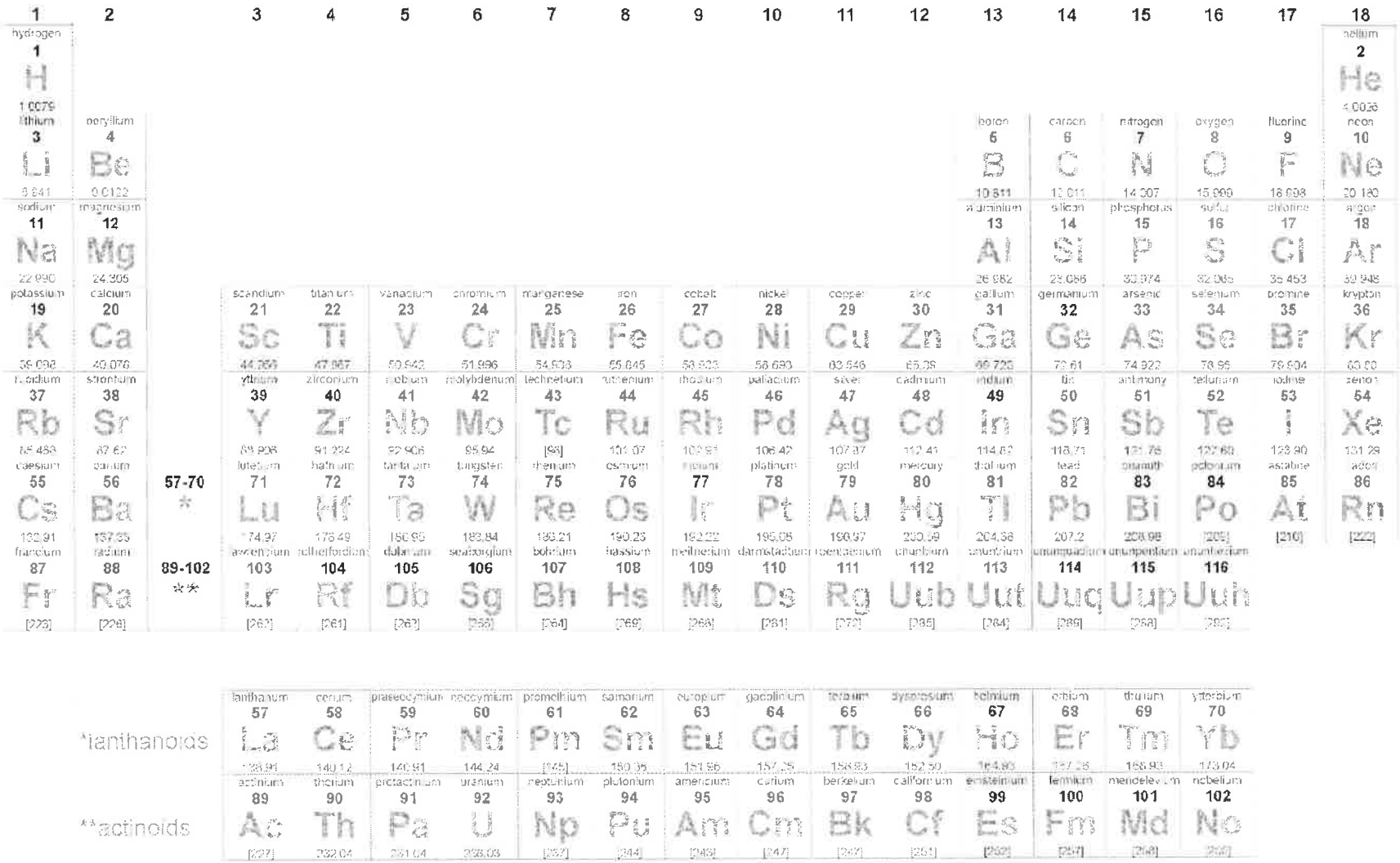
Periodic Table of the Elements



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VSEPR number	Shape (molecular geometry)
2 2 0	Linear
3 3 0	Trigonal Planar
3 2 1	Bent
4 4 0	Tetrahedral
4 3 1	Trigonal Pyramidal
4 2 2	Bent
5 5 0	Trigonal Bipyramidal
5 4 1	See Saw
5 3 2	T Shape
5 2 3	Linear
6 6 0	Octahedral
6 5 1	Square Pyramidal
6 4 2	Square Planar

Activity Series
Li
K
Ba
Ca
Na
Mg
Al
Mn
Zn
Cr
Fe
Co
Ni
Sn
Pb
H_2
Cu
Hg
Ag
Pt
Au

Prefix
Mono – 1
Di – 2
Tri – 3
Tetra – 4
Penta – 5
Hexa – 6
Hepta – 7
Octa – 8
Nona – 9
Deca – 10

Selected Polyatomic Ions			
H_3O^+	hydronium	CrO_4^{2-}	chromate
Hg_2^{2+}	dimercury(I)	$Cr_2O_7^{2-}$	dichromate
NH_4^+	ammonium	MnO_4^-	permanganate
$C_2H_3O_2^-$ CH_3COO^-	acetate	NO_2^-	nitrite
		NO_3^-	nitrate
CN^-	cyanide	O_2^{2-}	peroxide
CO_3^{2-}	carbonate	OH^-	hydroxide
HCO_3^-	hydrogen carbonate	PO_4^{3-}	phosphate
		SCN^-	thiocyanate
$C_2O_4^{2-}$	oxalate	SO_3^{2-}	sulfite
ClO^-	hypochlorite	SO_4^{2-}	sulfate
ClO_2^-	chlorite	HSO_4^-	hydrogen sulfate
ClO_3^-	chlorate	$S_2O_3^{2-}$	thiosulfate
ClO_4^-	perchlorate		

ELEMENT SYMBOLS

Name _____

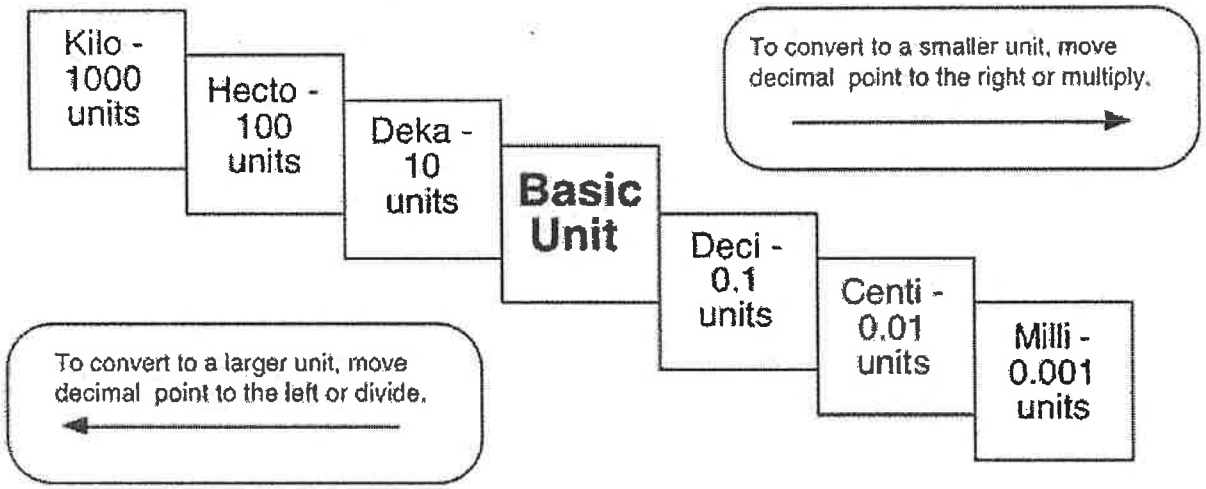
An element symbol can stand for one atom of the element or one mole of atoms of the element. (One mole = 6.02×10^{23} atoms of an element.)

Write the symbol for the following elements.

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

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

21. Kr _____
22. K _____
23. C _____
24. Ne _____
25. Si _____
26. Zr _____
27. Sn _____
28. Pt _____
29. Na _____
30. Al _____
31. Cu _____
32. Ag _____
33. P _____
34. Mn _____
35. I _____
36. Au _____
37. Mg _____
38. Ni _____
39. Br _____
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 g = 5,000,000 μg

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 cm^3 = _____ 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?

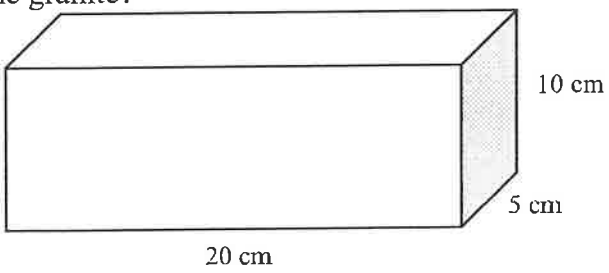
3) Calculate the mass of a liquid with a density of 2.5 g/mL and a volume of 15 mL.

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?

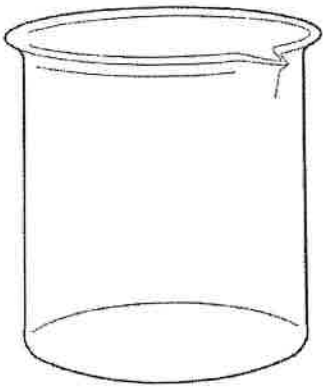
9) A solid magnesium flare has a mass of 1300 g and a volume of 743 cm^3. What is the density of the magnesium?

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.

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

What is the coin made of? _____

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.

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 ring made of? _____

What is the block made of? _____