

Exam #1—100 points

Directions: Answer each question below to the best of your ability. Show all work where calculations are required. An information sheet with a periodic table is attached to the back of the exam; you may remove it if you wish.

1. (10) Complete the table below by providing a symbol for the given element, or the element for the given symbol.

Symbol	Element Name
Mg	
H	
Ba	
Cu	
Fe	
Sn	
Bi	
Pb	
He	

Element Name	Symbol
oxygen	
mercury	
bromine	
strontium	
nitrogen	
chromium	
zinc	
rubidium	
titanium	

2. (4) Carry out the following calculations. Report your answer with the correct number of significant figures.

$$12.1 + (0.956 \times 14.55) + 2.13 =$$

$$2.53 \times 10^{12} + 1.27 \times 10^{12} - 2.8 \times 10^{-7} - 3.45 \times 10^{-9} =$$

3. (3) What are the states of each of the following elements at room temperature? Answer s for solid, l for liquid, and g for gas.

____ Al

____ Ca

____ Ne

____ Na

____ Hg

____ F

4. Convert each of the following measurements to the indicated units. Express each answer with the correct units and number of significant figures. Show all units in your work! (26 points)

a. 4.52 milliliters to microliters

b. 31.1 centimeters to yards

c. 10.00 years to milliseconds

d. 16.0 quarts per minutes to millimeters per second

e. 9.8 square yards (yd^2) to square decimeters (dm^2)

5. (5) Label each of the following as (a) an element, (b) a compound, (c) a homogeneous mixture, or (d) a heterogeneous mixture.

_____ salt water

_____ air

_____ pure water

_____ pizza

_____ potassium

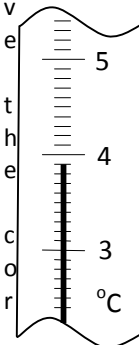
6.

6. Complete the following table. Assume that each atom is neutral unless otherwise indicated. (10 points)

Complete Symbol	Number of Protons	Number of Neutrons	Number of Electrons
^{49}Mn			
	15	16	15
$^{44}\text{Ca}^{2+}$			
<i>For the problem below, assume that this is an ion with 1- charge</i>			
		10	10

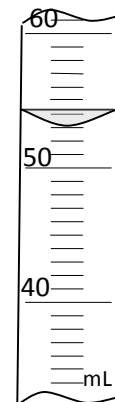
Correct reading (including units) for each piece of equipment shown in the figures. (2 points each)

7. Give the correct



temperature: _____

length of line: _____



volume reading: _____

volume reading: _____

11. (8) The mineral ransomite is 16.73% iron by mass. Ransomite has a density of 2.63 g/cm^3 . How many milligrams of iron are contained in a cube of ransomite measuring 3.00 inches on a side?

12. (6) Lithium has two naturally occurring isotopes. ${}^6\text{Li}$ accounts for 7.59% of all lithium, and has atomic mass 6.01512 amu. ${}^7\text{Li}$, which accounts the rest, has atomic mass 7.01600 amu. What is the atomic mass of lithium? Give your answer to three decimal places.

Conversion Factors :

- 1 pound = 453.6 g 1 amu = 1.661×10^{-24} grams 1 yard = 3 feet
 1 meter = 1.094 yards 1 mile = 1.609 km 1 L = 1.057 quart
 1 gallon = 4 quarts 1 quart = 2 pints 1 cal = 4.184 J

Periodic Table

	1 1A												18 8A					
1	1 H 1.008	2 2A											13 3A	14 4A	15 5A	16 6A	17 7A	18 2 He 4.003
2	3 Li 6.941	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
3	11 Na 22.99	12 Mg 24.31	3 3B	4 4B	5 5B	6 6B	7 7B	8 8B	9 8B	10 8B	11 1B	12 2B	13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95
4	19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.59	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
5	37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
6	55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.8	75 Re 186.2	76 Os 190.2	77 Ir 190.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (209)	85 At (210)	86 Rn (222)
7	87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (263)	105 Db (262)	106 Sg (266)	107 Bh (264)	108 Hs (269)	109 Mt (268)	110 Ds (272)	111 Rg (272)							

58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm (145)	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0
90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)