

Name: CALVIN  
 Date:  
 Hour:

Chem ~ Checkpoint

1) Write as many *polyatomic* ions as possible from memory. (Name, symbol, and charge).  
 Example: Hydroxide OH <sup>-1</sup>

See back of Periodic Table

2) Describe how to find the charge of a monatomic ion using the periodic table. (Describe what its charge is and why)

- a) Sulfide  $S^{2-}$ , gains 2 electrons
- b) Oxide  $O^{2-}$ , gains 2 electrons
- c) Magnesium  $Mg^{2+}$ , loses 2 electrons

3) Use factor-label to determine the speed of your car in *meters per second* if your speedometer reads 55.0 miles per hour. (1 mile = 1.61 km)

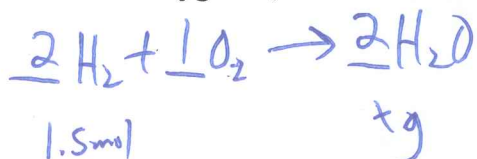
$$\frac{55.0 \text{ miles}}{\cancel{h}} \times \frac{1.61 \cancel{km}}{1 \text{ miles}} \times \frac{1,000 \text{ m}}{1 \cancel{km}} \times \frac{1 \cancel{h}}{60 \cancel{min}} \times \frac{1 \cancel{min}}{60 \cdot 5} = \boxed{24.6 \frac{\text{meters}}{\text{second}}}$$

4) Write three sentences about significant digits. (Which digits count, why are they needed, how many can your answer have if you multiply, etc.)

Exy Sandwich Rule 2002 Trailing zeroes count 4.00  
 Leading zeroes never count 0.0041

5) Find the mass of water vapor that can be produced when 1.5 moles of Hydrogen react with excess Oxygen. (hint start with *balanced equation*). Show work!!

Bonus



$$\frac{1.5 \cancel{\text{mol}} / H_2}{2 \cancel{\text{mol}} / H_2} \times \frac{2 \cancel{\text{mol}} / H_2O}{2 \cancel{\text{mol}} / H_2} \times \frac{18.02 \text{ g } H_2O}{1 \cancel{\text{mol}} / H_2} = \boxed{27 \text{ g } H_2O}$$

6) Classify each type of reaction (synthesis, decomposition, SR, DR, combustion)

a) Hydrogen gas reacts with Oxygen gas to produce water vapor

Synth.

b) Calcium Carbonate is heated to form Carbon dioxide and Calcium Chloride

Decomposition

c) Aluminum foil is dropped into a Copper (II) Chloride solution producing Aluminum Chloride and Copper

SR

7) Use algebra to solve the density equation ( $D=M/V$ ) for:

a)  $D = \frac{M}{V}$

b) M

$D = \frac{M}{V} \Rightarrow M = D \cdot V$

c) V

$D = \frac{M}{V} \Rightarrow V = \frac{M}{D}$

8) What is a mole? Why is it needed?

$6.02 \times 10^{23}$ , atoms are insanely tiny

9) Name the following formulas:

a) MgS Magnesium Sulfide

b) CO<sub>2</sub> Carbon dioxide

c) Pb(CN)<sub>3</sub> Lead(III) Cyanide

d) CaF<sub>2</sub> Calcium Fluoride

10) Write formulas for:

a) Barium Hydroxide



b) Nickel (II) Nitrate



c) Lithium Sulfate



d) Aluminum Oxide



11) Complete the chart:

Element	Protons	Neutrons	Electrons
Li	3	4	3
Ca	20	20	20
Cl	17	18	17
S <sup>-2</sup>	16	16	18
Al <sup>+3</sup>	13	14	10

12) Write four sentences about the atom.

Reas.

13) What is an ion? An isotope?

different # of electrons

different # of neutrons

14) What is valence and why is it important?

Outer electron, gained/lost/or shared

15) Perform using calculator, box in answer with SIG DIGS!

a)  $\frac{6.02 \times 10^{23}}{1.25 \times 10^{18}}$

48160

48200

b)  $(35)(20.0)(0.0120)$

8.4

c) 

222	24	76
12	8	51

OR  
4.82 x 10<sup>4</sup>

~~82.70588235~~

80

16) How many of each type of atom?

Ex. H<sub>2</sub>O H ~ 2 O ~ 1

a) Li<sub>3</sub>(PO<sub>4</sub>)

b) 5 Ca(OH)<sub>2</sub>

Li ~ 3 P ~ 1 O ~ 4

Ca ~ 5 O ~ 10 H ~ 10

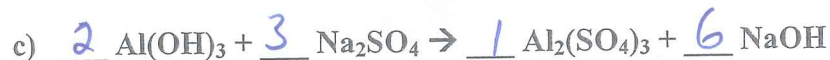
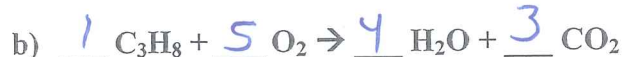
c) 2 (NH<sub>4</sub>)<sub>2</sub>S

d) 6 H<sub>2</sub>O

N ~ 4 H ~ 16 S ~ 2

H ~ 12 O ~ 6

17) Balance:



18) Find the molar mass of:

a) Water



18.02 g/mol

b) Carbon dioxide



44.01 g/mol

c) C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>

180.18 g/mol

19) List the SEVEN diatomic molecules



20) To convert from Celsius to Kelvin add 273.

Go Vikings!!