**4.1 – Balancing Equations Answer Sheet**

1. 2 Cr + 3 Cl2  🡪 2 CrCl3

2. Na2O + PbCl2 🡪 2 NaCl + PbO

3. 2 NH3 + 3 HgO 🡪 3 H2O + 3 Hg + N2

4. 2 C2H6 + 7 O2 🡪 4 CO2 🡪 6 H2O

5. 2 Ba + O2  🡪 2 BaO

6. CaCl2 + 2 KNO3  🡪 Ca(NO3)2 + 2 KCl

7. CaCN2 + 3 H2O 🡪 CaCO3 + 2 NH3

8. 2 Al + 3 FeO 🡪 Al2O3  + 3 Fe

**4.2 – Molar Mass and Grams to Moles**

1. A) 58 g/mol

B) 72 g/mol

C) 164 g/mol

2. moles = 24.0 ~~g~~ x (1 m/65.4 ~~g~~) = 0.37 moles

3. moles = 150 ~~g~~ x (1 m/72 ~~g~~) = 2.08 moles

4. moles = 100 ~~g~~ x (1 m/331 ~~g~~) = 0.3 moles

5. grams = 2.32 ~~m~~ x ( 12 g/1 ~~m~~) = 27.9 g

6. grams = 1.5 ~~m~~ x (224 g/1 ~~m~~) = 336.0 g

7. 54.5 g

**4.3 – Molarity and Grams to Moles**

1. 1 M

2. 8.62 M

3. 3.37; yes the solution would kill them

4. 49.5 g

5. 3.52 M

6. 8.04 moles

**4.4 – Particles to Moles Practice**

1. atoms = 120 ~~g~~ x (6 x 1023 atoms/24.3 ~~g~~) = 3.0 x 1024 atoms

2. moles = 1.6 x 1021 ~~molecules~~ x ( 1 mole/6 x 1023 ~~molecules~~) = 2.7 x 10-3 moles

3. moles = 1.6 x 1021 ~~molecules~~ x ( 1 mole/6 x 1023 ~~molecules~~) = 2.7 x 10-3 m.

4. 138 x 1023 particles

5. 0.5 moles

6. First you need to balance the equation:

H2SO4 + 2NaOH 🡪 2H2O + Na2SO4

18 x 1023 particles of H2SO4

**4.5 – District 4 Extra Practice**

1. M = (14.5 M)(3.8 L) = 55.1 moles

2. M = (2.5 M)(4.5 L) = 11.25 moles

3. g = (0.8 ~~M~~)(0.75 ~~L~~)(138 g/~~m~~) = 82.8 grams

4. g = (4 ~~M~~)(3 ~~L~~)(103 g/~~m~~) = 1,236 grams

5. M = (490 ~~g~~)(1 m/98 ~~g~~) = 5 moles; M = 5 m/6.0 L = 0.83 M.

6. M = (486 ~~g~~)(1 m/74 ~~g~~) = 6.57 moles; M = 6.57 m/3.2 L = 2.1 M

7. M = (250 ~~g~~)(1 m/325.2 ~~g~~) = 0.77 mole; M = 0.77 m/0.65 L = 1.18 molarity.

8. g = (2.0 ~~M~~)(1.5 ~~L~~)(98 g/1 ~~m~~) = 294 grams.

9. M = m/L; L = 18.2 m/3.6 M = 5.1 liters.