Mole Concepts Worksheet

1 mole = $6.02 \times 10^{23}$ particles such as atoms, ions, or molecules

1. How many hydrogen ions (H$^+$) are in a mole? __________________________

2. What is the mass of one mole of H$^+$ ions, in grams? __________________________

3. One mole of lead (Pb) contains __________________________ atoms and its mass is __________________________.

4. How many atoms of carbon and sulfur are needed to make one molecule of carbon disulfide (CS$_2$)?
   C = __________________________ S = __________________________

5. How many atoms of carbon and chlorine are needed to make one molecule of carbon tetrachloride (CCl$_4$)?
   C = __________________________ Cl = __________________________

Molar Mass

1) NaBr __________________________
2) PbSO$_4$ __________________________
3) Ca(OH)$_2$ __________________________
4) Na$_3$PO$_4$ __________________________
5) (NH$_4$)$_2$CO$_3$ __________________________
6) C$_6$H$_{12}$O$_6$ __________________________
7) iron (II) phosphate __________________________
8) ammonium sulfide __________________________
9) Zn(C$_2$H$_3$O$_2$)$_2$ __________________________
10) silver fluoride __________________________
1. How many hydrogen ions (H+) are in a mole? \(6.02 \times 10^{23}\)

2. What is the mass of one mole of H+ ions, in grams? 1.01 g

3. One mole of lead (Pb) contains \(6.02 \times 10^{23}\) atoms and its mass is 207.2 g.

4. How many atoms of carbon and sulfur are needed to make one molecule of carbon disulfide (CS\(_2\))? 1 atom of C and two atoms of S

5. How many moles of carbon atoms and sulfur atoms does it take to make one mol of carbon disulfide (CS\(_2\)) molecules? 1 mol of C and 2 mol of S

6. How many atoms of carbon and chlorine are needed to make one molecule of carbon tetrachloride (CCl\(_4\))? 1 atom of carbon and 4 atoms of chlorine

7. How many moles of carbon atoms and chlorine atoms does it take to make one mol of carbon tetrachloride (CCl\(_4\)) molecules? 1 mol of C and 4 mol of Cl

**Solutions to the Molar Mass Practice Worksheet:**

**Important note to students:** All of the units given here are “grams per mole”, which may be abbreviated as “g/mol”, “grams/mol”, or “g \cdot mol\(^{-1}\)”, depending on how your teacher likes to see it written. They all mean the same thing, but it’s probably a good idea to use whatever your teacher showed you in class. Also, remember that if you don’t use units in your answer, the answer is wrong!

All answers are rounded to the nearest 0.1 grams.

1) 102.9 g/mol  
2) 303.3 g/mol  
3) 74.1 g/mol  
4) 164.0 g/mol  
5) 96.0 g/mol  
6) 180.0 g/mol  
7) 357.4 g/mol  
8) 68.1 g/mol  
9) 183.4 g/mol  
10) 126.9 g/mol