Worksheet on Composition Stoichiometry

Molecular Mass, Formula Mass and Molar Mass
1. Find the molecular mass of CO₂
2. Find the formula mass of Sn(ClO₃)₄
3. Find the mass of one mole of Ca₃P₂
4. Find the molar mass of K₃PO₄
5. Find the molecular mass of BF₃
6. Find the formula mass of BaF₂
7. Find the mass of one mole of MgCl₂
8. Find the molar mass of Sr₃(PO₄)₂
9. Find the molecular mass of Cl₂O₅
10. Find the formula mass of K₂CO₃
11. Find the mass of one mole of Al₂O₃
12. Find the molar mass of (NH₄)₂SO₄
13. Find the molecular mass of SO₃
14. Find the formula mass of NaNO₃
15. Find the mass of one mole of FeN
16. Find the molar mass of P₂O₅
17. Find the molecular mass of Al(PO₃)₃
18. Find the formula mass of Al(CO₃)₃
19. Find the mass of one mole of N₂O₅
20. Find the molar mass of Na₂CrO₄

Moles, Mass and Molecules
1. How many moles are in 25.6 g of CaCl₂?
2. What is the mass of 4.56 moles of K₂SO₄?
3. How many formula units are in 5.7 moles of Ca(NO₃)₂?
4. How many Na ions are in 19.3 moles of Na₂SO₄?
5. How many moles are in 3.4 x 10²⁴ molecules of SnO₂?
6. What is the mass of 8.92 x 10²² formula units of BaCl₂?
7. How many water molecules are in 123.5 g of water (H₂O)?
8. What is the mass of 19.3 moles of Ca₃(PO₄)₂?
9. How many moles are in 234.5 g of methane (CH₄)?
10. What is the mass of Sulfate ions in 3.5 moles of Sn(SO₄)₂?
11. How many moles are in 15.1 g of CaCl₂?
12. What is the mass of 8.23 moles of K₂SO₄?
13. How many formula units are in 9.1 moles of Ca(NO₃)₂?
14. How many Na ions are in 12.7 moles of Na₂SO₄?
15. How many moles are in 8.4 x 10²⁴ molecules of SnO₂?
16. What is the mass of 8.12 x 10²² formula units of BaCl₂?
17. How many water molecules are in 153.5 g of water (H₂O)?
18. What is the mass of 13.3 moles of Ca₃(PO₄)₂?
19. How many moles are in 134.5 g of methane (CH₄)?
20. What is the mass of Sulfate ions in 7.5 moles of Sn(SO₄)₂?

Percent Composition
1. Find the percent composition of BaCl₂
2. Find the percent composition of Ca(NO₂)₂
3. Find the percent composition of SnO₂
4. Find the percent composition of Al₂(SO₄)₃
5. Find the percent composition of MgSO₄
6. Find the percent of Oxygen in P₂O₅
7. Find the percent of Iron in FeSO₄
8. Find the percent of Chlorine in NaCl
9. Find the percent of Oxygen in Fe₂(CO₃)₃
10. Find the percent of Pb in Pb(NO₃)₂
11. Find the percent of water in CuSO₄●5H₂O
12. Find the percent of water in MgSO₄●2H₂O
13. Find the percent of water in NaH₂PO₄●H₂O
14. Find the percent of water in MgBr₂●6H₂O
15. Find the percent of water in Na₂B₄O₇●10H₂O
16. Find the percent of water in Ca(NO₃)₂●4H₂O

**Empirical Formula**
1. Calculate the empirical formula for a compound that is 59.1% Mn and 40.9% F.
2. Calculate the empirical formula for a compound that is 64.1% Cu and 35.9% Cl
3. Calculate the empirical formula for a compound that is 42.6% Sn and 57.4% Br
4. Calculate the empirical formula for a compound that is 61.7% Tl and 38.3 % I
5. Calculate the empirical formula for a compound that is 89.7% Bi and 10.3 % O
6. Calculate the empirical formula for a compound that is 16.8 % C, 33.6% O, and 49.7% Cl
7. Calculate the empirical formula for a compound that is 30.7 % C, 20.5% H, and 41.0% S
8. What is the empirical formula for a compound formed by reacting 0.500 g of nickel in air to give 0.704 g of nickel oxide?
9. What is the empirical formula for a compound formed by reacting 0.500 g of tin with nitric acid to give 0.635 g of tin oxide?

**Molecular Formulas**
1. A compound has an empirical formula of C₉H₈O₄ and a molar mass of 180g. What is its molecular formula?
2. A compound has an empirical formula of C₁₀H₁₂NO and a molar mass of 325g. What is its molecular formula?
3. A compound has an empirical formula of C₃H₅O₂ and a molar mass of 147g. What is its molecular formula?
4. A compound has an empirical formula of C₃H₈N and a molar mass of 115g. What is its molecular formula?
5. Calculate the molecular formula for a compound that is 38.7% C, 9.74 % H and 51.6% O and has a molecular mass of 62 g.
6. Calculate the molecular formula for a compound that is 54.5% C, 9.15 % H and 36.3% O and has a molecular mass of 88 g.
7. Calculate the molecular formula for a compound that is 24.8% C, 2.08% H and 73.16% Cl and has a molecular mass of 290 g.