

## Unit 2: Matter and Moles Review Worksheet

Answer the following on a sheet of notebook paper. You will turn in this assignment at the beginning of class on the day of your test.

**INSTRUCTIONS:** Classify the following as homogeneous or heterogeneous mixtures.

1. Wood
2. Freshly-brewed black coffee
3. Water
4. Dirt
5. Sausage-and-mushroom pizza
6. Air

**INSTRUCTIONS:** Classify each of the following as an element, a compound, or a mixture.

7. Gold
8. Air
9. Water
10. Carbon dioxide
11. Seawater
12. Silver

**INSTRUCTIONS:** Classify each of the following properties of matter as physical or chemical.

13. Color
14. Reacts violently with chlorine
15. Density
16. Good conductor of heat
17. Burns easily (flammable)
18. Dissolves readily in water

**INSTRUCTIONS:** Classify each of the following changes in matter as physical or chemical.

19. Grinding chalk into powder
20. Burning gasoline
21. Dissolving salt in water
22. Hammering gold into foil
23. Dissolving zinc in acid
24. Melting ice

**INSTRUCTIONS:** Classify each of the following as an intensive property or an extensive property .

25. Mass
26. Color
27. Density
28. Volume
29. Melting point
30. Length

**SOLVE THE FOLLOWING MOLAR CONVERSION : SHOW WORK!**

31. How many grams would  $8.1 \times 10^{21}$  molecules of sucrose ( $C_{12}H_{22}O_{11}$ ) weigh?
32. How many oxygen atoms are in 2.5 g of carbon dioxide?
33. How many moles are in 53.8 g of magnesium chloride? ( $MgCl_2$ )
34. How many molecules are in 50.0 g of calcium sulfide? ( $CaS$ )
35. How many atoms are in 2.0 kg gold? (Note mass units.)

**SOLVE THE FOLLOWING PERCENTAGE COMPOSITION AND EMPIRICAL FORMULA PROBLEMS:**

36. Find the percentage composition of each element in sucrose ( $C_{12}H_{22}O_{11}$ ).
37. Find the percentage composition of a sample containing 1.29 g of carbon and 1.71 g of oxygen.
38. The empirical formula of a compound is  $NO_2$ . Its molecular mass is 92 g/mol. What is its molecular formula?
39. A compound is composed of 34.2% sodium, 17.7% carbon, and 47.6% oxygen. Find its empirical formula. If its molecular mass is 134 g/mol, find its molecular formula.