

## **Unit 6: The Mathematics of Chemical Formulas**

Name: \_\_\_\_\_  
*Text Questions from Wilbraham, et. al.*

- 7.2      1. What does a chemical formula show?
- 10.1      2. What does a mole of any substance contain?
3. Why does a mole of carbon dioxide contain three times Avogadro's number of atoms?
4. What is an element's molar mass?
5. What must you know to find the mass of a mole of a compound?
6. What are the two things to do to calculate the molar mass of a compound?
- 10.2      7. You use the molar mass to convert between what two quantities?
8. The conversion factor for the calculation is based on what relationship?
9. What does Avogadro's hypothesis state?
10. For gases, why does a collection of large particles NOT require more space than the same number of smaller particles?
11. The volume of a gas varies with...
12. What does standard temperature and pressure (STP) mean?
13. At STP 1 mole of any gas occupies what volume?
- What is this quantity called?
14. What must you use as an intermediate step when converting from one unit to another?
- 10.3      15. The percent composition is the percent...

16. The percent composition consists of a percent value for...

17. What must these percents total?

18. Write the equation for calculating the % mass of each element in a compound.

19. Does the percent composition of a compound ever change?

20. What does the empirical formula give?

21. Compounds with the same empirical formula can have different...

22. What instrument do chemists use to determine the molar mass of new compounds?

15.2 23. What is a hydrate?

24. In the formula of a hydrate, a dot connects what two things?

25. Why is water easily lost and regained by hydrates?

26. Hydrates with vapor pressures higher than the pressure of water vapor do what?

27. What do hydrated salts that have a low vapor pressure do?

28. What is a desiccant?

29. What can be done when a desiccant has absorbed all the water it can hold?

30. What is a deliquescent compound?