

## Composition of Compounds 2

# How Much Element is in That Compound?

### INFORMATION

**Sucrose** (simple table sugar),  $C_{12}H_{22}O_{11}$ , has a molar weight of 342.3 g/mol.

**Water**,  $H_2O$ , has a molecular weight of 18.015 g/mol.

**Ammonium Nitrate** (a major ingredient in commercial fertilizers),  $NH_4NO_3$ , has a molecular weight of 80.043 g/mol.



### Key Questions

1. What are the percentages of carbon, hydrogen, and oxygen in sucrose?
2. What are the percentages of hydrogen and oxygen in water?
3. What are the percentages of nitrogen, hydrogen, and oxygen in ammonium nitrate?
4. The compound  $X_2C$  is a very hard substance commonly used to coat metal cutting tools to make them sharper and more resilient. Carbon represents 3.2% of the compound. What is the element represented by X?
5. Theorize – why do you think it would be important for a chemist to know how much of a specific element is found in a particular compound?

Student Name: \_\_\_\_\_ Pd. \_\_\_\_\_ Date: \_\_\_\_\_

**Supplementary Exercises**  
**Determining Percent Composition of a Formula**

Determine the masses and percentages of each of the elements contained in the following compounds. For each formula, also provide a name. For each named compound, also provide a formula.

- |                               |                               |
|-------------------------------|-------------------------------|
| 1. acetic acid                | 21. $\text{KClO}_3$           |
| 2. barium dichromate          | 22. $\text{LiI}$              |
| 3. boron fluoride             | 23. $\text{MgS}$              |
| 4. boron trichloride          | 24. $\text{NaCl}$             |
| 5. bromine pentafluoride      | 25. $\text{NaH}_2\text{PO}_4$ |
| 6. $\text{CaBr}_2$            | 26. $\text{NH}_4\text{NO}_3$  |
| 7. chloric acid               | 27. oxygen difluoride         |
| 8. chlorine monoxide          | 28. $\text{P}_2\text{O}_5$    |
| 9. chromium (II) permanganate | 29. $\text{PbO}$              |
| 10. $\text{ClO}_2$            | 30. $\text{PCl}_3$            |
| 11. copper (I) sulfide        | 31. phosphorous trichloride   |
| 12. $\text{CuBr}$             | 32. potassium iodide          |
| 13. disulfur dichloride       | 33. potassium oxide           |
| 14. $\text{Fe}_2\text{S}_3$   | 34. $\text{RbI}$              |
| 15. francium cyanide          | 35. $\text{S}_2\text{Cl}_2$   |
| 16. $\text{H}_3\text{PO}_3$   | 36. $\text{SF}_6$             |
| 17. $\text{HClO}_3$           | 37. sodium hydrogen phosphate |
| 18. $\text{HF}$               | 38. strontium chloride        |
| 19. hydrobromic acid          | 39. sulfur dioxide            |
| 20. iron (III) chloride       | 40. $\text{XeF}_6$            |