

Name \_\_\_\_\_ date \_\_\_\_\_ period \_\_\_\_\_

## Counting Atoms and Balancing Equations

Put your answers on another sheet, and remember to show your work when you need too.

For the following molecules, list the different elements that are present in the molecule.

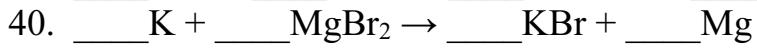
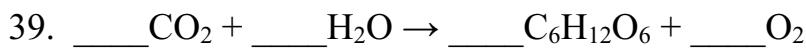
- 1.
2. H<sub>2</sub>O
3. NaCl
4. C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>
5. HeNaClPbTiCoC<sub>3</sub>
6. 2C<sub>8</sub>H<sub>18</sub>
7. C<sub>16</sub>H<sub>10</sub>N<sub>2</sub>O<sub>2</sub>
8. S<sub>8</sub>
9. HHeOC<sub>3</sub>

For the following molecules, list each element symbol; next to each symbol put how many atoms there are of that element, and then total up all the atoms in the molecule.

- 10.
11. H<sub>2</sub>O
12. NaCl
13. C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>
14. HeNaClPbTeI
15. 2C<sub>8</sub>H<sub>18</sub>
16. C<sub>16</sub>H<sub>10</sub>N<sub>2</sub>O
17. HHeOC<sub>3</sub>
18. COPbZnHITi

Balance the following equations. Use a separate sheet of paper to work them out. You must show your work!

19. \_\_\_ Mg + \_\_\_ O<sub>2</sub> → \_\_\_ MgO
20. \_\_\_ H<sub>2</sub>O<sub>2</sub> → \_\_\_ H<sub>2</sub>O + \_\_\_ O<sub>2</sub>
21. \_\_\_ H<sub>2</sub> + \_\_\_ Cl<sub>2</sub> → \_\_\_ HCl
22. \_\_\_ C<sub>8</sub>H<sub>18</sub> + \_\_\_ O<sub>2</sub> → \_\_\_ CO<sub>2</sub> + \_\_\_ H<sub>2</sub>O
23. \_\_\_ CO + \_\_\_ O<sub>2</sub> → \_\_\_ CO<sub>3</sub>
24. \_\_\_ Na + \_\_\_ Cl<sub>2</sub> → \_\_\_ NaCl
25. \_\_\_ CH<sub>4</sub> + \_\_\_ O<sub>2</sub> → \_\_\_ CO<sub>2</sub> + \_\_\_ H<sub>2</sub>O
26. \_\_\_ Pb(NO<sub>3</sub>)<sub>2</sub> + \_\_\_ K<sub>2</sub>CrO<sub>4</sub> → \_\_\_ PbCrO<sub>4</sub> + \_\_\_ KNO<sub>3</sub>
27. \_\_\_ KOH + \_\_\_ HCl → \_\_\_ KCl + \_\_\_ H<sub>2</sub>O
28. \_\_\_ Pb(NO<sub>3</sub>)<sub>2</sub> + \_\_\_ KI → \_\_\_ KNO<sub>3</sub> + \_\_\_ PbI<sub>2</sub>
29. \_\_\_ NaHCO<sub>3</sub> → \_\_\_ H<sub>2</sub>O + \_\_\_ CO<sub>2</sub> + \_\_\_ Na<sub>2</sub>CO<sub>3</sub>
30. \_\_\_ NaCl + \_\_\_ H<sub>2</sub>SO<sub>4</sub> → \_\_\_ Na<sub>2</sub>SO<sub>4</sub> + \_\_\_ HCl
31. \_\_\_ FeS + \_\_\_ HCl → \_\_\_ FeCl<sub>2</sub> + \_\_\_ H<sub>2</sub>S
32. \_\_\_ KI + \_\_\_ Br<sub>2</sub> → \_\_\_ KBr + \_\_\_ I<sub>2</sub>
31. \_\_\_ NaCl + \_\_\_ F<sub>2</sub> → \_\_\_ NaF + \_\_\_ Cl<sub>2</sub>
32. \_\_\_ AgNO<sub>3</sub> + \_\_\_ MgCl<sub>2</sub> → \_\_\_ AgCl + \_\_\_ Mg(NO<sub>3</sub>)<sub>2</sub>
33. \_\_\_ AlBr<sub>3</sub> + \_\_\_ K<sub>2</sub>SO<sub>4</sub> → \_\_\_ KBr + \_\_\_ Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>
34. \_\_\_ Cu<sub>2</sub>O + \_\_\_ NO → \_\_\_ CuO<sub>2</sub> + \_\_\_ N<sub>2</sub>
35. \_\_\_ C<sub>3</sub>H<sub>8</sub> + \_\_\_ O<sub>2</sub> → \_\_\_ CO<sub>2</sub> + \_\_\_ H<sub>2</sub>O
36. \_\_\_ P + \_\_\_ O<sub>2</sub> → \_\_\_ P<sub>2</sub>O<sub>5</sub>
37. \_\_\_ Ag<sub>2</sub>O → \_\_\_ Ag + \_\_\_ O<sub>2</sub>
38. \_\_\_ S<sub>8</sub> + \_\_\_ O<sub>2</sub> → \_\_\_ SO<sub>3</sub>



Convert the names below into formulas in an equation then balance the equation.

42. Aluminum bromide plus chlorine yields aluminum chloride plus bromine.

43. Sodium phosphate + calcium chloride yields calcium phosphate + sodium chloride.

44. Potassium chlorate when heated yields potassium chloride + oxygen gas.

45. Hydrogen plus nitrogen monoxide yields water plus nitrogen.

## Classification of Chemical Reactions

Balance the following equations then classify the reactions below as synthesis, decomposition, single replacement, double replacement, or combustion.

