
ELEMENTS AND THEIR SYMBOLS

Name _____

Write the symbols for the following elements.

- | | | | |
|-------------|-------|----------------|-------|
| 1. oxygen | _____ | 11. magnesium | _____ |
| 2. hydrogen | _____ | 12. manganese | _____ |
| 3. chlorine | _____ | 13. neon | _____ |
| 4. sodium | _____ | 14. bromine | _____ |
| 5. fluorine | _____ | 15. phosphorus | _____ |
| 6. carbon | _____ | 16. silver | _____ |
| 7. helium | _____ | 17. lead | _____ |
| 8. nitrogen | _____ | 18. iron | _____ |
| 9. copper | _____ | 19. calcium | _____ |
| 10. sulfur | _____ | 20. potassium | _____ |
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Write the name of the element that corresponds to each of the following symbols.

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|--------|-------|--------|-------|
| 21. Cu | _____ | 31. Ca | _____ |
| 22. K | _____ | 32. Ag | _____ |
| 23. C | _____ | 33. P | _____ |
| 24. Au | _____ | 34. O | _____ |
| 25. Zn | _____ | 35. I | _____ |
| 26. Pb | _____ | 36. Sn | _____ |
| 27. Fe | _____ | 37. H | _____ |
| 28. Na | _____ | 38. F | _____ |
| 29. S | _____ | 39. Ni | _____ |
| 30. Al | _____ | 40. Hg | _____ |
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NUMBER OF ATOMS IN A FORMULA

Name _____

Determine the number of atoms in the following chemical formulas.

- | | | | |
|--|-------|--|-------|
| 1. NaCl | _____ | 11. Cu(NO ₃) ₂ | _____ |
| 2. H ₂ SO ₄ | _____ | 12. KMnO ₄ | _____ |
| 3. KNO ₃ | _____ | 13. H ₂ O ₂ | _____ |
| 4. CaCl ₂ | _____ | 14. H ₃ PO ₄ | _____ |
| 5. C ₂ H ₆ | _____ | 15. (NH ₄) ₃ PO ₄ | _____ |
| 6. Ba(OH) ₂ | _____ | 16. Fe ₂ O ₃ | _____ |
| 7. NH ₄ Br | _____ | 17. NaC ₂ H ₃ O ₂ | _____ |
| 8. Ca ₃ (PO ₄) ₂ | _____ | 18. Mg(C ₂ H ₃ O ₂) ₂ | _____ |
| 9. Al ₂ (SO ₄) ₃ | _____ | 19. Hg ₂ Cl ₂ | _____ |
| 10. Mg(NO ₃) ₂ | _____ | 20. K ₂ SO ₃ | _____ |
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PARTS OF AN ATOM

Name _____

An atom is made up of protons and neutrons which are in the nucleus, and electrons which are in the electron cloud surrounding the atom.

The atomic number equals the number of protons. The electrons in a neutral atom equal the number of protons. The mass number equals the sum of the protons and neutrons.

The charge indicates the number of electrons that have been lost or gained. A positive charge indicates the number of electrons (which are negatively charged) lost.

A negative charge indicates the number of electrons gained.

This structure can be written as part of a chemical symbol.

Example:

$$\begin{array}{c}
 \text{mass} \\
 \text{number} \\
 \downarrow \\
 12 \\
 \uparrow \\
 6 \\
 \text{atomic} \\
 \text{number}
 \end{array}
 \text{C}^{+4}$$

charge

This carbon ion would have 6 protons, 6 neutrons and 2 electrons.

Complete the following chart.

Element/ Ion	Atomic Number	Mass Number	Charge	Protons	Neutrons	Electrons
${}_{12}^{24}\text{Mg}$						
${}_{19}^{39}\text{K}$						
${}_{11}^{23}\text{Na}^{+1}$						
${}_{9}^{19}\text{F}^{-1}$						
${}_{13}^{27}\text{Al}^{+3}$						
${}_{1}^1\text{H}$						
${}^{24}\text{Mg}^{2+}$						
Ag						
S^{-2}						
${}_{1}^2\text{H}$						
${}^{35}\text{Cl}^{-}$						
Be^{2+}						

GRAM FORMULA MASS

Name _____

Determine the gram formula mass of each of the following compounds.

- | | | | |
|--|-------|--|-------|
| 1. NaCl | _____ | 11. Cu(NO ₃) ₂ | _____ |
| 2. H ₂ SO ₄ | _____ | 12. KMnO ₄ | _____ |
| 3. KNO ₃ | _____ | 13. H ₂ O ₂ | _____ |
| 4. CaCl ₂ | _____ | 14. H ₃ PO ₄ | _____ |
| 5. C ₂ H ₆ | _____ | 15. (NH ₄) ₃ PO ₄ | _____ |
| 6. Ba(OH) ₂ | _____ | 16. Fe ₂ O ₃ | _____ |
| 7. NH ₄ Br | _____ | 17. NaC ₂ H ₃ O ₂ | _____ |
| 8. Ca ₃ (PO ₄) ₂ | _____ | 18. Mg(C ₂ H ₃ O ₂) ₂ | _____ |
| 9. Al ₂ (SO ₄) ₃ | _____ | 19. Hg ₂ Cl ₂ | _____ |
| 10. Mg(NO ₃) ₂ | _____ | 20. K ₂ SO ₃ | _____ |
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PARTS OF THE ATOM

Name _____

Using the Periodic Table of the Elements, determine the number of protons, neutrons and electrons in each of the following atoms. Draw a model of the atom showing the electrons in the proper energy levels.

1. ${}^1_1\text{H}$ _____ protons
 _____ neutrons
 _____ electrons

2. ${}^{12}_6\text{C}$ _____ protons
 _____ neutrons
 _____ electrons

3. ${}^{23}_{11}\text{Na}$ _____ protons
 _____ neutrons
 _____ electrons

4. ${}^{31}_{15}\text{P}$ _____ protons
 _____ neutrons
 _____ electrons

5. ${}^{16}_8\text{O}$ _____ protons
 _____ neutrons
 _____ electrons
