

Counting Atoms Worksheet

Name: _____ Grade: _____

Instructions:

For each chemical formula, answer the following:

1. How many elements are in the formula?
2. How many atoms of each element are there?
3. What is the total number of atoms?
4. How many molecules are shown?

1. $4\text{H}_2\text{SO}_4$

- Elements: _____
- Atoms of each element: _____
- Total atoms: _____
- Molecules: _____

2. Al_2O_3

- Elements: _____
- Atoms of each element: _____
- Total atoms: _____
- Molecules: _____

3. 3NH_3

- Elements: _____
- Atoms of each element: _____
- Total atoms: _____
- Molecules: _____

4. $\text{Ca}(\text{OH})_2$

- Elements: _____
- Atoms of each element: _____
- Total atoms: _____
- Molecules: _____

5. CH_4

- Elements: _____
- Atoms of each element: _____
- Total atoms: _____
- Molecules: _____

6. 2NaCl

- Elements: _____
- Atoms of each element: _____
- Total atoms: _____
- Molecules: _____

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Answer Key

1. $4\text{H}_2\text{SO}_4$

Sulfuric acid contains 3 elements: hydrogen, sulfur, and oxygen. One molecule has 2 hydrogen atoms, 1 sulfur atom, and 4 oxygen atoms. Multiply by 4 (since there are 4 molecules), giving 8 hydrogen, 4 sulfur, and 16 oxygen atoms, for a total of 28 atoms in 4 molecules.

2. Al_2O_3

Aluminum oxide is made of 2 elements: aluminum and oxygen. It contains 2 aluminum atoms and 3 oxygen atoms, adding up to 5 atoms in 1 molecule.

3. 3NH_3

Ammonia includes 2 elements: nitrogen and hydrogen. Since there are 3 molecules, you have 3 nitrogen atoms and 9 hydrogen atoms, totaling 12 atoms in 3 molecules.

4. $\text{Ca}(\text{OH})_2$

This formula contains 3 elements: calcium, oxygen, and hydrogen. It has 1 calcium atom, 2 oxygen atoms, and 2 hydrogen atoms, totaling 5 atoms in 1 molecule.

5. CH_4

Methane has 2 elements: carbon and hydrogen. There is 1 carbon atom and 4 hydrogen atoms, making 5 total atoms in 1 molecule.

6. 2NaCl

This compound has 2 elements: sodium and chlorine. Since there are 2 molecules, there are 2 sodium atoms and 2 chlorine atoms, making 4 total atoms in 2 molecules.