

Balancing Chemical Equations - Practice Worksheet

A companion download to the Cogniks blog post: "Class 10 Science: Chemical Reactions and Equations Explained with Real-Life Examples" - cogniks.com

Instructions

Balance each equation below by adding coefficients in front of formulas - never change a subscript within a formula, since that would change the substance itself. Work them out on paper first, then check the answer key on the next page.

#	Unbalanced Equation
1	$\text{Fe} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$
2	$\text{H}_2 + \text{Cl}_2 \rightarrow \text{HCl}$
3	$\text{Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}$
4	$\text{Al} + \text{O}_2 \rightarrow \text{Al}_2\text{O}_3$
5	$\text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbO} + \text{NO}_2 + \text{O}_2$
6	$\text{Zn} + \text{AgNO}_3 \rightarrow \text{Zn}(\text{NO}_3)_2 + \text{Ag}$
7	$\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \rightarrow \text{AlCl}_3 + \text{BaSO}_4$
8	$\text{KOH} + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$

Answer Key

#	Balanced Equation
1	$3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$
2	$\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
3	$4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$
4	$4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$
5	$2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$
6	$\text{Zn} + 2\text{AgNO}_3 \rightarrow \text{Zn}(\text{NO}_3)_2 + 2\text{Ag}$
7	$3\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4$
8	$2\text{KOH} + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 2\text{H}_2\text{O}$

The Hit-and-Trial Method, in Short

1. Write the skeletal (unbalanced) equation with correct formulas for every reactant and product.
2. Count the atoms of each element on both sides.
3. Start balancing with the element that appears in the fewest formulas, and leave hydrogen and oxygen for last.
4. Adjust coefficients (the numbers in front of formulas) - never the subscripts inside a formula.
5. Recount every atom once you're done, to confirm both sides truly match.

For the reaction types behind these equations, see the companion "Types of Chemical Reactions" quick reference. © Cogniks - cogniks.com