

Balancing chemical equations

Balance the following equations. Remember:

- do not change any formulae
- do not write any ones
- it is okay to write numbers with fractions such as $1\frac{1}{2}$ if that helps
- make sure the number of each element is the same on the right and left of the arrow.

One of these equations is already correctly balanced, so take care!

1. $\text{H}_2 + \text{Cl}_2 \rightarrow \text{HCl}$
2. $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$
3. $\text{C} + \text{CO}_2 \rightarrow \text{CO}$
4. $\text{Cu} + \text{O}_2 \rightarrow \text{CuO}$
5. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
6. $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{NaCl}$
7. $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$
8. $\text{Fe} + \text{Cl}_2 \rightarrow \text{FeCl}_3$
9. $\text{Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}$
10. $\text{Ca} + \text{Cl}_2 \rightarrow \text{CaCl}_2$
11. $\text{CuSO}_4 + \text{NaOH} \rightarrow \text{Cu}(\text{OH})_2 + \text{Na}_2\text{SO}_4$
12. $\text{CH}_4 + \text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{H}_2$
13. $\text{N}_2 + \text{H}_2 \rightleftharpoons \text{NH}_3$
14. $\text{C}_4\text{H}_{10} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
15. $\text{C}_2\text{H}_5\text{OH} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
16. $\text{Na}_2\text{S}_2\text{O}_3 + \text{HCl} \rightarrow \text{NaCl} + \text{S} + \text{SO}_2 + \text{H}_2\text{O}$

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Balancing chemical equations – ANSWERS

Balance the following equations. Remember:

- do not change any formulae
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1. $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
2. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
3. $\text{C} + \text{CO}_2 \rightarrow 2\text{CO}$
4. $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$
5. $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
6. $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$
7. $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$ ($\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \frac{1}{2}\text{O}_2$)
8. $2\text{Fe} + 3\text{Cl}_2 \rightarrow 2\text{FeCl}_3$
9. $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$ ($2\text{Na} + \frac{1}{2}\text{O}_2 \rightarrow \text{Na}_2\text{O}$)
10. $\text{Ca} + \text{Cl}_2 \rightarrow \text{CaCl}_2$ (already balanced!)
11. $\text{CuSO}_4 + 2\text{NaOH} \rightarrow \text{Cu}(\text{OH})_2 + \text{Na}_2\text{SO}_4$
12. $\text{CH}_4 + 2\text{H}_2\text{O} \rightarrow \text{CO}_2 + 4\text{H}_2$
13. $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 3\text{NH}_3$
14. $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$
15. $\text{C}_2\text{H}_5\text{OH} + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 3\text{H}_2\text{O}$
16. $\text{Na}_2\text{S}_2\text{O}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{S} + \text{SO}_2 + \text{H}_2\text{O}$

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7. $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$ ($\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \frac{1}{2}\text{O}_2$)
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