Balancing chemical equations for Class 10

Practice worksheet - Science · Grade 10

Name: _____ Date: _____

Show your working. Answers and explanations follow on a separate page.

Try each task before opening its answer. Give an example or reason, not only a label.

Write an answer and your reason before opening the explanation. Check the reasoning as well as the final answer.

1. How many H atoms are represented by $3H_2O$?

2. May H_2O be changed to H_2O_2 to balance oxygen?

3. Balance $Mg + O_2 \rightarrow MgO$.

4. Balance $N_2 + H_2 \rightarrow NH_3$.

5. Balance $Al + Cl_2 \rightarrow AlCl_3$.

6. Balance $KClO_3 \rightarrow KCl + O_2$.

7. Balance $Zn + HCl \rightarrow ZnCl_2 + H_2$.

8. Balance $CH_4 + O_2 \rightarrow CO_2 + H_2O$.

Practice continued

9. Balance $Na_2CO_3 + HCl \rightarrow NaCl + H_2O + CO_2$.

10. Simplify $4H_2 + 2O_2 \rightarrow 4H_2O$.

11. Is $C + O_2 \rightarrow CO_2$ already balanced?

12. Do equal total atom counts guarantee balance?

13. If one coefficient is 1/2, what must you multiply to remove it?

14. Does balancing prove a reaction is safe to perform?

Answers and explanations

Answer key - Science · Grade 10

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1. 6.

Multiply the coefficient 3 by subscript 2.

2. No.

That changes the substance.

3. $2Mg + O_2 \rightarrow 2MgO$.

Mg: 2 and O: 2 on each side.

4. $N_2 + 3H_2 \rightarrow 2NH_3$.

N: 2 and H: 6 on each side.

5. $2Al + 3Cl_2 \rightarrow 2AlCl_3$.

Al: 2 and Cl: 6 on each side.

6. $2KClO_3 \rightarrow 2KCl + 3O_2$.

K: 2, Cl: 2 and O: 6 each.

7. $Zn + 2HCl \rightarrow ZnCl_2 + H_2$.

Zn: 1, H: 2 and Cl: 2 each.

8. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$.

C: 1, H: 4 and O: 4 each.

9. $Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2$.

Na: 2, C: 1, O: 3, H: 2 and Cl: 2 each.

10. $2H_2 + O_2 \rightarrow 2H_2O$.

Divide every coefficient by 2.

11. Yes.

C: 1 and O: 2 each.

12. No.

Each individual element must match.

13. Every coefficient by 2.

The ratio must remain unchanged.

14. No.

It is a conservation check, not a safety assessment.