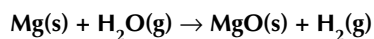


Types of chemical reaction

Scientists classify chemical reactions into different types - such as oxidation and neutralisation.

This exercise provides the equations for a number of chemical reactions.

For each reaction you are given a word equation, and an equation using chemical symbols:



You should try to classify each of the examples given.

- type of reaction
- displacement
- neutralisation
- oxidation
- reduction
- thermal decomposition
- none of the above

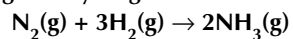
For each reaction tick (✓) the box, or boxes, that describe the type of reaction. Some of the reactions may be examples of more than one type of reaction.

Some of the reactions may only occur when energy is provided (as heat, or as electrical energy), but this is not shown in the questions.

Tick (✓) 'none of the above' if the reaction does not seem to fit any of the suggestions.

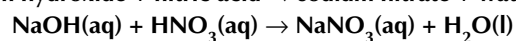
Explain why you have classified the reaction the way you have.

1. **nitrogen + hydrogen → ammonia**



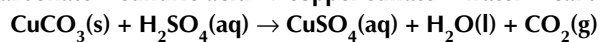
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

2. **sodium hydroxide + nitric acid → sodium nitrate + water**



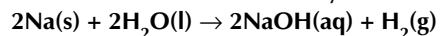
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

3. **copper carbonate + sulfuric acid → copper sulfate + water + carbon dioxide**



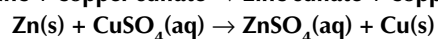
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

4. **sodium + water** → **sodium hydroxide + hydrogen**



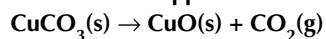
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

5. **zinc + copper sulfate** → **zinc sulfate + copper**



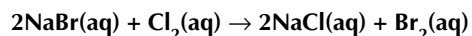
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

6. **copper carbonate** → **copper oxide + carbon dioxide**



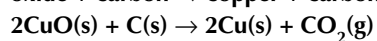
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

7. **sodium bromide + chlorine** → **sodium chloride + bromine**



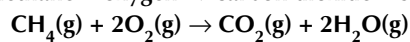
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

8. **copper oxide + carbon** → **copper + carbon dioxide**



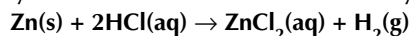
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

9. **methane + oxygen** → **carbon dioxide + steam**



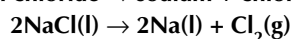
- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

10. **zinc + hydrochloric acid** → **zinc chloride + hydrogen**



- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

11. **sodium chloride** → **sodium + chlorine**

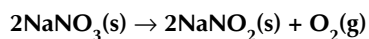


- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____

12. **sodium nitrate** → **sodium nitrite + oxygen**

or

sodium nitrate(V) → **sodium nitrate(III) + oxygen**



- type of reaction I made this classification because:
- displacement _____
- neutralisation _____
- oxidation _____
- reduction _____
- thermal decomposition _____
- none of the above _____