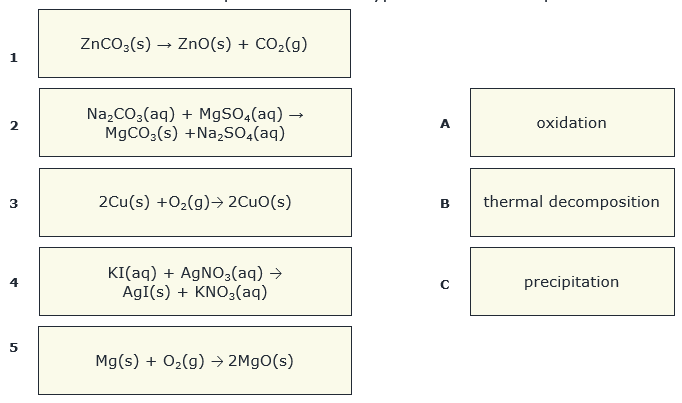
**Categorising reactions**

Match each chemical equation with the type of reaction it represents.



*Chemistry > Big idea CPS: Particles and structure > Topic CPS4: Understanding reactions > Key concept CPS4.1: Understanding reactions*

|  |
| --- |
| **Response activity** |
| **Categorising reactions** |

**Overview**

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| --- | --- |
| Learning objective: | A chemical reaction can be summarised by a chemical equation. |
| Observable learning outcome: | Use a symbolic chemical equation to categorise a reaction as oxidation, decomposition or precipitation. |
| Activity type: | application and practice |
| Key words: | oxidation, decomposition and precipitation |

This activity can help develop students’ understanding by addressing the misunderstandings revealed by the following diagnostic question:

* Reaction type

**What does the research say?**

Johnstone (1991) used a triangle to summarise three levels of representation that he proposed are needed in order to understand chemistry.



*Figure 1 Johnstone’s triangle*

Johnstone (2000) highlights how in chemistry teaching students are often introduced to all three levels of representation simultaneously. Whilst an experienced chemist may be able to manipulate all three, he suggests that this may overload the “working space” (working memory) of school students.

This activity aims to improve students’ confidence interpreting a symbolic representation as well as encouraging students to be aware of which representations they are using in their thinking.

**Ways to use this activity**

This activity gives students the opportunity to practise applying their understanding and to clarify their thinking through discussion. To support this, students should answer the question in pairs or small groups. As well as discussing the reaction types students could be explicitly encouraged to consider what representations they are using in their thinking. Are they translating the symbols, are they picturing the actual reactions, are they thinking of the particles or are they thinking about a combination of all three.

It is important that students understand the three types of reaction so, if necessary, recap these before starting the activity.

*Differentiation*

If some students are initially confused by the chemical equations, you may wish to provide some structured support in how to tackle the question. For example, students could start by looking at the number of substances on each side of the equation or the state symbols.

**Expected answers**

1 B, 2 C, 3A, 4C, 5A

**Acknowledgments**

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Images: None

**References**

Johnstone, A. H. (1991). Why is chemistry difficult to learn? Things are seldom what they seem. *Journal of Computer Assisted Learning,* 7**,** 75-83.

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