

## Writing chemical equations from text

### Education in Chemistry

January 2019

rsc.li/2B8ISRg

**When a chemical reaction is described in an article or text, the reactants and products are often given separately. It is an important skill of a chemist to be able to interpret written text and convert the information given into a chemical equation.**

Consider the description below:

*Clare's teacher burns a piece of magnesium ribbon in oxygen. The reaction generates a bright white light. A white powder is left. The teacher says that this is the compound magnesium oxide, MgO.*

Magnesium and oxygen are the two reactants. The product is magnesium oxide. We can show this using either a word or symbol equation.

**Word equation:** Magnesium + oxygen → magnesium oxide

**Balanced symbol equation:**  $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

For each of the descriptions below taken from the article, write a word and balanced symbol equation.

*Water is also used onboard the ISS to produce oxygen. 'We electrolyse water to split it open to hydrogen and oxygen,' says Laura. 'The oxygen goes into the atmosphere for the crew to breathe.'*

Word equation

.....

Balanced symbol equation

.....

*The hydrogen is then combined with another waste product – carbon dioxide breathed out by the crew – to make methane and water. This is known as the Sabatier reaction.*

Word equation

.....

Balanced symbol equation

.....

*The NASA team is also developing a way to crack open the methane to produce more hydrogen.*

Word equation

.....

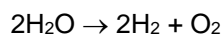
Balanced symbol equation

.....

## Answers

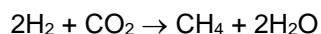
*Water is also used onboard the ISS to produce oxygen. 'We electrolyse water to split it open to hydrogen and oxygen,' says Laura. 'The oxygen goes into the atmosphere for the crew to breathe.'*

water → hydrogen and oxygen



*The hydrogen is then combined with another waste product – carbon dioxide breathed out by the crew – to make methane and water. This is known as the Sabatier reaction.*

hydrogen + carbon dioxide → methane + water



*The NASA team is also developing a way to crack open the methane to produce more hydrogen.*

methane → carbon + hydrogen

