

Topic	Balancing equations	Level	GCSE
Outcomes	1. To understand why we balance chemical equations 2. To work out the relative molecular mass of a substance		

Making water: why do we balance equations?

You are going to observe a reaction where hydrogen reacts with oxygen to produce water. You are then going to look at a balanced and an unbalanced equation for this reaction to help understand why chemists balance equations.

Below is the unbalanced equation for this reaction. We will call this equation 1.



We will now balance this equation. We will call this equation 2.



Substance in equation 1	Formula	Atoms	Relative molecular mass (M_r)	Total mass of substance assuming unbalanced equation (grams)
Hydrogen	H_2	H + H		
Oxygen	O_2	O + O		
Water	H_2O	H + H + O		

Substance in equation 2	Formula	Atoms	Relative molecular mass (M_r)	Total mass of substance assuming balanced equation (grams)
Hydrogen	H_2	H + H		
Oxygen	O_2	O + O		
Water	H_2O	H + H + O		

1. Work out the relative molecular mass of all the substances and complete the tables above.
2. Complete the final column in the table for equation 1 and equation 2.
3. What do you notice about the mass of reactants and the mass of the products for equation 1?
4. What do you notice about the mass of reactants and the mass of the products for equation 2?
5. In your own words can you explain why it is important to balance equations? Think about conservation of mass.

Progress: further resources on amounts of substance are available here <http://www.thescienceteacher.co.uk/moles/>