# Reactions

# 4. Types of Reaction

## CONCEPT 3

## LESSON GUIDE

## CONSERVATION OF MASS

### PRECISE LEARNING POINTS

KNOW

I know what conservation of mass means and can describe it using particle diagrams

APPLY

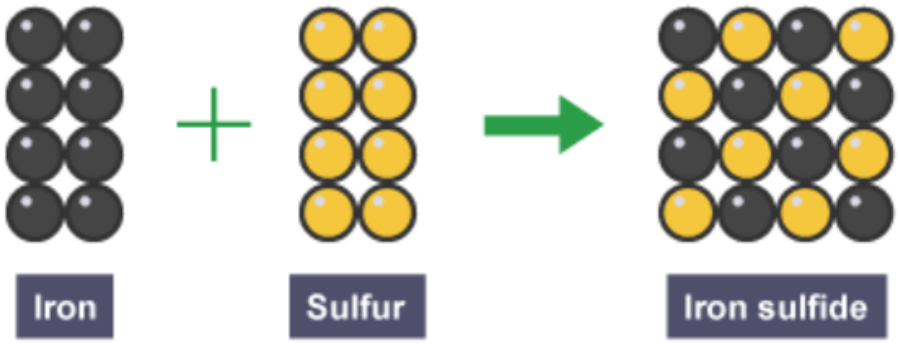
I can apply my knowledge to explain the conservation of mass in physical changes and chemical reactions.

EXTEND

I can extend my knowledge to use data to calculate the mass of reactants and products of chemical reactions.

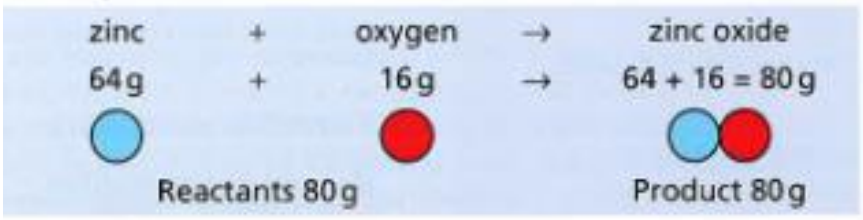
### NOTES

Some changes in chemistry are reversible like melting and freezing, these are named physical changes. A chemical change occurs in chemistry when new products are made that are different to the reactants you started with and they tend to be irreversible. However, no atoms are created or destroyed in a chemical reaction. This means that the total mass of the reactants is the same as the total mass of the products. We say that **mass is conserved** in a chemical reaction. You can see this in the example below;




The two reactants here are Iron and Sulphur, they have chemically combined to make a new product, Iron Sulphide. We know it is a new product as it has different properties to the two reactants. But count the number of atoms in each part of this reaction, what do you notice?

It is the same for reactions that have a physical change. For example, the melting of ice, if you took the bass before and after it melted, the mass would be the same. We call this conservation of mass. The conservation of mass means that mass is never lost or gained in a chemical reaction. Look at this example, that rather than counting the number of atoms it more practically uses mass.




As you can see in this reaction the total mass of reactants, 80g is equal to the total mass of the products, 80g. The mass has been conserved. The change is that the atoms have rearranged themselves. Sometimes it is harder to see the conversation of mass. For example, during thermal decomposition more than one product is made, and one of them being carbon dioxide. Carbon dioxide is a gas that can escape into the air. So if I took the mass of Calcium Carbonate before and after decomposition, the mass would seem less, but in fact it had just been lost to the air.