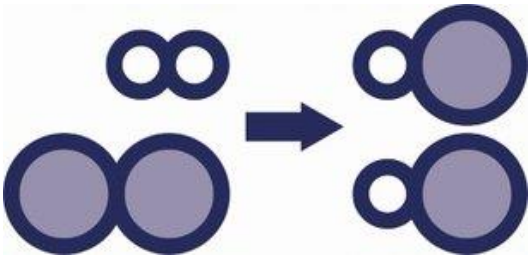
Quantitative Chemistry



What does it mean to have an amount of a substance? How can I use information about different elements and compounds to predict the outcomes of reactions? How could we use this information in industrial processes to calculate how much of a reactant we need to make a certain amount of product?

Quantitative chemistry allows us to do calculations to find out about quantities of substances. This is a very important application of chemistry that is used in industry and research. Using the relative formula mass and number of moles of a substance we can look closely at the amount of reactants and productions in chemical reactions.

This is the **fourth** unit we are studying as part of the big idea: **Reactions Rearrange Matter**

In this unit, we will begin by recapping the ideas of relative atomic mass and relative formula mass, as well as how we can use relative formula mass to determine the percentage by mass of an element in a compound. We will then look at the concept of moles in chemistry and how we can use them in chemical equations to calculate reacting masses and limiting reactants.

We will also review the idea of concentration and learn how to calculate the concentration of different solutions. We will also look at acids, alkalis and neutralisation and the difference between strong and weak acids. Separate science students will also look at titrations of acids and alkalis and the volume of gases.

In this unit, we will revisit some key skills including balancing equations, calculating percentages and substituting into and solving equations.

TASKS:
What subject will this unit focus on? BIOLOGY CHEMISTRY PHYSICS
(circle the correct subject)

There are lots of keywords underlined above. List these into the two columns:

Words I know	Words I haven't seen before

To answer before the unit:

1. What are you most excited to learn about in this topic?

_____

_____

_____

2. What do you already know about this topic?

_____

_____

_____

3. Why do you think it's important to learn how reactions rearrange matter?

_____

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_____

4. What knowledge from previous science lessons might help us?

_____

_____

_____

5. What questions do you have about this topic?

_____

_____

_____

To answer at the end of the unit:

1. Tick off any words in the 'words I haven't seen before' column that you are now confident with. Circle any you still need more practice to use.
2. What have you most enjoyed about this unit?

_____

_____

_____

3. What more would you like to learn about reactions as part of the big idea: 'Reactions Rearrange Matter'?

_____

_____

Teacher guidance:

The purpose of this resource is to provide students with an overview at the beginning and end of each unit. It is designed to create a discussion about the unit prior to the sequence of lessons.

The unit scope should be read as a guided reading activity. Tier 3 vocabulary has been highlighted. It may need to be adapted further for LPAs or pupils with different reading ages.

There are a range of ways to use this resource.

1. Display on a slide for students to read as a class. Direct students to complete the activities in their book.

2. Print off for students to stick into their book at the beginning of the unit along with their knowledge organiser. Complete as a guided reading task together. Direct students to complete the activities.

3. Have students complete as part of a booklet.

4. Set as a homework prior to a unit.

If you have any feedback about how this resource could be used/improved, please contact the science mastery team: sciencemastery@arkonline.org