# Feedback Lesson

| 12<br>**C**<br>carbon<br>6 | 16<br>**O**<br>oxygen<br>8 |
|---|---|

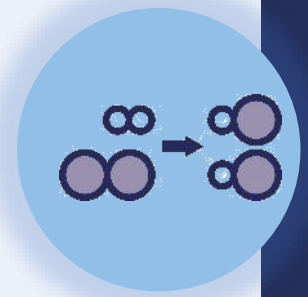
**Answer the questions below.**

1. State the units of volume.
   **Litres (L) or decimetres cubed ($dm^3$)**
2. State what is measured in $g/dm^3$.
   **Concentration**
3. Calculate the relative formula mass of carbon dioxide.
   **12 + (16 x 2) = 44**
4. Copy and complete for these state symbols:

(s) = solid (l) = **liquid** (g) = **gas** (aq) = **aqueous**

5. Write the order of the 4 processes that happen when we make a soluble salt from an insoluble base and an acid.

   **1. Neutralisation reaction**
   **2. Filtration**
   **3. Evaporation**
   **4. Crystallisation**



Do Now

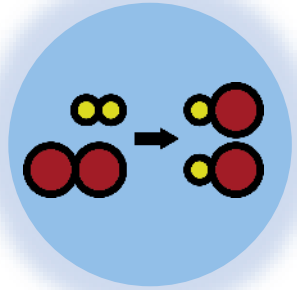
25/05/2022

# Feedback Lesson

## C3.2.12

Science Mastery

C3.2.1 Prior Knowledge Review
C3.2.2 Relative Formula Mass
C3.2.3 Percentage by Mass
C3.2.4 Conservation of Mass
C3.2.5 Balancing Equations
C3.2.6 Uncertainty
C3.2.7 Introducing Concentration
C3.2.8 Concentration Calculations
C3.2.9 Soluble Salts
C3.2.10 Making Soluble Salts
C3.2.11 Making Soluble Salts 2

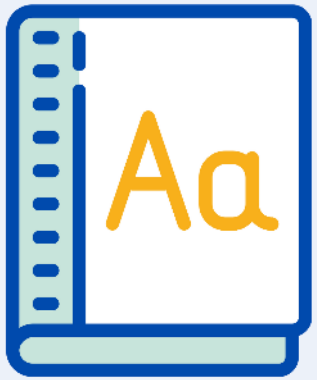


# Lesson Objectives

**Following this lesson, students will be able to:**

- State…
- Describe…
- Explain…

**Key Words:**




concentration

mass

relative formula mass

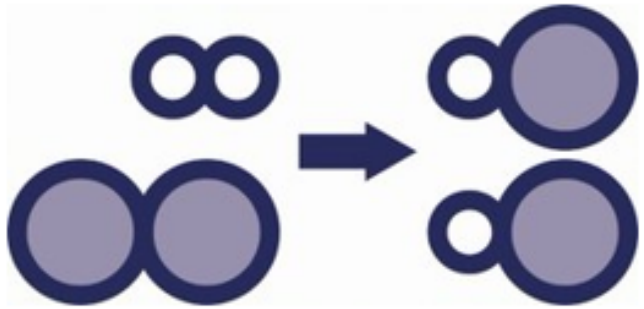
soluble salt

# The Big Idea: Reactions Rearrange Matter

Science Mastery

## Introduction to Quantitative Chemistry

*How do I know the concentration of a solution? What is the law of conservation of mass? How do you calculate the relative formula mass? What is a mole of oxygen? How do you make a soluble salt?*



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, concentration and number of moles we can look closely at the amount of reactants and productions in chemical reactions.

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

In this unit, we will begin by recapping the law of conservation of mass because it means that the mass of products equals the mass of the reactants which is important to remember when doing chemical calculations.

Then we will learn about state symbols and practise using them in symbol equations. Whilst we focus on chemical formulae, we will learn how to calculate the relative formula mass and use this to calculate the mass of reactant or product. Chemical amounts are also

Introduction

# This is the fix-it portion of the lesson

The **fix-it** is an opportunity to respond to gaps in knowledge, especially those identified by the previous lesson's exit ticket.

- The teacher should customise this slide as needed, to facilitate
  - **reteach**, **explanation, demonstration** or **modelling** of ideas and concepts that students have not yet grasped or have misunderstood.
  - **practise** answering specific questions or of key skills.
  - **redrafting** or **improving** previous work.

Fix-it

# Answers

| Question | Answer |
|---|---|
| 1 | A |
| 2 | C |
| 3 | B |
| 4 | B |
| 5 | C |
| 6 | A |
| 7 | A |

| | |
|---|---|
| 8 | B |
| 9 | A |
| 10 | A |
| 11 | C |
| 12 | C |
| 13 | B |
| 14 | B |
| 15 | C |

# Answers

1. Sodium chloride

2. The law of conservation of mass states that no atoms are lost or made during a chemical reaction, so the mass of the products equals the mass of the reactants

3. The interval within which the true value can be expected to lie.

# Answers

4. Method:
1. Add sulfuric acid to a beaker
2. Warm sulfuric acid gently placing the beaker on gauze, tripod and heatproof mat, and use a Bunsen burner
3. Add a small amount of solid magnesium oxide using a spatula
4. Stir using a glass rod
5. Keep adding small amounts of solid magnesium oxide using a spatula until it will no longer dissolve and remains in the beaker. This means the magnesium oxide is in excess.
6. Filter the mixture using a filter paper and funnel to remove excess magnesium oxide
7. Heat the filtrate gently in an evaporating basin until crystals start to form
8. Transfer the solution to a crystallising dish
9. Leave to crystallise for at least 1 day
10. Gently scrape the crystals out of the evaporating dish and pat dry with filter paper

**Answer the questions below.**

1. What is the correct equation for calculating the mass of a substance when given the amount of substance?
   - ☑ A. Mass = amount of substance x Mr
   - ☐ B. Mass = amount of substance ÷ Mr
   - ☐ C. Mass = Mr ÷ amount of substance

2. Choose which is correctly balanced.
   - ☐ A. $NaCl + F_2 \rightarrow NaF + Cl_2$
   - ☐ B. $NaCl + F_2 \rightarrow 2\ NaF + Cl_2$
   - ☑ C. $2\ NaCl + F_2 \rightarrow 2\ NaF + Cl_2$

3. How do you convert $cm^3$ to $dm^3$?
   - ☑ A. Divide by 1000
   - ☐ B. Multiply by 1000
   - ☐ C. Add 1000

Exit ticket

# Feedback

| Lesson C3.2.12 | |
|---|---|
| What was good about this lesson? | What can we do to improve this lesson? |
| | |

Send us your feedback by clicking this link. Thank you!