
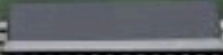




# Chemistry - An Introduction

- 1.1 The Importance of learning Chemistry
  - 1.2 What is Chemistry?
  - 1.3 Solving problems using a scientific approach
  - 1.4 Using scientific thinking to solve a problem
  - 1.5 The Scientific Method
  - 1.6 Learning Chemistry
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## 1.1 Why Study Chemistry?

- Chemistry is an incredibly fascinating field of study. Because it is so fundamental to our world, chemistry plays a role in everyone's lives and touches almost every aspect of our existence in some way.
- Chemistry is essential for meeting our basic needs of food, clothing, shelter, health, energy, and clean air, water, and soil. Chemical technologies enrich our quality of life in numerous ways by providing new solutions to problems in health, materials, and energy usage.
- Knowledge of the nature of chemicals and chemical processes therefore provides insights into a variety of physical and biological phenomena. Knowing something about chemistry is worthwhile because it provides an excellent basis for understanding the physical universe we live in.
- For better or for worse, \_\_\_\_\_ is chemical!

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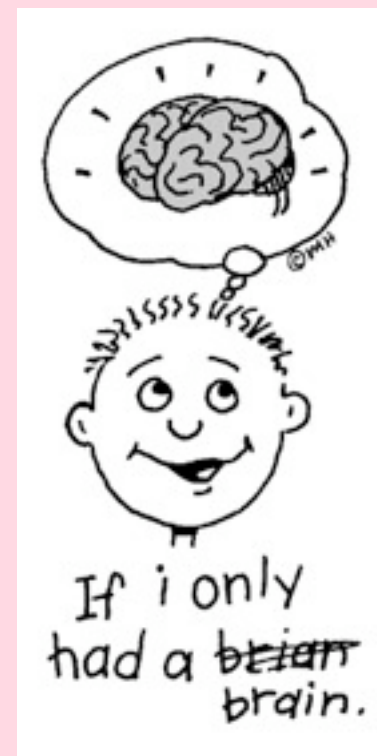
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- Knowledge of the nature of chemicals and chemical processes therefore provides insights into a variety of physical and biological phenomena. Knowing something about chemistry is worthwhile because it provides an excellent basis for understanding the physical universe we live in.
- For better or for worse, **everything** is chemical!

# Need Some Ideas for College?

- Studying chemistry also puts you in an excellent position to choose from a wide variety of useful, interesting and rewarding careers. A person with a bachelor's level education in chemistry is well prepared to move on to professional positions in industry, medicine, education, law or public service.
- A chemistry degree also serves as an excellent foundation for advanced study in a number of related areas. The list of career possibilities for people with training in chemistry is long and varied.

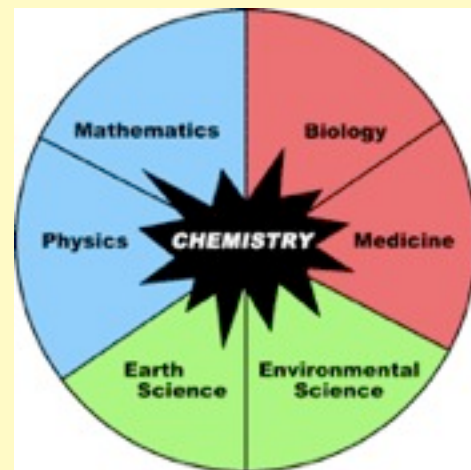
# The Bottom Line?

- While you are *doing* Chemistry you will be learning how to **think**, **problem-solve**, **collect data**, **compare & contrast**, **process objectively**, **reason deductively**, **organize**, **analyze**, **hypothesize**, **summarize**, **draw conclusions**, and then **communicate** and **write clearly** about all of this.
- In other words, its good **brain exercise**.



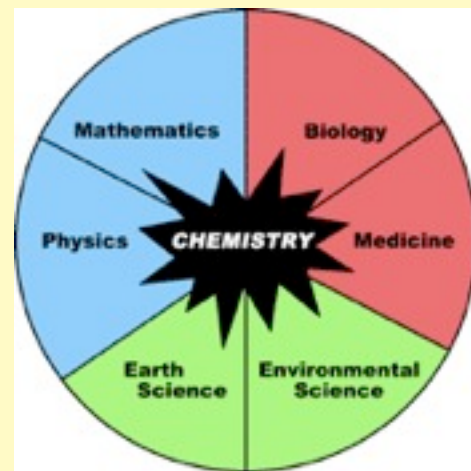
## 1.2 By definition, what exactly is Chemistry?

- It's the science that deals with \_\_\_\_\_ or the materials within the universe, the changes that they undergo and the energy associated with those changes
- Chemistry's sometimes called the “\_\_\_\_\_ Science” because it is a major component of study within other areas of science as well
- Chemists study materials from the inside out, from the \_\_\_\_\_scopic (sub-microscopic) world towards to the macroscopic world to gain a better understanding of the properties of matter.



## 1.2 By definition, what exactly is Chemistry?

- It's the science that deals with **matter** or the materials within the universe, the changes that they undergo and the energy associated with those changes.
- Chemistry's sometimes called the “**Central Science**” because it is a major component of study within other areas of science as well
- Chemists study materials from the inside out, from the **nanoscopic** (sub-microscopic) world towards to the macroscopic world to gain a better understanding of the properties of matter.



## 1.3 - 1.4 The importance of a method for Scientific Thought

There are a few basic thought processes that are used to solve science based problems. In science these processes of thought are known as the \_\_\_\_\_, established by the steps that follow below:

- ✓ Prepare a question based on \_\_\_\_\_
- ✓ Develop a \_\_\_\_\_
- ✓ Perform an \_\_\_\_\_ and \_\_\_\_\_ the data
- ✓ \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ again
- ✓ Summarize by writing a scientific \_\_\_\_\_
- ✓ Explain with a \_\_\_\_\_ or a \_\_\_\_\_
- ✓ \_\_\_\_\_ and test, then \_\_\_\_\_
- ✓ \_\_\_\_\_ the experimental results

## 1.3 - 1.4 The importance of a method of Scientific Thought

There are a few basic thought processes that are used to solve science based problems. In science these processes of thought are known as the **Scientific Method**, established by the steps that follow below:

- ✓ Prepare a question based on **observations**
- ✓ Develop a **hypothesis**
- ✓ Perform an **experiment** and **analyze** the data
- ✓ **Repeat, repeat, and repeat** again
- ✓ Summarize by writing a scientific **Law**
- ✓ Explain with a **theory** or a **model**
- ✓ **Predict** and test, then **modify**
- ✓ **Share** the experimental results

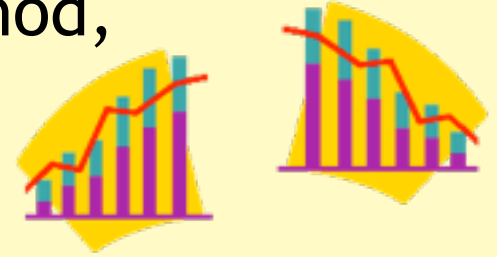
## 1.5 The scientific process: Theories & Laws

- \_\_\_\_\_ are a summary of observations and experiments.
- \_\_\_\_\_ are concepts and ideas that attempt to explain the reason for some natural phenomenon.
- A \_\_\_\_\_ explains \_\_\_\_\_ happens.
- A \_\_\_\_\_ or (model) attempts to explain \_\_\_\_\_ it happens.

## 1.5 The scientific process: Theories & Laws

- **Laws** are a summary of observations and experiments.
- **Theories** are concepts and ideas that attempt to explain the reason for some natural phenomenon.
- A **law** explains **what** happens.
- A **theory** or (model) attempts to explain **why** it happens.

During the processing of the scientific method, scientists will often collect two different forms of data.



Data that is qualitative, which are descriptive traits such as red, smelly, small, smooth, heavy and the like.

Data that is quantitative, which are distinct, measurable, numerical properties, obtained through the use of tools.

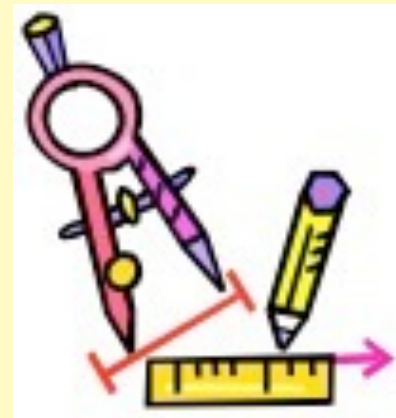
12 g (grams) - mass

5.0 L (liters) - volume

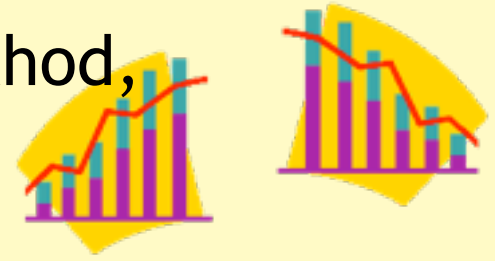
4 m (meters) - length

32°C (Celsius) - temperature

35 s (seconds) - time



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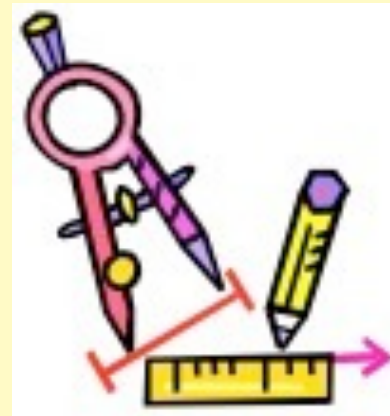
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## 1.6 Are there strategies for learning chemistry?

- *DO YOUR HOMEWORK* - I don't assign it for busy work, I assign it because it will help you be successful.
- **Learn** the vocabulary - Use the key words at the back of each chapter.
- **Understand** the concepts, **don't just memorize** facts. **Look** for patterns.
- **Failure** may be a **success** waiting to happen!
- **Read** the text, Ask questions, email the teacher.
- **Study** your class notes, the notesheets, LAB introductions.
- **Practice** by doing the P sheets.





"Gee, I don't know... I guess if I had to choose between you I'd say that Jerry's formula has the most hideous side effects."