PREFACE

You will find this book interesting: Chemistry concepts presented in a diagrammatic form. Specially written to ease learning and to stimulate interest in Chemistry, this book will help students in acquiring and reinforcing Chemistry concepts, and especially the difficult ones, more easily and effectively.

This book makes learning easier through the following features:

Learning Outcomes
Learning outcomes on the header point out the concepts that you should focus on in the process of learning.

Important Concepts and Key Terms
The important concepts and key terms are presented clearly in simple language. Further explanations linked to the diagrams help you better understand the concepts.

Interesting Visuals
Visual aids such as concept maps, flow charts and annotated diagrams are integrated to make the concepts easier to understand and remember.

Real-life Examples
These examples show real-life application of concepts and explain the inquiries on the phenomena that happen in our everyday lives.

Worked Examples
Step-by-step worked examples help to reinforce your skills in solving problems.

Instant Facts
These are extra information that can help you acquire a more in-depth understanding of the topic under discussion.

This book complements the school curriculum and will certainly help in your preparation for the examinations.

The Editorial Team

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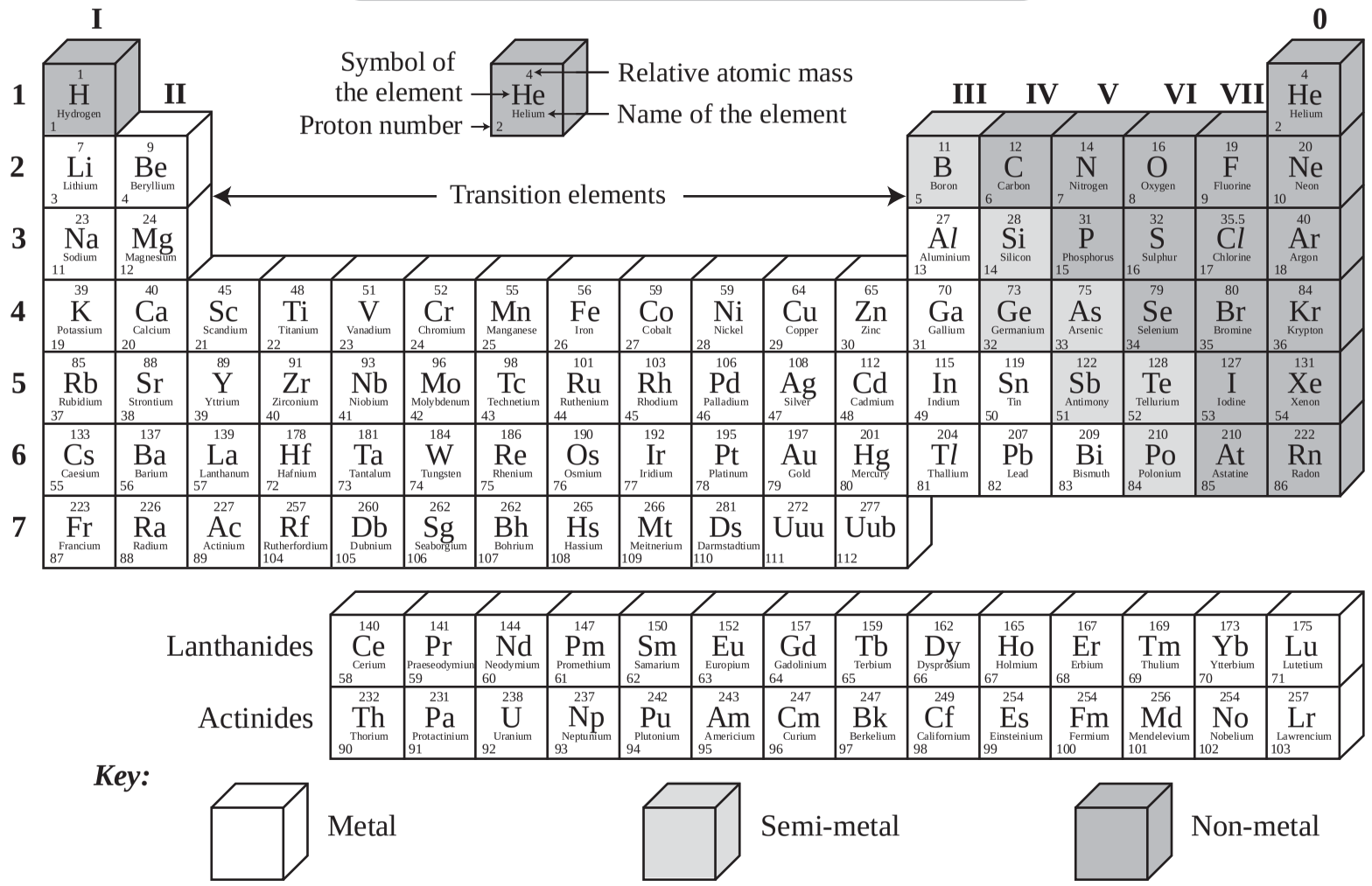
The Periodic Table of Elements



Section 1: Experimental Chemistry

1 INTRODUCTION TO CHEMISTRY

1.1 Understanding Chemistry and Its Importance ■ 2

- What is Chemistry? ■ 2
- Chemistry Related Careers ■ 3
- The Contributions of Chemistry-based Industries ■ 4

1.2 Analysing Scientific Method ■ 5

- Steps Involved in a Scientific Method ■ 5

2 EXPERIMENTAL CHEMISTRY

2.1 Understanding Measurement ■ 7

- Measurement ■ 7

2.2 Describing Methods of Purification and Analysis ■ 8

- Methods of Purification and Analysis ■ 8

What is Chemistry?

Laboratories

Chemicals

The study of the composition, structure, properties and interactions of matter

Chemistry

Common chemicals around us

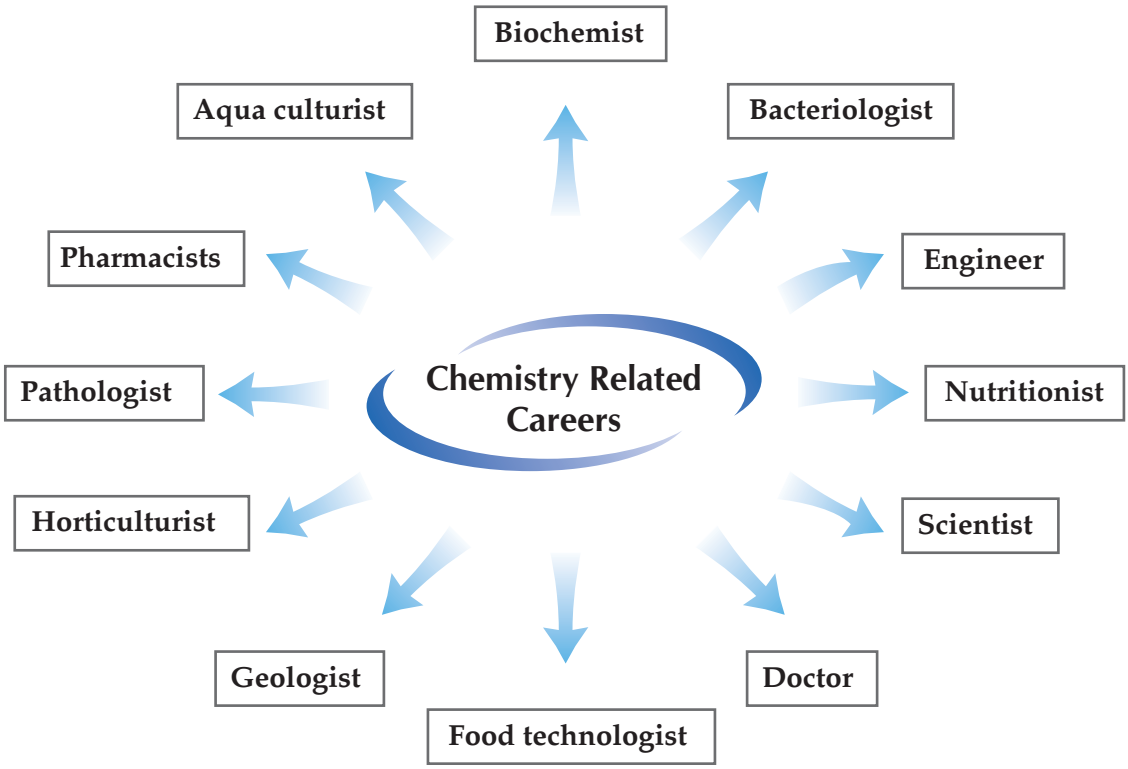
Food

Paper

Medicines

Stones

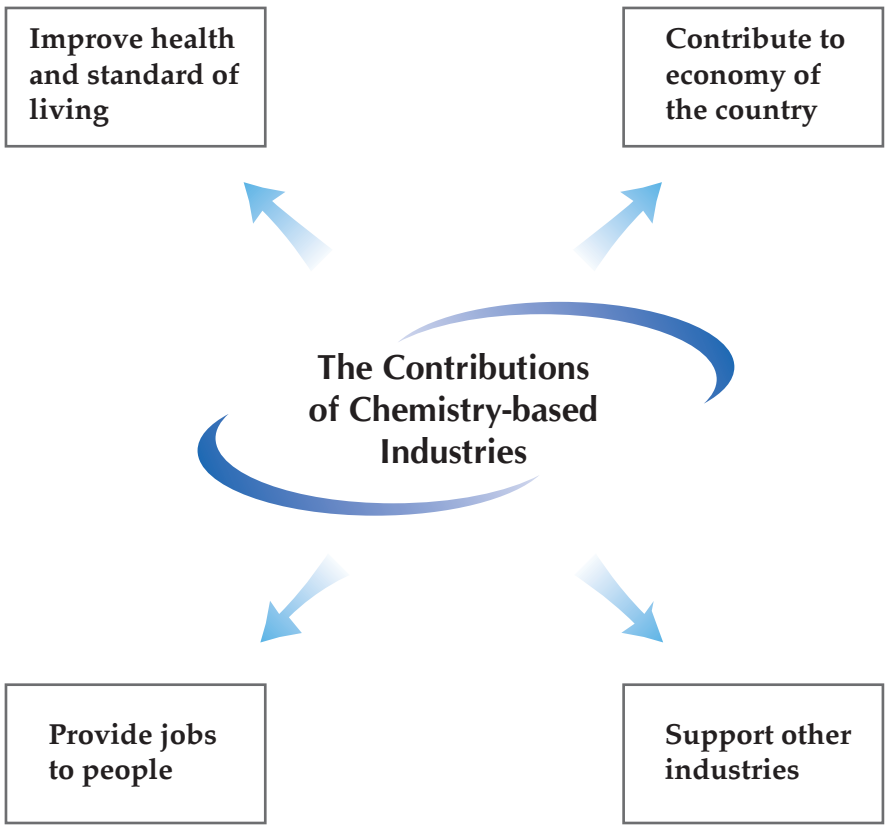
Chemistry Related Careers



INSTANT FACTS

- The chemistry related career that involves the study of growing flowers, fruit or vegetables is horticulturist.
- The chemistry related career that involves the study of the origin, history and structure of Earth is geologist.

The Contributions of Chemistry-based Industries

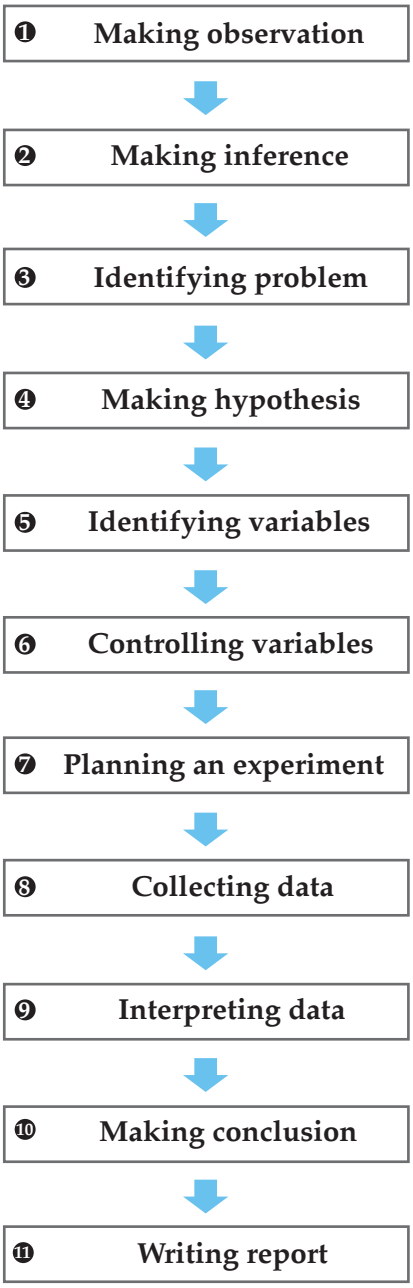


INSTANT FACTS

- Chemical industries play an important role in the development of our country. These industries include steel industries, food industries, water treatment industries and polymer industries.
- The contributions of chemistry-based industries in our country include creating job opportunities, increasing export earning, improving health and standard of living and support other industries.

Steps Involved in a Scientific Method

Scientific method – a systematic approach used by scientists to investigate a phenomenon



❶ **Making observation**
Gather information about a phenomenon by using the five senses

❷ **Making inference**
Make a smart guess or a tentative explanation about a phenomenon based on the observation

❸ **Identifying problem**
Ask questions based on the inference made

❹ **Making hypothesis**
Make a general statement about the relationship between a manipulated variable and responding variable

❺ **Identifying variables**
Identify the manipulated variable, responding variable and fixed variable of an experiment to test the hypothesis made

❻ **Controlling variables**
Decide how to manipulate the chosen variable, what to measure and how to keep the fixed variable constant

❼ **Planning an experiment**
Determine the materials and apparatus to be used, the procedure of the experiment, the method of collecting data and the methods to analyse and interpret the collected data

❽ **Collecting data**
Make observations or measurement and record the data systematically

❾ **Interpreting data**
Organise and analyse data. Do calculations and draw graphs or charts to find any relationship between the variables

❿ **Making conclusion**
Make a statement about the outcome of the experiment and whether the hypothesis is accepted or rejected

⓫ **Writing report**
Communicate the details of the experiment to spread and find a benefit to the findings