

MATERIAL COVERED:

The Science 9 course is divided into five major parts:

- **Processes of Science**
- **Life Science – Reproduction**
- **Physical Science – Atoms, Elements and Compounds**
- **Physical Science – Characteristics of Electricity**
- **Earth and Space Science – Space Exploration**

TEXTBOOK:

The course uses the following text: *BC Science 9* (ISBN 0-07-098451-4, McGraw-Hill Ryerson)

OTHER USEFUL RESOURCES:

- *BC Science 9 Workbook* (ISBN 0-07-098467-0, McGraw-Hill Ryerson)
- *BC Science 9* Website: <http://www.bscience.com/bc9>

COURSE DESIGN:

The course units have been organized by chapters of the textbook so that the content covered in each “unit”, or mastery, test will be one chapter of the book, including the corresponding chapter in the student workbook. This should make it easier for the grade 9 student to master the content before being tested. The cumulative tests, however, will include **all** the material covered in the Units of the textbook (textbook units are three chapters) **and** the related material in the student workbook. **Both the Unit and Cumulative tests may also include information taken from the BC Science 9 website.**

EVALUATION:

This course works on a mastery system. You must pass the mastery tests in each unit to the 80% level before you can go on. In addition, there are cumulative tests after every 3 unit tests. **These are tests you can take only once, so studying before them is essential to doing well.** Your final mark for the course is based 60% on mastery tests and 40% on cumulative tests.

GOAL

The goal of this chapter is to learn about atomic theory and the composition and behaviour of matter.

OBJECTIVES

After completing this unit you will be able to:

- Explain the three states of matter using the kinetic molecular theory
- Identify physical properties of matter
- Describe the development of the atomic theory
- Identify and describe three subatomic particles that make up an atom

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 1**.
- Ask your teacher for the **Unit 1 Worksheets**.
- In the textbook, read **all** of Chapter 1, then once you are done, answer the questions on the Unit Worksheets and in your student workbook. **Be sure to go online** and investigate the information in Chapter 1 of Unit 1 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 37-9.
- When you are ready, ask your teacher for the Unit 1 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to understand that elements are the building blocks of matter.

OBJECTIVES

After completing this unit you will be able to:

- Distinguish between metals, non-metals, and metalloids
- Explain the organization of the periodic table
- Predict the properties of a family of elements in the periodic table
- Compare the characteristics and atomic structures of elements

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 2**.
- Ask your teacher for the **Unit 2 Worksheets**.
- In the textbook, read **all** of Chapter 2, then once you are done, answer the questions in the Unit Worksheets and in your student workbook. **Be sure to go online** and investigate the information in Chapter 2 of Unit 1 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 71-3.
- When you are ready, ask your teacher for the Unit 2 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to understand how elements combine to form compounds.

OBJECTIVES

After completing this unit you will be able to:

- Distinguish between covalent and ionic compounds
- Demonstrate understanding of chemical names and formulas of ionic compounds
- Differentiate between chemical and physical change
- Describe applications of chemical technology

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 3**.
- Ask your teacher for the **Unit 3 Worksheets**.
- In the textbook, read **all** of Chapter 3, then once you are done, answer the questions in the Unit Worksheets and in your student workbook. **Be sure to go online** and investigate the information in Chapter 3 of Unit 1 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 105-7.
- When you are ready, ask your teacher for the Unit 3 Test. Remember, you must get 80% to pass, so studying hard is essential.
- **Reread** the chapters assigned for Units 1-3 and go over your worksheets in preparation for Cumulative Test 1. To check your understanding of this section, you may want to complete the **Unit Summary and Review** beginning on page 108.
- When you are ready, ask your teacher for Cumulative Test #1. **Remember, you may only write this test once**, so you have to study hard to do well on it.

GOAL

The goal of this unit is to learn how the nucleus controls the functions of life.

OBJECTIVES

After completing this unit you will be able to:

- Describe the nucleus and the relationship of the nucleus with other cell parts
- Describe the role of genes in the production of proteins
- Explain how proteins function in a cell
- Describe factors that may lead to changes in a cell's genetic information
- Demonstrate an understanding of how mutations occur

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 4**.
- Ask your teacher for the **Unit 4 Worksheets**.
- In the textbook, read **all** of Chapter 4, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 4 of Unit 2 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 145-7.
- When you are ready, ask your teacher for the Unit 4 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to understand that Mitosis is the basis of asexual reproduction.

OBJECTIVES

After completing this unit you will be able to:

- Demonstrate an understanding of the cell cycle
- Explain what happens to the chromosomes, nucleus, and cell membrane during mitosis
- Relate errors that occur in the cell cycle to the development of cancer
- Compare the advantages and disadvantages of sexual reproduction

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 5**.
- Ask your teacher for the **Unit 5 Worksheets**.
- In the textbook, read **all** of Chapter 5, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 5 of Unit 2 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 183-5.
- When you are ready, ask your teacher for the Unit 5 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to understand that Meiosis is the basis of sexual reproduction.

OBJECTIVES

After completing this unit you will be able to:

- Explain how organisms maintain genetic diversity
- Describe how a zygote forms and develops
- Distinguish the process of mitosis from meiosis
- Explain the role of stem cells in embryonic development

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 6**.
- Ask your teacher for the **Unit 6 Worksheets**.
- In the textbook, read **all** of Chapter 6, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 6 of Unit 2 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 231-3.
- When you are ready, ask your teacher for the Unit 6 Test. Remember, you must get 80% to pass, so studying hard is essential.
- **Reread** the chapters assigned for Units 4-6 and go over your worksheets in preparation for Cumulative Test 2. To check your understanding of this section, you may want to complete the **Unit Summary and Review** beginning on page 234.
- When you are ready, ask your teacher for Cumulative Test #2. **Remember, you may only write this test once**, so you have to study hard to do well on it.

GOAL

The goal of this unit is to understand how static charge is produced by electron transfer.

OBJECTIVES

After completing this unit you will be able to:

- Explain, with illustrations, the transfer of static charges in various materials
- Describe the types of static charges
- State the three laws of static charge
- Explain how the amount of charge and distance of separation affect the force between charges

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 7**.
- Ask your teacher for the **Unit 7 Worksheets**.
- In the textbook, read **all** of Chapter 7, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 7 of Unit 3 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 265-7.
- When you are ready, ask your teacher for the Unit 7 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is learn about Ohm's Law, describing the relationship of current, voltage, and resistance.

OBJECTIVES

After completing this unit you will be able to:

- Explain how electric current results from separation of charge and the movement of electrons
- Apply the laws of static charge to electron flow in a circuit
- Define voltage, current, and resistance
- Draw circuit diagrams using appropriate symbols
- Distinguish between potential and kinetic energy; static electricity and current electricity; and conventional current and electron flow.

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 8**.
- Ask your teacher for the **Unit 8 Worksheets**.
- In the textbook, read **all** of Chapter 8, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 8 of Unit 3 for additional information that may help you with the chapter concepts
- To check your understanding of this unit, you may complete the Chapter Review on page 301-3.
- When you are ready, ask your teacher for the Unit 8 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is understand how circuits are designed to control the transfer of electrical energy.

OBJECTIVES

After completing this unit you will be able to:

- Differentiate between series and parallel circuits in terms of current, voltage, and resistance
- Define electrical energy and power
- Calculate power using voltage and current
- Determine energy consumption given the power rating of a device and duration of use

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 9**.
- Ask your teacher for the **Unit 9 Worksheets**.
- In the textbook, read **all** of Chapter 9, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 9 of Unit 3 for additional information that may help you with the chapter concepts
- To check your understanding of this unit, you may complete the Chapter Review on page 329-31.
- When you are ready, ask your teacher for the Unit 9 Test. Remember, you must get 80% to pass, so studying hard is essential.
- **Reread** the chapters assigned for Units 7-9 and go over your worksheets in preparation for Cumulative Test 3. To check your understanding of this section, you may want to complete the **Unit Summary and Review** beginning on page 332.
- When you are ready, ask your teacher for Cumulative Test #3. **Remember, you may only write this test once**, so you have to study hard to do well on it.

GOAL

The goal of this unit is to look at the scientific evidence suggesting that the universe formed about 13.7 billion years ago.

OBJECTIVES

After completing this unit you will be able to:

- Describe the Big Bang theory of the formation of the universe
- Identify the characteristics of an expanding universe
- Explain how astronomers use technologies to advance our understanding of the universe
- Describe the formation and characteristics of galaxies

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 10**.
- Ask your teacher for the Unit 10 Worksheets.
- In the textbook, read **all** of Chapter 10, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 10 of Unit 4 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 363-365.
- When you are ready, ask your teacher for the Unit 10 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn how the components of the universe are separated by unimaginably vast distances.

OBJECTIVES

After completing this unit you will be able to:

- Distinguish stars based on their different types and characteristics
- Describe the formation and components of the solar system
- Explain the measuring units astronomers have devised to describe the vast distances in space
- Explain how triangulation and parallax are used to measure distance

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 11**.
- Ask your teacher for the Unit 11 Worksheets.
- In the textbook, read **all** of Chapter 11, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 11 of Unit 4 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 405-7.
- When you are ready, ask your teacher for the Unit 11 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to see how human understanding of Earth and the universe continues to increase through observation and exploration.

OBJECTIVES

After completing this unit you will be able to:

- Explain the motion and interrelationships of the Sun-Earth-Moon system
- Describe traditional perspectives of a range of Aboriginal peoples in British Columbia on the nature of bodies in the solar system
- Identify a range of instruments and tools used in astronomy
- Analyze implications and ethical issues associated with space travel and exploration

WHAT TO DO IN THIS UNIT

- This unit uses the textbook *BC Science 9* and the *Student Workbook*, **Chapter 12**.
- Ask your teacher for the Unit 12 Worksheets.
- In the textbook, read **all** of Chapter 12, then once you are done, answer the questions in the Unit Worksheet and in your student workbook. **Be sure to go online** and investigate the information in Chapter 12 of Unit 4 for additional information that may help you with the chapter concepts.
- To check your understanding of this unit, you may complete the Chapter Review on page 449-51.
- When you are ready, ask your teacher for the Unit 12 Test. Remember, you must get 80% to pass, so studying hard is essential.
- **Reread** the chapters assigned for Units 10-12 and go over your worksheets in preparation for Cumulative Test 4. To check your understanding of this section, you may want to complete the **Unit Summary and Review** beginning on page 452.
- When you are ready, ask your teacher for Cumulative Test #4. **Remember, you may only write this test once**, so you have to study hard to do well on it.