

Science 9

Designed to help achieve the outcomes of Saskatchewan's Science 8 course in an individualized learning system, this resource includes nine workbook units, score keys, tests, and test keys. Corresponding experiments and activities are found in the final section of each workbook.

No additional text is required, but schools will need to be prepared with the necessary lab supplies for each workbook activity. **With the appropriate safeguards in place, these activities can be completed in a regular classroom setting.**

Workbook 1: Cell Division and Reproduction

- ❖ Cell Division
 - The Advantage of Microscopes
 - The Cell Cycle
 - Cell Division and Cancer
 - Using a Microscope
- ❖ Asexual Reproduction
 - Types of Asexual Reproduction
 - Asexual Reproduction and Agriculture
- ❖ Sexual Reproduction
 - Types of Sexual Reproduction
 - Sexual Reproduction in Animals
 - Sexual Reproduction in Plants
 - Biological Advantages and Disadvantages of Sexual Reproduction

NOTE:

These workbooks were designed to be used in conjunction with the text, *Saskatchewan Science 9*, Pearson Education Canada, 2009, but also work well on their own.

Workbook 2: Heredity and Genetics

- ❖ Variation, Traits, and Characteristics
 - Heritable and Non-Heritable Characteristics
 - DNA: Skinny Molecule, Big Impact
 - DNA and the Genetic Code
 - Chromosomes
 - Genes
 - Patterns of Inheritance
- ❖ Genetics, Technology, and Society
 - Biotechnology
 - Biotechnology and Society
 - Accidental Changes to DNA
 - Genetic Conditions
 - Canadian and Saskatchewan Contributions to Genetics

Workbook 3: Human Reproduction

- ❖ The Beginning of Human Reproduction
- ❖ Human Development
 - Technology and Reproduction

Workbook 4: Investigating Matter

- ❖ The Chemistry of Fireworks
 - Ancient Views on the Nature of Matter
 - Forms of Matter

- Classifying Matter
- Pure Substances
- Mixtures
- A Practical Use for Mixtures in Saskatchewan
- ❖ The Chemistry of a Campfire
 - Physical Properties of Water
 - Observing Physical Properties
 - Observing Chemical Properties
 - Heat and Chemical Change
 - Controlling Changes to Matter

Workbook 5: Models of Matter

- ❖ Models, Theories, and Laws in Science
 - Models of the Atom
 - Atomic Model Timeline
 - A Summary of the Modern Model of the Atom
 - The Elements We Wear
 - Elements and Their Symbols
 - Some Common Elements
- ❖ Elements and Compounds Everywhere
 - Compounds
 - Two Types of Compounds
- ❖ The Periodic Table of the Elements
 - The Modern Periodic Table
 - Atomic Models Support the Periodic Table

Workbook 6: Characteristics of Electricity

- ❖ Static Electric Charges
 - A Shocking Experience
 - Electrically Charged Particles
 - Electron Affinity
 - Laws of Attraction and Repulsion
 - Electrical Insulators and Conductors
 - The Transfer of Static Electric Charges
 - Detecting Static Electric Charges
 - Charging by Contact
 - Charging by Induction
 - Electrical Discharge
 - Lightning Rods
 - Grounding Static Electric Charges on Vehicles
 - Making Use of Static Electric Charges
- ❖ Voltage, Current, and Resistance
 - Current Electrical Energy
 - Electric Circuits
 - Voltage
 - How Electrons Transfer Energy in a Circuit
 - Current
 - Resistors and Voltage
 - Electrochemical Cells

Workbook 7: Characteristics of Electricity II

- ❖ Series Circuits and Parallel Circuits
 - Tiny Circuits
 - Circuits
 - Two Types of Circuits
 - A Fascination with Electricity
 - Voltage, Current, and Resistance
 - Short Circuits
 - Electrical Safety
- ❖ Renewable and Non-Renewable Energy Resources
 - Local solutions to Generating Electrical Energy
 - Generating Electrical Energy
 - Using Water to Generate Electrical Energy
 - Using Heat to Generate Electrical Energy
 - Other Energy Sources
 - Electrical Energy Production in Canada
 - A Sustainable Choice
 - The Cost of Electrical Energy
 - Calculating Percent Efficiency
 - Comparing Efficiency
 - How Off is Off?

Workbook 8: Exploring Our Universe

- ❖ The View from Earth
 - Using the Sky as a Calendar
 - Using the Sky for Navigation
 - Earth in Motion
 - Earth's Moon
 - Eclipses
 - The Sun
 - The Sun's Effects on Earth
 - The Solar System
- ❖ Other Objects in the Solar System
 - Galaxies are Full of Stars
 - Binary Star Systems
 - Neighbours in the Universe
 - Other Objects in Galaxies

Workbook 9: Exploring Our Universe II

- ❖ An Ever-Faster Expanding Universe
 - The Wave Nature of Light
 - Radiation Maps: More Evidence
 - Explaining Planetary Motion
- ❖ Into the Frontier of Space
 - The Evolution of Astronomers' Tools
 - Telescopes
- ❖ Space Research and Exploration
 - Major Advances in Space Exploration

- Space Transportation Technologies
- Benefits of Space Research
- Communications Technologies
- Tracking Devices
- Remote Sensing and Digital Imaging
- Real-Time Imaging
- Questions About Space Exploration
- Hazards of Travelling in Space
- Challenges of Living in Space
- Microgravity's Effects on the Body
- Reducing the Effects of Microgravity