



Chemistry

GRADE LEVEL:

Elementary level

Scope and Sequence

COURSE OVERVIEW:

Experience the science of fun! In this *Investigate the Possibilities* series the 3rd through 6th grade, elementary chemistry becomes infused with fun through activities and applied learning! This dynamic full-color book provides over 20 great ways to learn about bubbles, water, colors, salt, and the periodic table, all through interactive lessons that ground students in their faith in God. Help tap into the natural curiosity of younger learners with activities utilizing common household items, teaching them why and how things work, what things are made of, and where they came from. You will learn about the physical properties of chemical substances, why adding heat causes most chemical changes to react faster, the scientist who organized a chart of the known elements, the difference between chemical changes and physical changes, and more.

FEATURES:

This title is an integral part of the Investigate the Possibilities Series. Each book includes instructions for 20 hands-on science experiments using simple household items, with additional guidance provided through the teacher's guides. All four titles are available in a discounted package that includes teacher and students books, with subjects covering physical science, chemistry, physics, and earth science.

CONTENT FOCUS:

Chapter 1: The physical side of chemicals

Concepts for discussion:

- How can the physical properties of a chemical substance be used to help identify the substance?

Chapter 2: Strange substances and their properties

Concepts for discussion:

- What are the physical properties of MX and the chemical in baby diapers?

Chapter 3: Chemistry fun with bubbles

Concepts for discussion:

- What are the physical properties of soap bubbles?

Chapter 4: Colors are colors

Concepts for discussion:

- How can you separate the chemicals in colored markers?

Chapter 5: How in the world can you separate a mixture of sand and salt?

Concepts for discussion:

- How can you separate a mixture of sand and salt on the basis of one or more physical properties?

Chapter 6: Water is the standard

Concepts for discussion:

- How do scientists find volume, mass, and density?

Chapter 7: Bending streams of water

Concepts for discussion:

- Are there positively and negatively charged particles in matter?

Chapter 8: Drops of water

Concepts for discussion:

- Why is the shape of a drop of water round?

Chapter 9: Oil and water don't mix

Concepts for discussion:

- Is there a way to make oil and water mix?

Chapter 10: Acids and bases

Concepts for discussion:

- What is the difference between an acid and a base?

Chapter 11: Basically – Is it acid or base?

Concepts for discussion:

- How do different kinds of indicators work?

Chapter 12: Salt – An ordinary substance with extraordinary powers

Concepts for discussion:

- How can you use the Periodic Table to name some common salts and write their formulas?



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Chapter 13: More about the amazing Periodic Table

Concepts for discussion:

- What are some ways the Periodic Table can be used to predict things about the elements?

Chapter 14: Electricity and salt water

Concepts for discussion:

- How is liquid water changed by an electric current passing through it?

Chapter 15: Changes – Are they chemical or physical?

Concepts for discussion:

- What kind of change occurs when sugar is heated for several minutes?

Chapter 16: Clues of a chemical reaction

Concepts for discussion:

- What are some examples of chemical reactions?

Chapter 17: A heavy gas

Concepts for discussion:

- How can we tell that a gas is produced by a reaction between vinegar and baking soda?

Chapter 18: Large or small? Hot or cold?

Concepts for discussion:

- Does particle size affect the rate of reaction time?

Chapter 19: Understanding phase changes

Concepts for discussion:

- What are the differences in a solid, liquid, and gaseous phase?

Chapter 20: The race to evaporate

Concepts for discussion:

- Which substance evaporates the fastest?

HOW TO USE THIS SERIES:

The learning progression recommended for this book is: engage, investigate, explain, apply, expand, and assess. In each lesson, students will be introduced to something that is interesting, they will do an investigation, they will find a scientific explanation for what happened, they will be able to apply this knowledge to other situations and ideas, they will have opportunities to expand what they learned, and there will be multiple assessments.

Think about This (Engage) — Students should make a note of what they know or have experienced about the topic. If this is a new topic, they could write some questions about what they would like to learn.

The Investigative Problem(s) — Students should be sure to read this so they will know what to be looking for during the investigation.

Gather These Things — Having everything ready before starting the investigation will help students be more organized and ready to begin.

Procedures and Observations (Investigate) — Students should first follow the instructions given and make observations of what happens. There will usually be opportunities for students to be more creative later.

The Science Stuff (Explain) — This section will help students understand the science behind what they observed in the investigation. The explanations will make more sense if they do the investigation first.

Making Connections (Apply) — Knowledge becomes more permanent and meaningful when it is related to other situations and ideas.

Dig Deeper (Expand) — This is an opportunity for students to expand what they have learned. Since different students will have different interests, having choices in topics and learning styles is very motivating. All students should aim to complete one “Dig Deeper” project each week, but the teacher may want older students to do more. Generally, students will do at least one project from each lesson, but this is not essential. It is all right for students to do more than one project from one lesson and none from another.

What Did You Learn? (Assessment) — The questions, the investigations, and the projects are all different types of assessments. For “What Did You Learn?” questions, students should first look for answers on their own, but they should be sure to correct answers that might not be accurate.

