

ALPHA SCIENCE



 ALPHA PUBLISHING

Alpha Science

Grade 6-8 Brochure

www.alphapublishing.com

Welcome to Alpha Publishing

Alpha Publishing believes that children and adults have the right to a quality education. Continuous learning is the best means of improving the lives of individuals and enhancing the standards and quality of our communities.

Our mission is to provide educational materials and courses across Africa, Asia, the Middle East and Latin America that meet international standards while also reflecting and incorporating the cultures and traditions of the region.

Our dedicated publishing teams are mindful of the different types of learners who come from various national and cultural backgrounds; therefore, our publishing strategy is driven by the motto: **"We are in the Region, for the Region."** We pay the utmost attention to the delivery of globally recognized and culturally appropriate content and innovative teaching tools not just in our books but through **eAlpha**, our digital CLMS platform.



Lifelong Learning

We make constant endeavors to bring global experience, expertise, and best practices to what we publish, while bearing in mind the region's current and future learning and teaching requirements.



Innovative and Futuristic

We ensure that all of our products are based on the latest research in education and make the mission of international standards a reality. We are committed to delivering both traditional print and innovative, interactive online educational experiences.



Latest Technology

We put great stock in the importance of technology to produce cutting-edge programs and courses for the educational transformation of the community.



Results-Oriented

At Alpha, we know that enhancing teaching and learning outcomes is a key element for measurable impacts.



Publishing Excellence

We guarantee that what we publish is reliable and trustworthy, both globally and regionally.

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 **ALPHA**
Mobile eLearning Platform

www.eAlpha.info

Alpha's Content Learning Management System for both students and teachers gives access to premium interactive lessons and resources to create virtual classrooms for all students both online and offline. eAlpha makes learning a personalized, exciting and enriching experience.



Easy to Use



Engaging Audio



Informative Videos



Online Reporting



Online / Offline Resources



Interactive Content

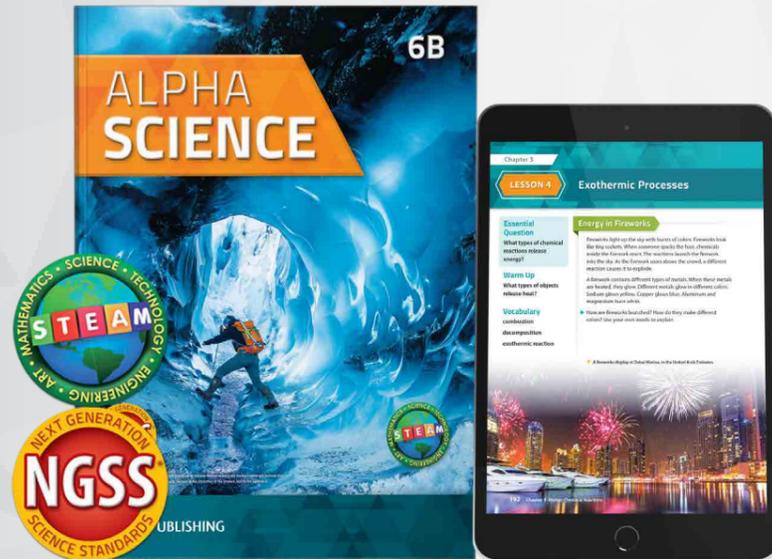


Cross-platform Offline Application

Available on the  **App Store**

Get it on  **Windows 10**

GET IT ON  **Google Play**



- American English
- Video Clips
- Online Reporting
- Online Resources
- Interactive Content
- Alpha + PhET Sims

Alpha Science Grades 6–8 Middle School is a fully integrated and immersive science experience in which the student is surrounded by Life, Earth, Space, Physical Sciences, and Engineering and Technology in all three grades.

Hands-on, student-centered learning is delivered through powerful STEAM laboratories and lessons that achieve all three dimensions of the NGSS (Next Generation Science Standards). The program is written to fully align with the NGSS while also building strong cross-curricular connections.

Alpha Science brings international science standards to the classrooms and homes of students around the world. It introduces students to doing science from a twenty-first century global perspective within a context that makes sense to them.

Key Features

- Fully aligned to the NGSS with Cross-Curricular Connections to CCSS English Language Arts, CCSS Mathematics, engineering, technology, and art. The standards are clearly listed throughout the program.
- Hands-on activities, practices, and STEAM laboratories help students develop critical-thinking skills, science literacy, understanding of experimental design, and the ability to design solutions to real-world problems
- Clearly defined, refined, and revisited Lesson Objectives and Essential Questions
- Built on the 5E Instructional Model: Engage, Explore, Explain, Elaborate, and Evaluate
- NEW - Alpha + PhET Sims from the University of Colorado Boulder's PhET Simulations. PhET Sims are based on extensive education research and engage students through an intuitive environment where they will learn through exploration and discovery.

Other Key Features

- Differentiated instruction is built into the program through the use of multiple representations of concepts, differentiated ELL support, and engaging activities that reinforce each lesson
- Easy-to-use and customizable program for teachers with robust resources: editable Lesson Plans, Chapter Plans, and Yearly Plans; training and professional development opportunities; and teacher guidance
- ExamView assessment generator for creating, assigning, and scoring tests, quizzes, and more
- Available both online and offline on eAlpha, your dynamic and interactive Learning Management System

Student Book

The Student Book is the main resource for students. There are two light-weight volumes per grade that contain all the core content, practice, and STEAM laboratories for use in class and at home.

GUIDED PRACTICE

Exploring Exothermic Reactions

Ask a question. Can you measure the exothermic effects of dissolving these salts in water?

1. Predict Will you be able to measure the temperature change caused by dissolving two salts in water? If so, how much will the temperature change? Write your predictions in the table.

	Can the temperature change be measured?	Temperature change
Mixing water and table salt (sodium chloride)		
Mixing water and calcium chloride		

2. Record Place 2 tablespoons of room-temperature water in each of two cups or beakers. Record the temperature of the water in the table below.

3. Record Add 1 tablespoon of sodium chloride to one of the cups. Gently use the thermometer to stir the sodium chloride into the water. Note any changes that occur as you stir. When the temperature stops changing, record the temperature in the table. Repeat the procedure using calcium chloride.

	Start temperature	End temperature
Table salt and water		
Water and calcium chloride		

4. Conclude What evidence did you collect to demonstrate that dissolving salts in water releases energy?

198 Chapter 3 Matter: Chemical Reactions

DIRECTED PRACTICE

Elephant Toothpaste

Ask a question. The activity is called "Elephant Toothpaste" because the large stream of foam that forms looks like enough toothpaste to clean an elephant's teeth! Yeast catalyzes the breakdown of hydrogen peroxide. Does the process of making elephant toothpaste release or absorb energy?

1. Predict Make a prediction to answer the question above.

2. Record Put 30 mL of hydrogen peroxide in the cylinder or flask. Record the temperature of the hydrogen peroxide, and any other observations of the peroxide, in the table. Add half a packet of yeast to the cylinder or flask. Record your observations in the table, including the temperature of the liquid remaining in the graduated cylinder.

Hydrogen peroxide before adding yeast	Hydrogen peroxide after adding yeast

3. Conclude Did the formation of the foam release energy or absorb energy? Defend your answer using observations from the experiment.

MATERIALS

- 50 mL graduated cylinder or flask
- dry yeast
- gloves
- hydrogen peroxide, 6%
- safety goggles
- thermometer

Each lesson follows the same organized structure to fulfill the lesson objective, answer the essential question and achieve the learning standard. Lessons begin with an exploratory Directed Practice, an engaging Guided Practice, and a student-driven Full Practice. Students become more confident and willing to take ownership of their learning through this gradual release strategy.

Students make real-world connections to science through special features in their books that include: Engineering Connections, Science and Math Connections, Science and Art Connections, Science and ELA Connections, Careers in Science, Technology, and Math, ESL/ELL Strategies, and Calculator Activities.

Teacher Guide

The Teacher Guide provides assistance in all phases of the teaching cycle. It complements each page of the Student Book with wrap-around instructional support.

Teaching Connections draw the teacher's attention to how the science content connects to other content areas. Robust teacher guidance is also delivered through Teaching Tips, ideas for differentiation, instructions for ESL/ELL support, vocabulary review, and cross-curricular connections.

Full Scope & Sequence and NGSS Alignment charts are included. The Lesson Plans, found on eAlpha, complement the Teacher Guide and allow teachers to easily customize the program around the needs of each student, the whole class, and the school calendar.

Calculator Activity

Write the formula shown below on the board or a large sheet of paper.

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Say: The distance between the Sun and Earth is 150,000,000 kilometers. The speed of light is 300,000 kilometers per second. **Ask:** How long does it take sunlight to reach Earth? (500 seconds)

Ask: How long does it take sunlight to reach Earth, in minutes? (HINT: Divide by 60 to convert seconds to minutes.) (8.3333, or $8\frac{1}{3}$ minutes)

Technology Activity

The invention of the electron microscope gave scientists the ability to see atoms for the very first time. Although scientists could prove that atoms existed, no one had been able to actually see them.

Have students think about technology advances that have occurred during their lifetime. Ask students to choose one device, such as a cell phone, and write how the device has changed. Students should focus on the features of the device and how the device has changed how they communicate, for example.

Science and Art Connections

If students struggle to draw their modified designs, show them the Drawing Dictionary graphic organizer on page TR15 of this Teacher Guide. This page supports instruction regarding how to draw a model or other picture using simple shapes and symbols.

Engineering Connections

Students from around the United Arab Emirates can take part in the Formula One STEM Challenge. Teams of students from across the UAE design, build, and race model cars. Have students do online research about this event. Have students focus on the engineering challenges students face in designing and building cars that will race around a 20-meter track. Encourage students to share their findings.

ELL Activity

Have students read the hypothesis and conclusion in *Draw a Conclusion*. Then ask them to identify the question the scientists wanted to ask.

Beginning: Ask students to identify what scientists wanted to ask by using simple phrases.

Intermediate: Ask students to write the questions that scientists wanted to ask.

Advanced: Ask students to write the questions that scientists wanted to ask and explain how the hypothesis and the conclusion are related.

Practice Book

The Practice Book complements the Student Book; for each lesson there are extra problems and questions that reinforce what students learn in class and refine scientific skills.

Ancillaries & Teacher Resources

Anchor Activities

Anchor Activities are engaging activities that encourage active learning and exploration while reinforcing foundational concepts—a quick and fun opening for each lesson. There are three levels of differentiated activities to meet the students at their own level of readiness for new material. Teacher support for implementation, materials lists, alignment, and procedures are included in the Lesson Plans. These activities are available both as printable and interactive pages on eAlpha.

GRADE 6 • CHAPTER 9 LESSON 3 NGSS: MS-ESS2-3
Volume B

ANCHOR ACTIVITY

Plate Tectonics

Procedure

- Imagine a tunnel passing through the center of Earth.
- Draw a picture of what you think you would see if you look through the tunnel.
- Label any important features on your drawing.

GRADE 6 • CHAPTER 9 LESSON 3 NGSS: MS-ESS2-3
Volume B

ANCHOR ACTIVITY

Plate Tectonics

If you could drain the oceans, what do you think the ocean floor would look like?

Procedure

- Draw a picture of what you think you would see.
- Label any important features on your drawing.

GRADE 6 • CHAPTER 9 LESSON 3 NGSS: MS-ESS2-3
Volume B

ANCHOR ACTIVITY

Plate Tectonics

If you could see deep inside Earth, what do you think it would look like...

- where an earthquake happens?
- where a mountain range is located?
- where a deep sea trench is located?

Procedure

- Divide your paper into thirds, one part for each location.
- Draw a picture of what you think you would see at each location.
- Label important features on your drawing.

GRADE 6 • CHAPTER 3 LESSON 5 NGSS: MS-PS1-6
Volume A

EXIT ACTIVITY

Endothermic Processes

The graph shows the energy movement during an endothermic reaction. Label the parts of the graph using the words below.

Products Reactants Energy Reaction Progress

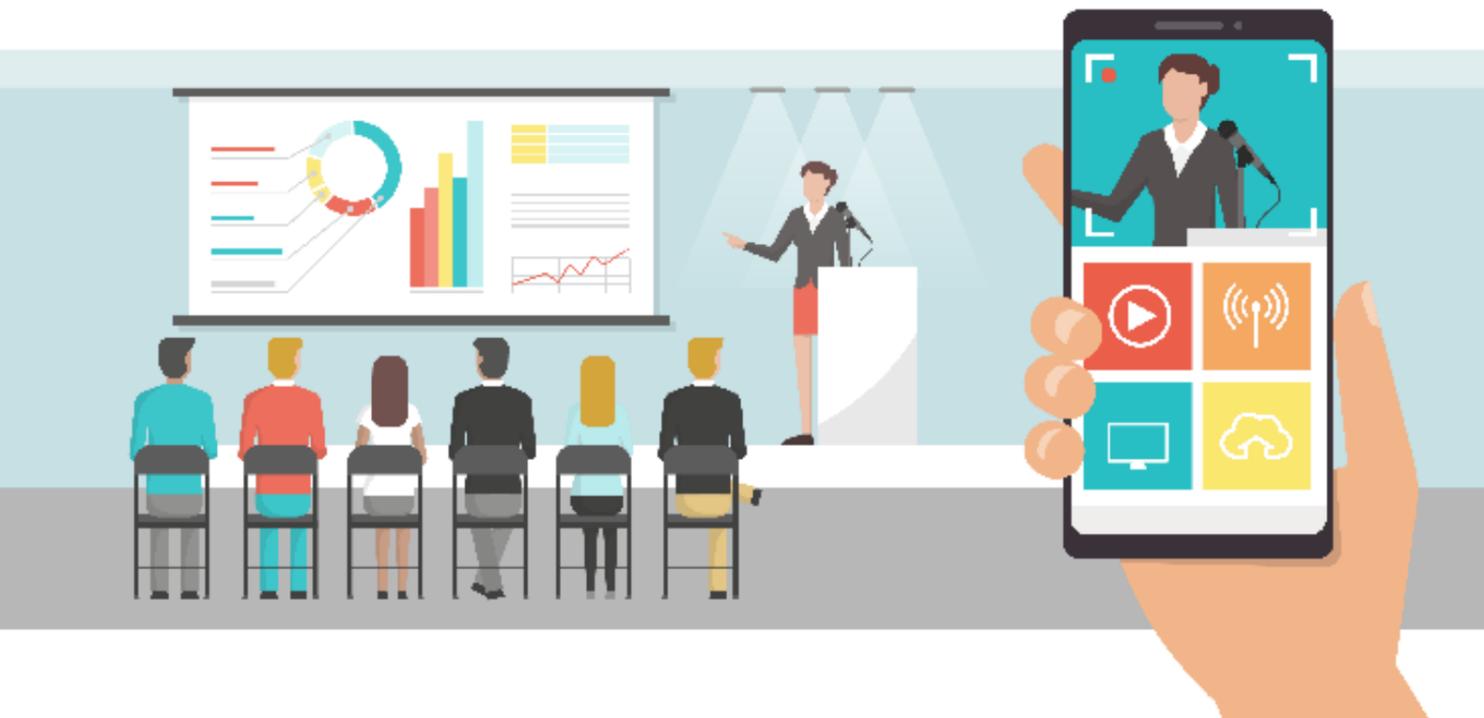
Exit Activities

Exit Activities are short and fun formative assessments to complete at the end of each lesson. They provide the teacher with a quick snapshot of each student's understanding of the lesson. Teacher support for implementation procedures is included in the Lesson Plans. These activities are available both as printable and interactive pages on eAlpha.

Lesson Plans

Lesson Plans are available as downloadable, editable, and printable pages on eAlpha. They contain pacing, materials lists, vocabulary, preparation tips, procedures for the Anchor and Exit Activities, the 5Es throughout each lesson, a lesson closure, and lesson extensions. A Yearly Pacing Guide is provided for each grade level.

Professional Development & Product Training



Providing ongoing professional development for educators is one of the most critical success factors for better learning and teaching outcomes.

Alpha Publishing, in partnership with KDSL Global and a selection of independent trainers, provides specifically tailored program training and practice sessions, along with leadership and school management courses, for teachers and institutions, via distance learning or at site events.

For more information about professional development and product training please visit www.alphapublishing.com or call +971 4 391 8658.

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