# Table of Contents

## Introduction ............................................................................................................. 4

## Common Core State Standards ............................................................................... 5

## Life Science

**Unit 1:** Kingdoms .................................................................................................... 7  
Classifying Living Things — Living Kingdoms — Kingdom Math — Sorting Kingdoms — Word Study

**Unit 2:** Brine Shrimp ............................................................................................... 12  

**Unit 3:** Mealworms ................................................................................................. 18  
What Are Mealworms? — Mealworm Facts to Know — Mealworm Features and Sketches — Mealworm Math — Word Study

**Unit 4:** Isopods ....................................................................................................... 23  
Getting Acquainted with Isopods — Recognizing Isopods — “Roly-Poly” Math — Comparing Isopods and Insects — Word Study

**Unit 5:** Mollusks .................................................................................................... 28  

**Unit 6:** Amphibians ................................................................................................. 34  
What Are Amphibians? — Studying Frogs and Toads — Amphibian Math Facts — Amphibians Size Graph — Identifying Amphibians — Word Study

**Unit 7:** Ocean Mammals ....................................................................................... 40  

**Unit 8:** Senses ....................................................................................................... 46  

**Unit 9:** Freshwater Ecosystems ............................................................................. 51  
What Are Freshwater Ecosystems? — Freshwater Lakes — Identifying Freshwater Ecosystems — Comparing Freshwater Environments — Word Study

**Unit 10:** Terrestrial Environments ........................................................................ 56  
What Are Terrestrial Environments? — Matching Ecosystems and Environments — Ecosystems and Their Residents — Eco Math — Word Study

**Unit 11:** Pollution ................................................................................................. 61  
How Does Water Pollution Occur? — What Causes Water Pollution? — The Truth About Pollution — Pollution Math — Thinking About Pollution — Pollution Problems — Pollution Checklist — Word Study

## Physical Science

**Unit 12:** Inventions ............................................................................................... 69  

**Unit 13:** Magnetism ............................................................................................... 77  

**Unit 14:** Electricity ............................................................................................... 82  
## Unit 15: Energy

- What Is Energy?
- Potential and Kinetic Energy
- Types of Energy
- Sources of Energy
- Charting Energy Sources

## Unit 16: Chemical Compounds

- What Are Chemical Compounds?
- Chemical Reactions
- Elements and Compounds
- Matching Compounds and Formulas

## Unit 17: Water

- Water: Life-Giving Substance
- The Three States of Water
- Water Math

## Unit 18: Light

- What Is Light?
- Understanding Light
- Working with Wavelengths
- Understanding Electromagnetic Radiation

Earth & Space Science

## Unit 19: Geology

- What Is Geology?
- Testing for Hardness with the Mohs Scale
- Learning About Geology
- Categories of Rocks
- Scrambled Minerals
- Useful Rocks and Minerals

## Unit 20: Earth's Special Features

- Earth's Special Features
- Our Amazing Earth
- Special Features Math
- Special Geography
- Unusual Places

## Unit 21: A Dangerous Planet

- You Live On a Dangerous Planet!
- Matching World Dangers
- Earth's Natural Disasters
- Unscrambling Earth Events
- Natural Disaster Math

## Unit 22: Antarctica

- Antarctica: The Coldest Continent
- Antarctica Fast Facts
- Antarctic Math
- The Coldest Place On Earth
- Antarctica Crossword Puzzle

## Unit 23: Clouds

- What Are Clouds?
- Types of Clouds
- Cloud Math
- Name That Cloud

## Unit 24: Ocean Zones

- What Are Ocean Zones?
- Animals of the Ocean Zones
- Creatures of the Twilight Zone
- Ocean Depths Math

## Unit 25: Saving the Environment

- How Can You Save the Environment?
- Environmental Math
- Dos and Don’ts for Saving the Environment
- Do Something!
- Reduce, Reuse, Recycle

## Unit 26: The Sun and Stars

- Our Sun
- Fun Sun Facts
- Sun Math
- Stars: Red Giants and Supernovas
- Types of Stars
- Star Math

## Unit 27: Constellations

- What Are Constellations?
- Constellation Names: English and Latin
- Thinking About Constellations
- Recognizing Constellations

## Unit 28: Ice Ages

- What Are Ice Ages?
- Meet the Ice-Age Mammals
- Prehistoric Mammals
- Understanding Ice-Age Terms

## Answer Key

- Answer Key
Common Core State Standards


### Reading: Informational Text

<table>
<thead>
<tr>
<th>Key Ideas and Details</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 1: RI.4.1.</strong> Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</td>
<td>2, 3, 5, 7, 8, 10–13, 15–22, 25</td>
</tr>
<tr>
<td><strong>Standard 2: RI.4.2.</strong> Determine the main idea of a text and explain how it is supported by key details; summarize the text.</td>
<td>3–8, 12, 13, 14, 16–20, 22, 25, 26</td>
</tr>
<tr>
<td><strong>Standard 3: RI.4.3.</strong> Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.</td>
<td>2, 3, 5–8, 11–20, 22, 25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Craft and Structure</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 4: RI.4.4.</strong> Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.</td>
<td>All</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Integration of Knowledge and Ideas</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 7: RI.4.7.</strong> Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.</td>
<td>1–10, 12–14, 18–21, 23, 24, 26–28</td>
</tr>
<tr>
<td><strong>Standard 9: RI.4.9.</strong> Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.</td>
<td>2–8, 13–20, 22, 25, 26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range of Reading and Level of Text Complexity</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 10: RI.4.10.</strong> By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.</td>
<td>All</td>
</tr>
</tbody>
</table>
### Reading: Foundational Skills

<table>
<thead>
<tr>
<th>Phonics and Word Recognition</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 3: RF.4.3.</strong> Know and apply grade-level phonics and word-analysis skills in decoding words.</td>
<td>All</td>
</tr>
</tbody>
</table>

**Fluency**

| **Standard 4: RF.4.4.** Read with sufficient accuracy and fluency to support comprehension. | All |

### Writing

<table>
<thead>
<tr>
<th>Text Types and Purposes</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 1: W.4.1.</strong> Write opinion pieces on topics or texts, supporting a point of view with reasons and information.</td>
<td>2, 5, 7, 8, 10–12, 18–22, 25, 27, 28</td>
</tr>
<tr>
<td><strong>Standard 2: W.4.2.</strong> Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</td>
<td>2, 3, 5, 7–12, 14–18, 20, 22, 24, 25, 28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Production and Distribution of Writing</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 4: W.4.4.</strong> Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.</td>
<td>All</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research to Build and Present Knowledge</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 9: W.4.9.</strong> Draw evidence from literary or informational texts to support analysis, reflection, and research.</td>
<td>All</td>
</tr>
</tbody>
</table>
Name: ____________________________

Directions: Use the names in the Word Bank to complete the missing blanks in the boxes below.

Word Bank
rabbit  eel  carrot  moss  pigeon
fern  grass  orchid  sponge  whale
kangaroo  oak  cactus  eagle  opossum
spider  elm  conifer  elephant  earthworm

Plants
F ______ N
M ______ S
C ______ ______ ______ ______ R
G ______ ______ S
C ______ ______ ______ S
O ______
E ______ M
O ______ ______ ______ ______ D
C ______ ______ ______ T

Animals
S ______ ______ ______ E
S ______ ______ ______ R
E ______
E ______ ______ ______ E
E ______ ______ ______ E
E ______ ______ ______ ______ T
P ______ ______ ______ N
W ______ ______ ______
E ______ ______ ______ W ______ ______ ______
O ______ ______ ______ ______ M
K ______ ______ ______ ______ O ______
R ______ ______ ______ T
Name: ________________________________

Directions: Use your math skills to solve these problems. Write your answers in the ovals.

1. An adult, fully-grown blue whale is 100 feet long. A newborn blue whale is about 25 feet long. How many times longer is the adult whale?

2. A newborn baby blue whale weighs about 2 tons. A fully-grown adult weighs 150 tons. How many times heavier is the adult?

3. The baby blue whale nurses 40 times each day and drinks more than 120 gallons of milk for the day. About how many gallons does the baby drink each time it nurses?

4. Fifty people could stand on the blue whale’s tongue. If the average person standing on the tongue weighed 150 pounds, how much would be the total weight of 50 people standing on the whale’s tongue?

5. The blue-whale baby calf gains about 10 pounds in weight every hour the first week. How many pounds will it gain in one day? How many pounds will it gain in a week?

6. The sperm whale can weigh 40 tons. The blue whale can weigh 150 tons. How much heavier is the blue whale?
Charting Energy Sources

Name: ________________________________

Directions: Study the chart below with the listed energy sources. Answer the questions below.

### Energy Sources

<table>
<thead>
<tr>
<th>Fossil Fuels</th>
<th>Sun</th>
<th>Natural Forces on Earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>coal</td>
<td>sunlight</td>
<td>wind</td>
</tr>
<tr>
<td>oil</td>
<td>solar energy</td>
<td>gravity</td>
</tr>
<tr>
<td>natural gas</td>
<td></td>
<td>water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wood</td>
</tr>
</tbody>
</table>

### Questions

1. Which of the energy sources shown above are used to make electricity?
   
   ______________________________________________________

2. How is water used to create energy as electricity? Why are waterfalls so important? Why are oceans, rivers, and other sources of moving water so important?
   
   ______________________________________________________
   ______________________________________________________

3. How is wind used to create electric power?
   
   ______________________________________________________

4. Why is gravity important in making electricity using water power?
   
   ______________________________________________________
   ______________________________________________________

5. What is done to any fossil fuel to make electricity? Can the fossil fuel be used more than once to create electricity?
   
   ______________________________________________________
   ______________________________________________________
What is geology, and why is it important? Geology is the study of Earth. This science particularly concerns the study of the rocks and minerals that make up the crust of the planet we live on. Rocks are pieces of Earth that are made of up two or more minerals. Rocks were formed over long periods of time by the action of the constantly changing Earth. The inner core of the Earth is liquid rock, called magma. This liquid rock cools when it reaches the surface through volcanic action.

Geologists study rocks and minerals and how they are formed. Geology is important because there are many varieties of rocks and many combinations of minerals on Earth. However, there are just three basic types of rock. These are called igneous, sedimentary, and metamorphic rocks.

Igneous rocks are formed by magma or lava when it cools. Pumice and obsidian are two examples of igneous rock formed from cooling lava. Sedimentary rocks are formed over long ages. Tiny bits of sediment, such as dirt or bits of sand, are washed into an ocean. This sediment settles to the bottom of the ocean. There the weight of water gradually presses it into rock. Sandstone and limestone are sedimentary rocks. Metamorphic rock is created from sedimentary or igneous rock. These rocks are turned by pressure and heat into harder types of rock. Slate, granite, and marble are metamorphic rocks.

Rocks are made of different minerals. There are more than 2,000 minerals on Earth. However, there are only about 25 to 30 common minerals. Most rocks are made up of two or more of these minerals. These may be minerals such as iron, copper, aluminum, silver, tin, or gold. Hematite is a mineral that is processed into iron. Bauxite is a rock that can have three different aluminum mineral ores in it. Gold is a mineral that can be separated from less valuable minerals in a rock. Geology is the science in which you study the ground you walk on and everything underneath.

What Did You Learn?

1. What do geologists study?
   - A) rivers  B) rocks and minerals  C) weather  D) the mind

2. Which of these is a sedimentary rock?
   - A) gneiss  B) aluminum  C) pumice  D) sandstone

3. Which of these is a mineral?
   - A) sand  B) aluminum  C) gneiss  D) slate

4. Which of the following is a metamorphic rock?
   - A) sandstone  B) obsidian  C) gold  D) marble

What Am I?

I am the science that studies rocks and how they are formed.

G ____  ____  ____  ____  ____  ____
Unscrambling Earth Events

Directions: Unscramble these Earth events.

<table>
<thead>
<tr>
<th>Hurricane</th>
<th>Lightning</th>
<th>Cyclone</th>
<th>Tornado</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Hurricane" /></td>
<td><img src="image2" alt="Lightning" /></td>
<td><img src="image3" alt="Cyclone" /></td>
<td><img src="image4" alt="Tornado" /></td>
</tr>
<tr>
<td>Earthquake</td>
<td>Volcano</td>
<td>Thunderstorm</td>
<td>Blizzard</td>
</tr>
<tr>
<td><img src="image5" alt="Earthquake" /></td>
<td><img src="image6" alt="Volcano" /></td>
<td><img src="image7" alt="Thunderstorm" /></td>
<td><img src="image8" alt="Blizzard" /></td>
</tr>
</tbody>
</table>

1. __________  r r i h u n a c e  
2. __________  z d b a z l r i  
3. __________  m o r t s e r d u n t h  
4. __________  g n i n g h t i l  
5. __________  o d a n t r o  
6. __________  q u a e k t h e r a  
7. __________  o n a c l o v  
8. __________  n y c c l e o  

A. Which of the events listed above occur in or near your home, city, or state?

________________________________________________________________________________
________________________________________________________________________________

B. Have you personally lived through any of these Earth events? Describe the experience.

________________________________________________________________________________
________________________________________________________________________________

C. Which of these events do you think is the most dangerous and scary? Explain your answer.

________________________________________________________________________________
________________________________________________________________________________