Study Questions

to “Explorers of the Underground”

Study and learn facts and ideas based on this Young Naturalists nonfiction story in Minnesota Conservation Volunteer, January–February 2016, www.mndnr.gov/mcvmagazine.

*Minnesota Conservation Volunteer* magazine is your guide to wild things. Every other month, six times a year, the magazine arrives in your school library. Each one has a story for Young Naturalists like you. *Are you curious about wild things?* Young Naturalists tells true stories that can answer all kinds of questions such as these—

**Have you ever heard of a purple wartyback?** How about a pink heelsplitter, pimple-back, or monkeyface? All are Minnesota freshwater mussels. Read Young Naturalists stories to learn which species (kinds) of critters live in Minnesota—frogs, salamanders, snakes, wild cats, wild dogs, weasels, mice, and rabbits.

Want to *peek inside the den of a red fox* and see how the kits grow up? Are you a rock hound searching for agates? Have you ever wondered what’s alive under snow? How animals see? Why is a bluebird blue? How birds fly?

Would you like to hear the true story of *giants of the ice age*? Young Naturalists also tells you about the underground universe. You can read the story of a tiny owl that went to a hospital with an injured wing. Find out about a boy who worked in a logging camp. Read the story of Ojibwe children today hunting and gathering like their ancestors did.

Learn how to get started camping, snowshoeing, ice fishing, or canoeing.

Find these stories and more online at www.mndnr.gov/young_naturalists.

*Your knowledge of wild things helps you explore and enjoy the outdoors. Have fun!*
**“Explorers of the Underground” Study Questions**


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1. **What have fossils revealed about birds and dinosaurs?**

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2. **Rocks along the shore of Lake Superior were once**

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3. **Use the Venn diagram to compare and contrast the work of an archeologist with that of a geologist.**

![Venn Diagram](image)

4. **What valuable material is Heather Arends looking for?**

---
5. Why is it important to reclaim land after mining is finished?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

6. What is silica sand, and why is it valuable?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

7. Why did Dave Dahl change his mind about his future career?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

8. Describe the photo on page 50.
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

9. GIS means________________________________________________________

10. Geologists use GIS to_______________________________________________
____________________________________________________________________
____________________________________________________________________

11. What kind of maps helped geologists find the Cuyuna Iron Range?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

12. What do drill cores tell scientists about Minnesota?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

13. Explain how fishing line helps Mindy Erickson do her job.
____________________________________________________________________
____________________________________________________________________
14. What does a hydrologist study?
_____________________________
_____________________________

15. What is arsenic, and why should we pay attention to it?
____________________________________________________________________
____________________________________________________________________

16. What do art and science have in common?
____________________________________________________________________
____________________________________________________________________

Challenge: Match each item in Column A with its partner from Column B.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____300,000</td>
<td>1. Number of counties in Minnesota</td>
</tr>
<tr>
<td>_____1,100,000,000</td>
<td>2. Acres of School Trust Land</td>
</tr>
<tr>
<td>_____500 million</td>
<td>3. Weight in pounds of a box of rocks</td>
</tr>
<tr>
<td>_____87</td>
<td>4. Age in years of the oldest rocks in Minnesota</td>
</tr>
<tr>
<td>_____30</td>
<td>5. Number of years ago North America almost split</td>
</tr>
<tr>
<td>_____1.8 billion</td>
<td>6. Age of silica sand</td>
</tr>
<tr>
<td>_____3,600,000,000</td>
<td>7. Number of boxes of core samples</td>
</tr>
<tr>
<td>_____3.5 million</td>
<td>8. Number of years ago that a big meteor crashed</td>
</tr>
<tr>
<td>_____9,000,000</td>
<td>9. Weight of the rock collection</td>
</tr>
</tbody>
</table>

Minnesota Comprehensive Assessment

Name ___________________________ Period _____ Date __________

1. Mindy Erickson works for
   A. the Minnesota Department of Natural Resources.
   B. the United States Department of Agriculture.
   C. the United States Geological Survey.
   D. the University of Minnesota.

2. The DNR’s rock library is located in
   A. Hibbing.
   B. Duluth.
   C. St. Paul.
   D. Bemidji.
3. What is “one sentence in the book of Minnesota’s history”?
   A. A grain of silica sand
   B. A core sample of rock
   C. Arsenic
   D. All of the above

4. Heather Arends originally was interested in
   A. dentistry
   B. chemistry
   C. archaeology
   D. carpentry

5. What do the photos on page 44 tell you about this story?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

**Student Study Guide: Vocabulary**

**arsenic** poisonous metallic element that may contaminate groundwater

**bedrock** solid rock beneath soil or gravel

**crust** Earth’s rocky outer layer

**debris** scattered fragments of something wrecked or destroyed

**evolve** to develop gradually from one form to another

**fossil** preserved remain or trace of a plant or animal that lived long ago

**glaciers** large, dense bodies of ice that form on land and move under their own weight

**microscope** instrument for viewing objects too small to be seen by the naked eye

**lava** volcanic rock liquefied by heat

**sandstone** sedimentary rock composed of sand-size grains of minerals or rocks

**sediments** particles of rock broken down by weathering or erosion and transported and deposited by wind, water, or glaciers

**tectonic plates** large slabs of solid rock that comprise Earth’s crust and upper mantle
<table>
<thead>
<tr>
<th>What is <strong>arsenic</strong>?</th>
<th><strong>A poisonous metallic element that may contaminate groundwater</strong> is called</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is <strong>bedrock</strong>?</td>
<td><strong>The solid rock beneath soil or gravel</strong> is</td>
</tr>
<tr>
<td>Earth’s <strong>crust</strong> is its</td>
<td>Earth’s <strong>rocky outer layer</strong> is its</td>
</tr>
<tr>
<td><strong>Debris</strong> is</td>
<td><strong>Scattered fragments of something wrecked or destroyed</strong> are called</td>
</tr>
<tr>
<td>What is a <strong>fossil</strong>?</td>
<td>The <strong>preserved remain or trace of a plant or animal that lived long ago</strong> is a</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>What are <strong>glaciers</strong>?</td>
<td>Large, dense bodies of ice that form on land and move under their own weight are called</td>
</tr>
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