

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

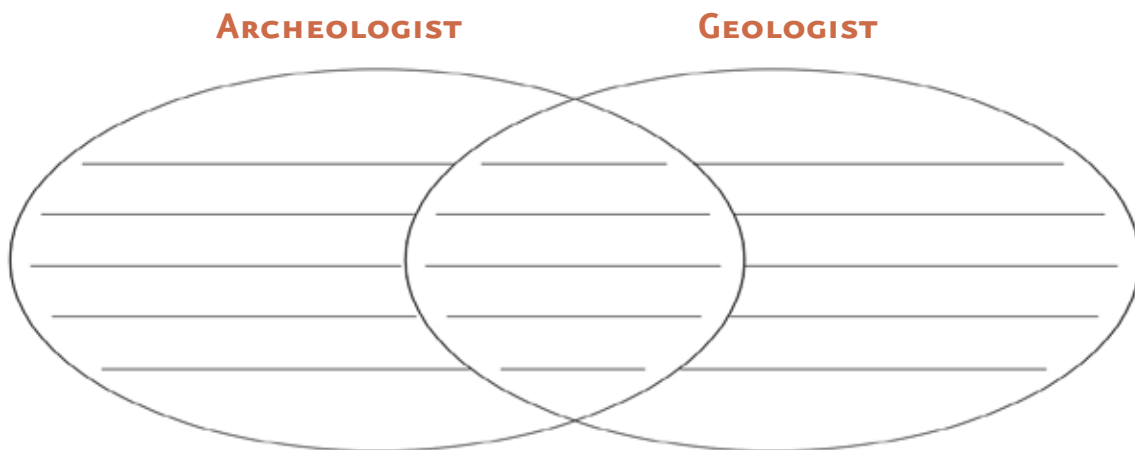
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1. WHAT HAVE FOSSILS REVEALED ABOUT BIRDS AND DINOSAURS? _____

2. ROCKS ALONG THE SHORE OF LAKE SUPERIOR WERE ONCE _____

3. USE THE VENN DIAGRAM TO COMPARE AND CONTRAST THE WORK OF AN ARCHEOLOGIST WITH THAT OF A GEOLOGIST.



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.

A	B
____ 300,000	1. Number of counties in Minnesota
____ 1,100,000,000	2. Acres of School Trust Land
____ 500 million	3. Weight in pounds of a box of rocks
____ 87	4. Age in years of the oldest rocks in Minnesota
____ 30	5. Number of years ago North America almost split
____ 1.8 billion	6. Age of silica sand
____ 3,600,000,000	7. Number of boxes of core samples
____ 3.5 million	8. Number of years ago that a big meteor crashed
____ 9,000,000	9. Weight of the rock collection

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

STUDENT STUDY GUIDE: VOCABULARY CARDS

Cut along horizontal lines, fold in the middle, and tape or staple. Blanks are provided to allow you or your students to add new words or phrases

What is
ARSENIC?

**A POISONOUS METALLIC
ELEMENT THAT
MAY CONTAMINATE
GROUNDWATER** is called

What is
BEDROCK?

The **SOLID ROCK BENEATH
SOIL OR GRAVEL** is

Earth's **CRUST** is its

Earth's **ROCKY OUTER LAYER** is its

DEBRIS is

**SCATTERED FRAGMENTS OF
SOMETHING WRECKED OR
DESTROYED** are called

What is a
FOSSIL?

The **PRESERVED REMAIN
OR TRACE OF A PLANT OR
ANIMAL THAT
LIVED LONG AGO** is a

What are
GLACIERS?

FOLD

**LARGE, DENSE BODIES OF
ICE THAT FORM ON LAND
AND MOVE UNDER
THEIR OWN WEIGHT**
are called

What is a
MICROSCOPE?

FOLD

**AN INSTRUMENT FOR
VIEWING OBJECTS TOO
SMALL TO BE SEEN
BY THE NAKED EYE** is called a

What is
LAVA?

FOLD

**VOLCANIC ROCK LIQUEFIED
BY HEAT** is known as

What is
SANDSTONE?

FOLD

**SEDIMENTARY ROCK COMPOSED
OF SAND-SIZED GRAINS OF
MINERALS OR ROCKS** is

What are
SEDIMENTS?

FOLD

**PARTICLES OF ROCK BROKEN
DOWN BY WEATHERING OR
EROSION AND TRANSPORTED
AND DEPOSITED BY WIND,
WATER, OR GLACIERS** are called

TECTONIC PLATES are

FOLD

**LARGE SLABS OF SOLID ROCK
THAT COMPRISE EARTH'S
CRUST AND UPPER
MANTLE** are its

FOLD

FOLD

FOLD

FOLD

FOLD

FOLD