

Teacher Guide for ASK, "Continents Crack Up!"

July/August 2009

Betty Lou Askin, a retired educator, who lives in Toronto Ontario, prepared this guide.

Pre-reading-

- Ask the students to look at the cover and the title. Lead a discussion about what they see and what they may learn from this magazine.
- Have them look at the Table of Contents' pictures. What might these pictures suggest?

Scoops (pages 2-3)

Horses Rule

- What new evidence about horses was found in Kazakhstan?
- Describe the proof that supports this evidence.
- Explain how horses were beneficial to early humans.

Fingerprints Feel Fine

- Before reading this article, ask the students for the purpose of fingerprints. Possible answers might include the following:
Fingerprints are very individual
Fingerprints help find criminals
- If the concept of touch is not mentioned, lead the students to this fact and read the article.
- Why are scientists pursuing robotic fingerprints?

Cagey Caterpillars

- How do ants recognize one another?
- How do ants communicate?
- Explain why the mountain alcon blue caterpillar is smart.
- Why are scientists pleased with the odd partnership between the caterpillar and the red ants?

Nestor's Dock (pages 4-5)

- What is Nestor concerned about?
- Lonna seems calm. Why?
- Explain why Trip is pleased with himself.

The Puzzle of Pangaea (pages 6-13)

- Materials- Map of the World.
Paper for cutouts

There are a few ideas listed below that you might choose from according the circumstances of your teaching situation. Or, possibly use a combination of ideas.

A)

- If you would like to challenge your students before beginning this article, make simple cutouts of the continents, as seen on pages 6 and 7.
- Ask the students to look at a Map of the World and to lay their cutout continent pieces on their desk representing the Earth as we know it.

- Propose the idea that billions of years ago, the land masses may have been united. Allow the students to move the continents about to see if various continents might fit together like a jigsaw puzzle.
- When ready to read the article, divide the class into 4(8) groups. Assign one of the clues to each of the 4 groups (or 1 to 2 groups). Ask each group to read the clue, make notes on chart paper and prepare a presentation to the rest of the class.

B)

- If you do not choose to use the method described above, the following questions may help with the reading and comprehension of the information.
- Describe why you think that scientists are interested in the study of Pangaea.
- **Clue 1: Pieces of the Puzzle**
 1. Show a Map of the World. Also use cutout pieces of South America and Australia. Place these pieces next to Africa and Antarctica as indicated in the article.
 2. Explain why scientists have changed their minds about fixed continents.
- **Clue 2: Riddles of the rocks**
 1. Explain what amazing information geologists found about 200 years ago.
 2. Why was this important information?
 3. Describe what effects were made by the glacier millions of years ago.
 4. Explain how these glaciers help to prove that Pangaea once existed.
 5. Tell why Alfred Wegener was "a man before his time".
- **Clue 3: Mystery of Mesosaurus**
 1. Describe Mesosaurus.
 2. Tell why Mesosaurus helped to explain Pangaea.
 3. Why do you think that sea creatures ended up on the top of a mountain?
- **Clue 4: Secrets of the Seafloor**
 1. Why did it take so long to find the fourth piece of evidence?
 2. What are tectonic plates?
 3. Explain what is known about why the plates move.
- The section titled "How Fast" indicates that North America is moving west at a very slow pace. Page 13 suggests that the continents might come together again in the future. If you had made cutouts of the continents to use at the beginning of this article, let the students manipulate these to speculate on the future meeting of continents.

Earth – A Brief History (pages 14-15)

- After reading this article with the students, you might want to have them develop their own timeline using the information on these pages.
- A TV show, news report or written article could be developed and presented by the students based on this material.

Ask a Pirate (pages 16-20)

Ideas to use with this article:

- Why did Pirate Pete become a geologist?
- Explain how gems are formed.
- Describe the hardness test for rocks.
- Tell how crystals help identify rocks.
- Divide the students into 4(8) groups. Assign 1 of the gems on pages 18 and 19 to each of the groups. Ask the groups to read about their gem, to prepare and

present the information to the rest of the class. You might also wish to have the students do further research on their gem before they make their presentation.

The Ring of Fire (pages 21-26)

Questions for discussion:

- Explain why the Pacific Ocean does not merit the meaning of its name.
- "Sinking Plates, Big Waves, and Quakes" – Describe what is happening underwater in the Ring of Fire.
- "Volcanoes Above and Below" – Explain how some islands have been formed within the Ring of Fire. Tell what "seafloor recycling" means. What are hot spots?
- "Life in the Deep" – Why do you think that creatures are able to live under such extreme conditions?
- "Living with the Ring of Fire" – What equipment is available for scientists to predict earthquakes? How can scientists know of impending tsunamis?

Measuring the Shakes (page27)

- Describe how a seismometer works.
- How does a tsunameter help scientists?

Jimmy the Bug (page 32)

- What is the concentration of salt in the ocean?
- Compare how much salt is in lakes and rivers with that in the oceans.
- Explain where the salt comes from, especially that in lake and rivers.

Marvin and Friends

- Why is Plush upset?
- Marvin and Bone Pony understand information from this issue of the magazine. Explain this statement.

Don't forget:

- To learn more about the faker and real insects and to play a Pangaea puzzle game go to www.askmagkids.com/links
- To quiz yourself about the Ring of Fire go to www.askmagkids.com/games
- To enter the next contest find a pet rock and send a photo.
- To ask Jimmy the Bug a scientific question.