# A Discovery with Ami Ammonite

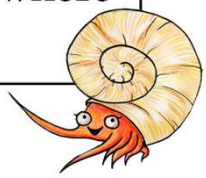
BHSU

School of Education

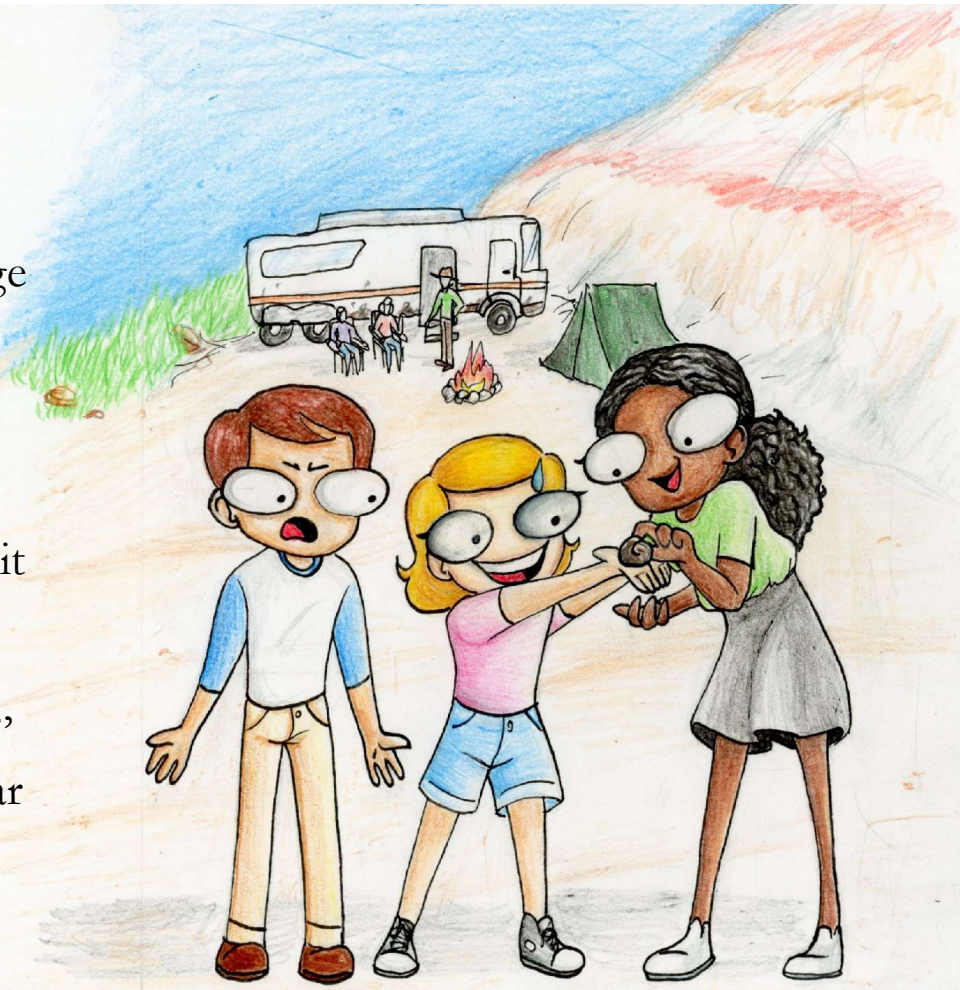
The eMEL Project

Hi! My name is Ami Ammonite. Ammonites are extinct animals that used to live in oceans long ago. Fossils of our shells can be found here in South Dakota. I am here to help you learn about how scientists think about fossils. Let's get started!

I will be here at the bottom of the page to help you find where to go on your worksheet as you read the story.



Sherry and her friends, William and Maria, were camping in the Badland's National Park with their family. While looking around some large rocks near their camp, Sherry saw a strange looking stone.



"It looks like a seashell!" she exclaimed when she picked it up.

"How can it be a seashell?" ask William, "The ocean is so far away."

"Let's hurry back and show everyone," Sherry said, "Maybe Ranger Johnson will know what it is."

Maria quietly said, "We should leave it here. Ranger Johnson will know what to do with it."

When they got back to their campsite, they found Ranger Johnson with their parents. The parents gave them permission to go with him to meet with someone who could tell them more about their fossil.

The children and Ranger Johnson walked along a path to a place where Sherry found the fossil. He told Maria that it was a good idea to leave it where Sherry found it and took a picture of it with his phone.

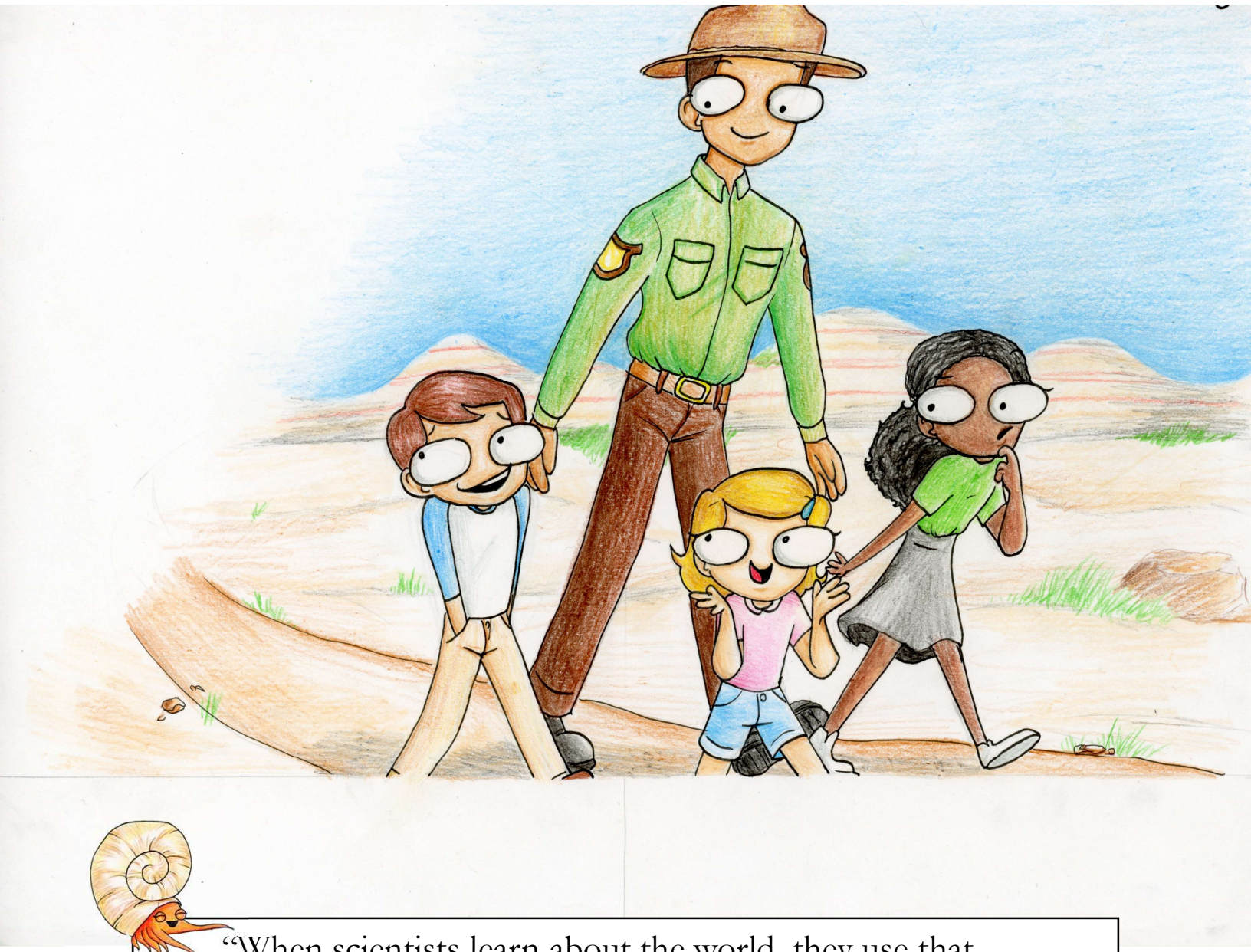
Sherry looked a little sad, but Ranger Johnson told her that the park rules said she should leave it there.

"Ranger Johnson, isn't it strange that this rock looks like a seashell?" asked Sherry while looking at the picture.

Ranger Johnson smiled and said, "It's a fossil, Sherry, the preserved remains of a prehistoric creature that lived here a long time ago."

Sherry smiled back and said, "Wow! If it looks like a seashell, there must have been a lot of water here. I wonder what else fossils can tell us about South Dakota."

William laughed a little. "I don't think it would tell us very much. It was a long time ago and I bet we can't find all of them to know for sure."





"When scientists learn about the world, they use that knowledge to make explanations that they call models. Scientists use models to explain to people how they think the world works.

"In the story, Sherry thinks that fossils might be able to help us describe what the Earth looked like a long time ago. William isn't so sure because fossils are so old, and we can't find them all.

Both of these could be explanations about how scientists use fossils in their work."

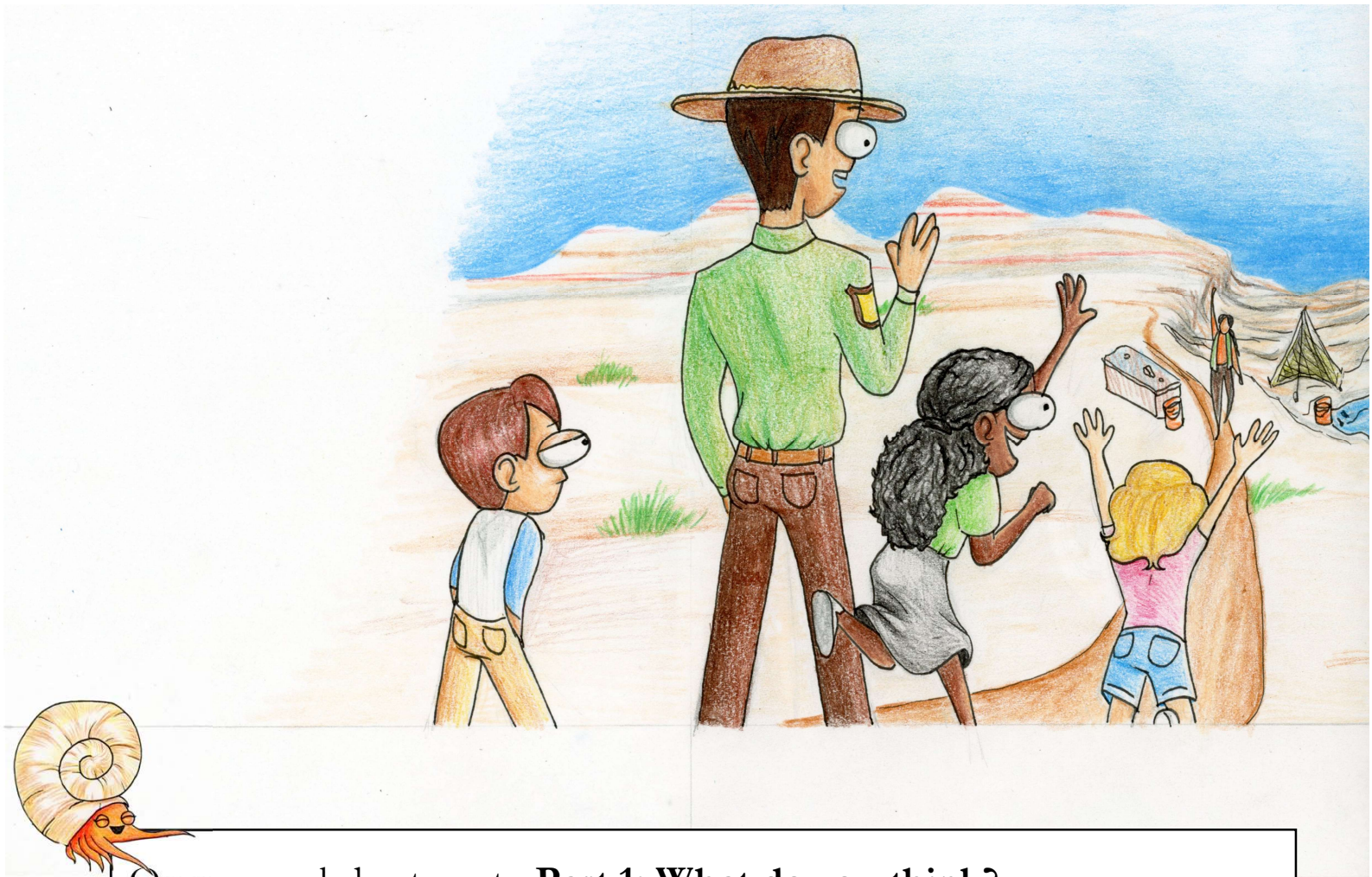
When scientists make models, they think about how truthful they are. In this story, you will read about some of the things scientists know about fossils. You will use the story to think about which of these models is more truthful.

A. Fossils don't help.

We have not found fossils for all the organisms that lived in the past. This means we cannot figure out what the Earth was like then.

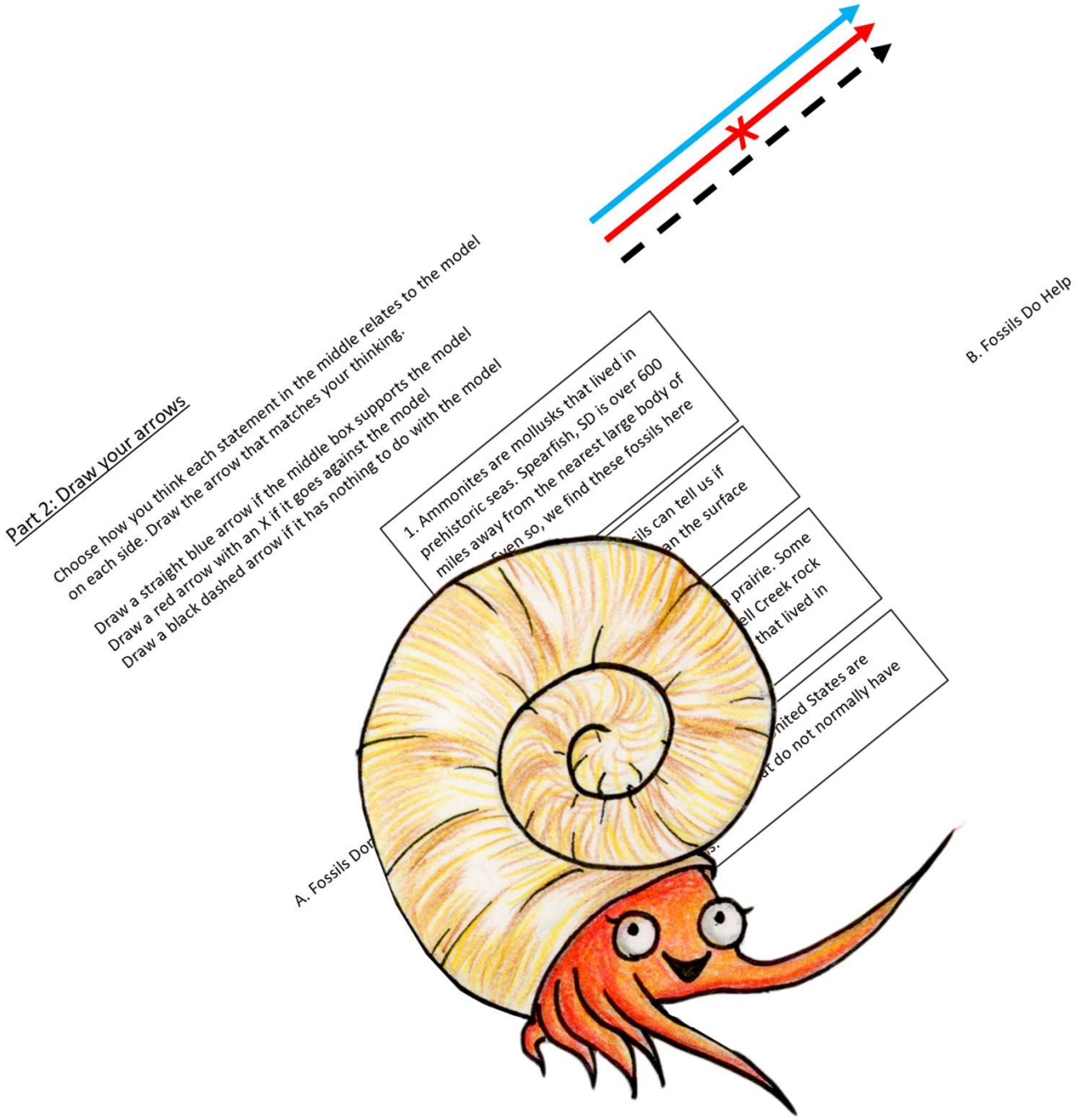
B. Fossils do help.

Fossils tell us things about organisms from the past. This gives us ideas about what the Earth was like then.



On our worksheet, go to **Part 1: What do you think?**

Circle the answer to how truthful you think each model is.




Scientists use information called evidence to think about their models. Evidence can support (agree with), go against (disagree with), or have nothing to do with their model. When scientists find evidence that disagrees with their model, they need to go back and make a new model.

In the next part of the story, you will be asked to talk with your classmates about what the scientist says about fossils. After a short talk, you will decide if that information supports each model or goes against them. It is okay if you think it has nothing to do with one.

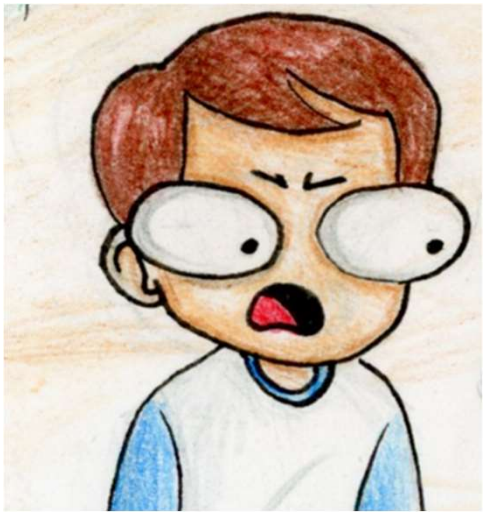
You will then draw arrows from the word box to the model that will tell us how what you read relates to each model.

Ranger Johnson introduces the children to a scientist who is carefully brushing some dust from a rock. “Kids,” says Ranger Johnson, “This is Dr. Maka. She is a paleontologist, a scientist that studies fossils.”

"Hello, Ranger Johnson. It is nice to see you again," says Dr. Maka, "Please be careful where you step."

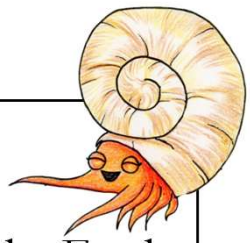
Sherry steps forward. "I found this, what is it?" She shows the picture of the rock to Dr. Maka.

"Oh my, this is exciting! My Grandfather would say this is one of the *Unk-tegila*, the water monsters. It is an ammonite, a prehistoric mollusk that lived in the seas that were here millions of years ago. They mostly swam in the water and had tentacles that came out of their shells."



William looked puzzled. "How could there be a sea here?" he asked, "It's so dry."

Dr. Maka turned to him and said, "Yes, it is dry now but there was a sea here until about the time the dinosaurs went extinct."



Go to **Part 2: Draw Your Arrows** and read box 1.

Talk in your group: Does finding fossils help tell us about how the Earth was a long time ago or not? Think about how finding the ammonites in the Badlands National Park relates to your answer!

When you are done talking, draw the arrow you think best relates box 1 to model A and to model B.

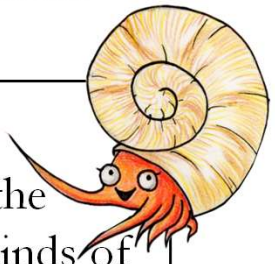
"Here, let me show you other fossils I have," said Dr. Maka as she led the children to her work bench. "These are fossils of tree leaves that we found up north at the Hell Creek rock formation."

Dr. Maka handed a leaf fossil to each child. "If you look closely, these leaves do not look much like the trees we have here now. In fact, they look more like trees found in the tropical rainforest."

"How can that be?" asked William.

Sherry's eyes widened as she said, "Does that mean it was warmer and wetter here a long time ago?"

Ranger Johnson laughed and said, "That's right, Sherry, it could mean that."



Go to **Part 2: Draw Your Arrows** and read box 2.

Talk in your group: Does finding fossils help tell us about how the Earth was a long time ago or not? How do fossils of different kinds of tree leaves in South Dakota tell us about what it was like there a long time ago?

When you are done talking, draw the arrow you think best relates box 2 to model A and to model B.

"Now look at the edge of the leaves," said Dr. Maka, "Do you see how some of them are smooth and others are jagged?. The fossils with the jagged edges are about 10,000 years older than the smooth ones."

"So what?" said William.

Maria looked very closely at the edges of the leaves as Sherry also said, "Yeah, what does that mean?"

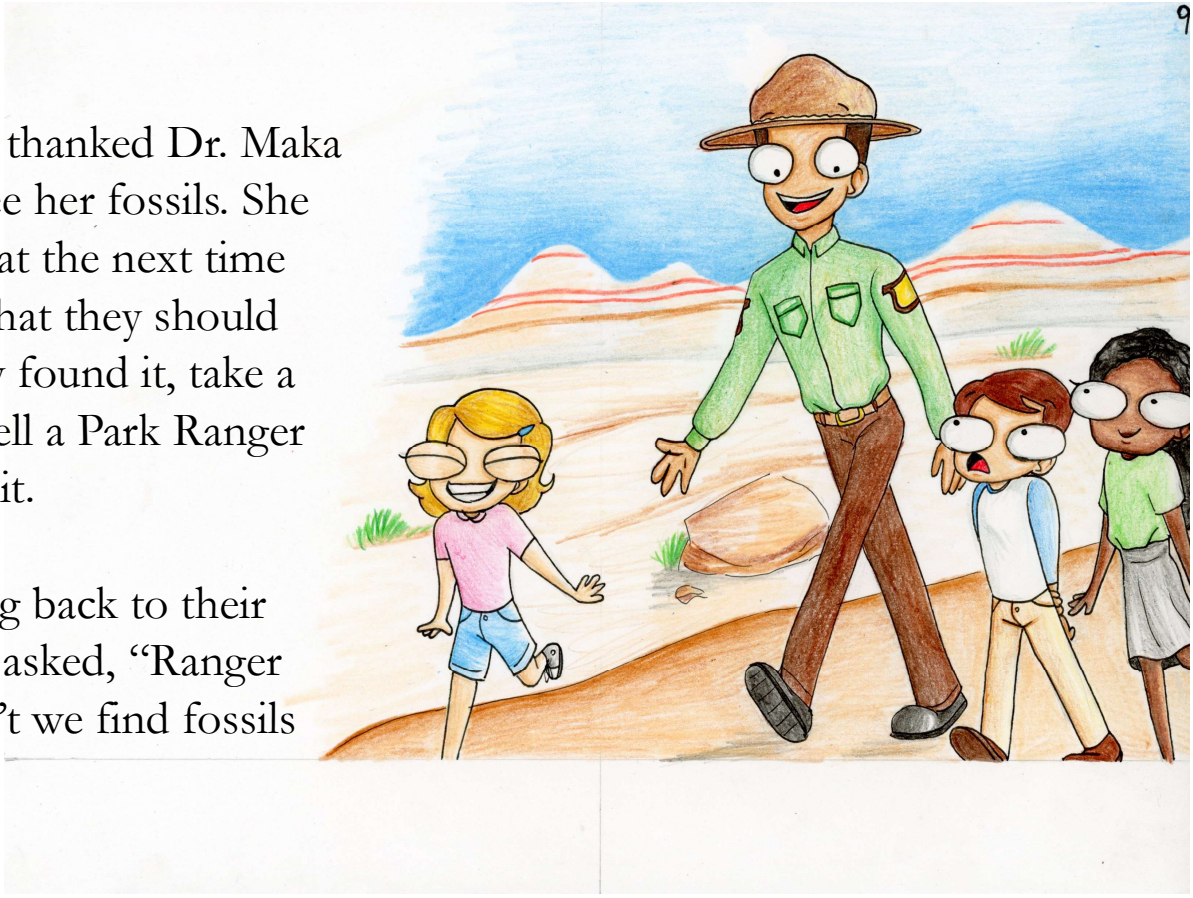
"The jagged leaves are able to make sugars sooner in the spring, but they also dry out faster. We think that means it was cooler here and then it became warmer when the other leaves were alive."


Go to **Part 2: Draw Your Arrows** and read box 3.

Talk in your group: Does finding fossils help tell us about how the Earth was a long time ago or not? How do fossils of tree leaves with different shapes in South Dakota tell us about what it was like there a long time ago?

When you are done talking, draw the arrow you think best relates box 3 to model A and to model B.

The children thanked Dr. Maka for letting them see her fossils. She reminded them that the next time they find a fossil that they should leave it where they found it, take a picture of it and tell a Park Ranger where they found it.



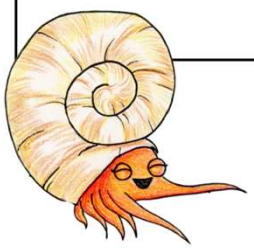

While walking back to their campsite, William asked, "Ranger Johnson, why don't we find fossils everywhere?"

"Well, William," he replied, "the Earth is made up of many kinds of rocks. Fossils can only form in some of them. South Dakota has a lot of rock that used to be mud and that helped the fossils to form. Other places, like Northern Georgia, have different kinds of rock that do not help fossils form."

Go to **Part 2: Draw Your Arrows** and read box 4.

Talk in your group: Does finding fossils help tell us about how the Earth was a long time ago or not? How do fossil scientists think about the places where they cannot find fossils?

When you are done talking, draw the arrow you think best relates box 4 to model A and to model B.



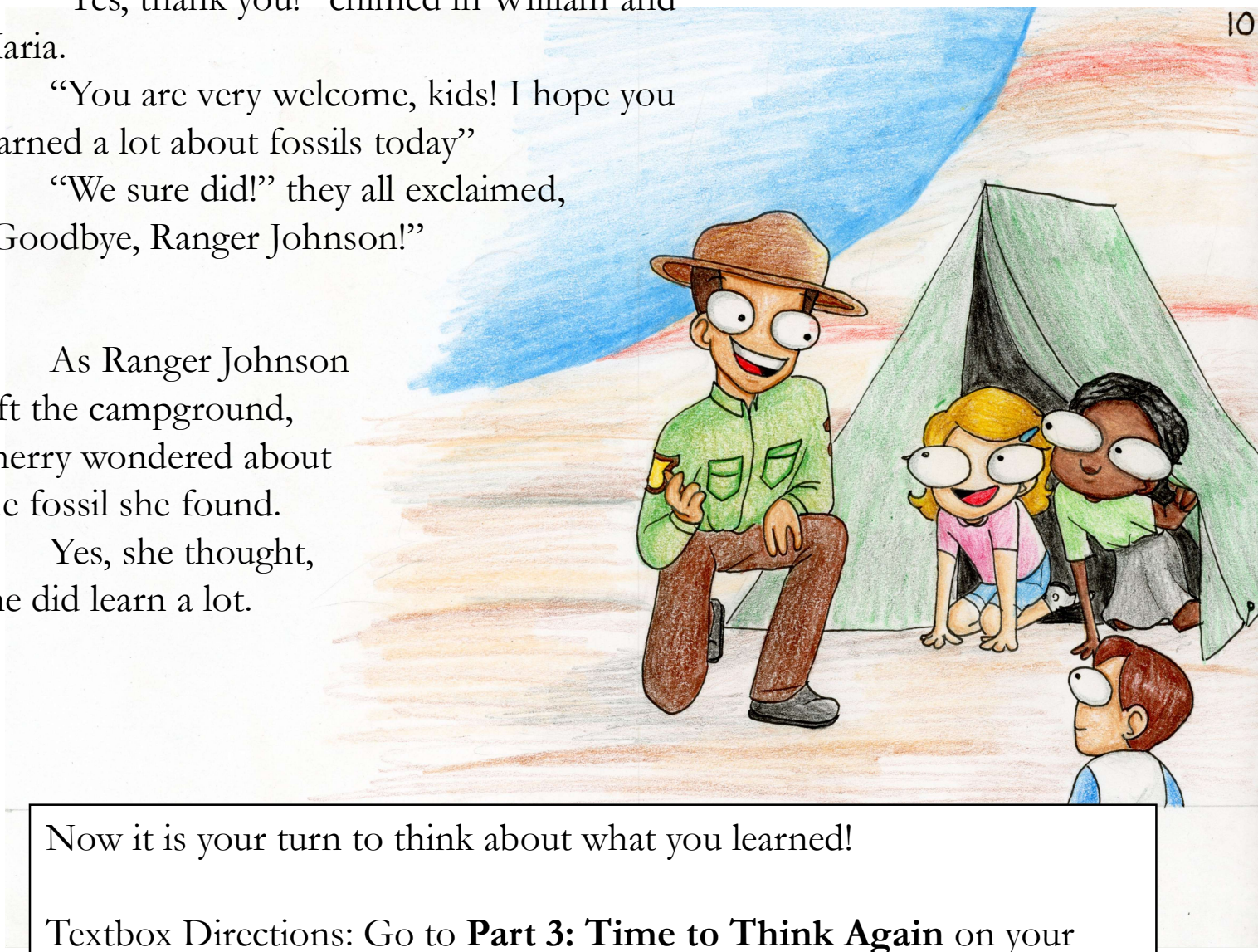
Ranger Johnson and the children returned to the campsite.

"Thank you for taking us to see Dr. Maka, Ranger Johnson," said Sherry.

"Yes, thank you!" chimed in William and Maria.

"You are very welcome, kids! I hope you learned a lot about fossils today"

"We sure did!" they all exclaimed, "Goodbye, Ranger Johnson!"



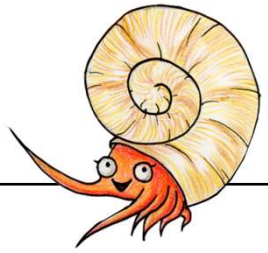

As Ranger Johnson left the campground, Sherry wondered about the fossil she found.

Yes, she thought, she did learn a lot.

Now it is your turn to think about what you learned!

Textbox Directions: Go to **Part 3: Time to Think Again** on your worksheet and tell us what you think fossil scientists know about each model by circling your choice. It is okay to look back at Part 1 to help yourself decide if your thinking has changed.

Then, Go to **Part 4: Tell Us Why** on your worksheet and answer the questions there. Be sure to use parts of the story to tell us what you are thinking.



"Thank you for learning about fossils with me today. There sure was a lot to think about, wasn't there? Which of the two models did you think was most truthful? Your teacher will now show you which model scientists think is the most truthful.

"Goodbye, friends!"

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