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Caves by Neil Morris
 Text-Based Discussion Plan

<p>Launch: Show students three pictures of caves. Explain that although they look different, each image is a cave. Then ask students to write down one thing they notice about images on an index card. Tell students that we will return to their observations at the conclusion of the discussion. Our goal is to understand what caves are and how they are formed in order to add to our original observations. I will begin reading the text, but I will ask for volunteers to read as we move through the text together.</p>		
Text segment	Questions/Comments	Cautions or Notes
<p>What is a cave?</p> <p>A cave is a hollow in the ground. This hollow, which we sometimes call a cavern, is really a hole in the earth's crust. Some caves are just below the surface, while others extend deep down into the crust.</p>	<p>It is important to notice that the author has included the subtitle "What is a cave?" This tells me what the information I can expect to find on this page before I read the paragraph. As I read the first paragraph, listen for how the author answers the question <i>what is a cave</i>.</p> <p>The author identifies a cave as a hollow, a cavern, or a hole? Which is it? How can we make sense of this?</p> <ul style="list-style-type: none"> ✓ A cave is a hole in the earth's crust or surface 	<p>* Make sure students understand that simply put, a cave is a hole in the earth's surface. However, they can be referred to by other names such as a cavern or hollow.</p>
<p>Caves can have very long underground passages, with lakes, rivers, and waterfalls. Some caves may be up to 50 million years old. Most developed as water trickled through them, finding paths between layers of rock, filling tunnels, and carving out new passages.</p>	<p>Who can explain the relationship between water and caves?</p> <ul style="list-style-type: none"> ✓ Caves are made by water. ✓ Caves can be filled with water in the form of lakes, rivers, and waterfalls. 	

<p>Caves can have very long underground passages, with lakes, rivers, and waterfalls. Some caves may be up to 50 million years old. Most developed as water trickled through them, finding paths between layers of rock, filling tunnels, and carving out new passages.</p>	<p>Who can explain the relationship between water and caves?</p> <ul style="list-style-type: none"> ✓ Caves are made by water. ✓ Caves can be filled with water in the form of lakes, rivers, and waterfalls. <p>How can water carve rock?</p> <ul style="list-style-type: none"> ✓ Over time, water wears the surface of the rock down. This process creates a cave. 	
<p>Experts have found evidence showing that people and animals have lived in caves since prehistoric times.</p>	<p>Why is this information important? How does it help us answer the question “What is a cave?”</p> <ul style="list-style-type: none"> ✓ A cave could also be defined as a habitat or home to prehistoric people and animals. 	
<p>Inside A Cave</p> <p>Constantly dripping water creates fantastic shapes and patterns inside caves, where it is damp, dark, and cold. Amazing sights usually await explorers when they first enter a cave. There are no green plants inside because there is little or no light to help them grow. There are, however, fungi, bacteria, and many other forms of life.</p>		

<p>Acid Rain</p> <p>In some areas, acid rain speeds up the formation of caves, as the acidic water widens the cracks. Acid rain is a form of pollution caused by gases given off by power plants and factories. Trees and whole forests can be killed by acid rain.</p>	<p>How does this information confirm what we have read about the acid in rainwater?</p> <ul style="list-style-type: none"> ✓ The acid in rain speeds up the formation of caves. <p>The author tells us that acid rain helps to form caves faster, but it also says that acid rain is a form of pollution—So, does acid rain have a positive or negative impact on our environment?</p> <ul style="list-style-type: none"> ✓ Positive—caves provide a home for animals, they help us learn more about our earth ✓ Negative—acid rain can kill trees, caves can be formed with the weak acid found naturally in rainwater 	<p>*Look for opportunities to link student responses.</p>
<p>Beneath the Hills</p> <p>An underground world of caves lies beneath the unusual limestone cones and towers of the Shuicheng hills in China.</p>	<p>Let's return to the caption Beneath the Hills on page 5.</p> <p>Why was an entire underground world of caves able to form in this particular location in China?</p> <ul style="list-style-type: none"> ✓ Water was able to carve the soft limestone rock. 	

<p>Sinkhole</p> <p>Sinkholes are funnel-shaped holes through which water flows into a cave. They usually start as large cracks.</p>	<p>Let's return to the caption Sinkhole on page 6.</p> <p>Why would the author include this information?</p> <ul style="list-style-type: none"> ✓ It explains how water flows into a cave. ✓ It reminds us that water is changing the earth's surface; it changes the large crack into a hole. The hole is how the water is able to get underground and form caves. <p>We know that once water is underground it continues to flow and move. On the pages 8 and 9 we are going to see the kinds of formations or shapes that are created by the water.</p>	
<p>Cave Formations</p> <p>When water seeps through limestone, it carries a dissolved mineral called calcite. Over time, this mineral is deposited and creates formations called speleothems.</p>	<p>What new information can we take away from this section?</p> <ul style="list-style-type: none"> ✓ Water carries a mineral called calcite that, over time, creates something called a speleothem. 	
<p>The best-known speleothems are stalactites, which hang downwards, and stalagmites, which grow upwards. To remember which is which, think "c" for ceiling in stalactite, and "g" is for ground in stalagmite.</p>	<p>How are stalactites and stalagmites formed?</p> <ul style="list-style-type: none"> ✓ Water carries calcite that builds up and creates these speleothems over time. <p>We learned that water wears down the earth's surface, but could we argue that water is also responsible for building new landforms?</p> <ul style="list-style-type: none"> ✓ Water carries calcite (a mineral) and 	

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<p>page 9</p> <p>Columns</p> <p>Stalactites and stalagmites grow together to form a column. These columns are from a cave in China. The world’s tallest column is 39 meters (128 feet) high! The tallest stalagmite is 32 meters (105 feet) high, and the longest stalactite is over 6 meters in length (20 feet).</p>		
<p>pages 8-9</p> <p>Strange Shapes</p> <p>A gradual buildup of calcite makes strange shapes. Water drips down from stalactites to</p>	<p>How would wind be able to create spiral shaped</p>	

<p>Hidden World</p> <p>This cross section shows what limestone caves look like underground. A stream vanishes down a sinkhole, making shafts and galleries. A small doline or large gorge may form when caves collapse.</p>	<p>Let's look at the diagram on page 7. Would someone like to read the caption?</p> <p>The author provides us with new information about what happens when a cave collapses. Why is this important?</p> <ul style="list-style-type: none"> ✓ If rock is worn down enough, a cave may collapse and the earth will be changed again. 	
<p>Exit: Tell students to return to their initial descriptions of the caves. Show the same three pictures of caves ask the students to describe the caves again, but using the scientific information we learned from our text. Invite students to turn and talk with a partner about the difference between their two descriptions. Recollect as one group and ask students to share what they talked about with their partners.</p> <p>Remind students that there is much more to learn about caves, so they should continue their exploration and build on what they have learned during our discussion today.</p>		