

4TH GRADE



Instructional Packet

Inside and Outside Carlsbad Caverns

by ReadWorks



Imagine watching hundreds of thousands of bats swirl around you, swarming to form a large, black mass that flies off into the horizon. At Carlsbad Caverns in New Mexico, this scene is a regular occurrence. The caverns, located in a United States National Park, are home to around 400,000 Mexican free-tailed bats that fly out into the night sky each evening at dusk to feed on nearby moths and insects, returning at dawn to their caves. The spectacle draws crowds from around the world into the Chihuahuan Desert, where the park is located. One such visitor was Laurel Mathews, who once visited the caves with her family on a road trip.

"At the entrance to one of the caves, there's stadium seating for visitors to watch the bats," she remembers. "We waited a long time to see them. Finally, they started circling out of the cave and they flew off-out came more and more and more, all of them flying in loops and then out into the sky. It was amazing that there were so many!"

Laurel also remembers the sound the bats made, describing the high, screeching noise. "It was really creepy, but also really cool," she says.

Laurel recalls her family's arrival at the Carlsbad Caverns National Park. "It didn't look very

spectacular when we first drove in," she admits. "But then we started exploring the big network of underground caves."

The formation of the caves is a result of a fossilized reef that existed 250 to 280 million years ago in an inland sea that has long since disappeared. Since limestone is typically made up of fragments of coral, a large limestone deposit eventually formed in the area. Today, you can still find several fossilized plants and animals in the caves' limestone that date back to a time before dinosaurs walked the earth. Starting sometime between four and six million years ago, water from the earth's surface began moving through the cracks in the stone deposit. There is a type of acid in surface water. When this water combined with rainwater, the two mixed to form another type of acid as a result of their chemical compositions. This acid slowly dissolved the limestone to eventually form the winding caves that exist today in Carlsbad Caverns. This is a very common process that happens to limestone-many caves all around the world exist in limestone deposits due to the stone's solubility (the ability of a substance to be dissolved) in a mixture of water and acid.

Eventually, speleothems-formations that arise from mineral deposits in caves-began to take shape in the lower levels of the caverns. In fact, these speleothems existed during the last ice age, when instead of a desert, a pine forest sat above the caves. Over the years, park employees and rangers have found clues that hint at the caves' history. For example, according to the National Park Service, people have found some bones of ancient ice age animals scattered around the entrance to some of the caves. In 2003, an employee found a part of a stone scraper dating back to the last ice age near a cave entrance as well. Clearly, the caves have a long history-researchers have discovered that American Indians first inhabited the area sometime between 12,000 and 14,000 years ago. Ever since then, the caves have been explored by several groups, including Spanish explorers in the 1500s, and later by American explorers and guides who drew attention from all across the country to the natural phenomenon.

Laurel remembers this phenomenon very well. "It took us between one and two hours to get all the way to the bottom," she says, recounting the windy pathway leading deeper and deeper into the heart of the caves. "The park had put in blue and red lights to highlight the beautiful rock formations."

Once they reached the bottom, Laurel says that she had to take an elevator to get back to the top. "My ears popped so much in the elevator!" she remembers. "It took a really long time to reach the top; I didn't realize how far down we were until we were on our way back up."

Name: _____ Date: _____

1. According to the passage, what currently lives in the caves at Carlsbad Cavern National?

- A. Native Americans
- B. bats
- C. bears
- D. explorers

2. What does the author describe at the beginning of the passage?

- A. how speleothems are formed
- B. the formation of limestone caves
- C. fossils found in Carlsbad Cavern
- D. watching bats at Carlsbad Cavern

3. Limestone deposits can help researchers learn about what the area was like thousands of years ago. What evidence from the passage best supports this conclusion?

- A. Limestone can contain fossilized plants and animals.
- B. Acid can slowly dissolve limestone to form winding caves.
- C. Limestone is typically made up of coral fragments.
- D. Many caves around the world exist in limestone deposits.

4. "At the entrance to the cave, there's stadium seating for visitors to watch the bats." Based on this information, what can you conclude about the popularity of the bats at Carlsbad Cavern?

- A. The bats are not a popular attraction at Carlsbad Cavern.
- B. People go to Carlsbad Cavern to see the caves, not the bats.
- C. The bats are a popular attraction at Carlsbad Cavern.
- D. Most people who visit Carlsbad Cavern don't know about the bats.

5. What is this passage mostly about?

- A. Laurel Mathews' family vacation
- B. how bats navigate using sound
- C. how speleothems are formed
- D. caves at Carlsbad Cavern National Park

6. Read the following sentences: "The caverns, located in a United States National Park, are home to around 400,000 Mexican free-tailed bats that fly out into the night sky each evening at dusk to feed on nearby moths and insects, returning at dawn to their caves. The **spectacle** draws crowds from around the world into the Chihuahuan Desert, where the park is located."

As used in this sentence, what does the word "**spectacle**" mean?

- A. a very impressive show
- B. something that happens irregularly
- C. something that happens at night
- D. something that people watch with glasses

7. Choose the answer that best completes the sentence below.

_____, Laurel did not think the Carlsbad Cavern National Park looked very spectacular, but her opinion changed after she explored the caves.

- A. For instance
- B. Initially
- C. Particularly
- D. Therefore

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WRITING PROMPT

Week 1:

Imagine a giant box is delivered to your doorstep with your name on it. What's inside and what happens when you open it.

4.OA.B.4

Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Exploring Multiples

1	3	5	7	9					
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Materials: hundred grids, different colored crayons, hundred grids recording sheet

1. Shade in the multiples of 2 on the hundred grid recording sheet.
2. Next, select a different color crayon and shade in the multiples of 3 on the hundred grid recording sheet.
3. Describe any patterns that you notice in the multiples of 2 and 3.
4. Which numbers have two colors on them? What number do you need to skip-count by in order to place only these colors on the hundred grid? Explain.
5. Next, select a different crayon and color each multiple of 4 on the hundred grid. How is the multiples of 4 pattern different from the patterns for multiples of 2 and 3? Explain your thinking.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Patterns in Products

1. Draw and complete the table shown below.

	X 2	X 4	X 8
2			
4			
8			
3			
6			
9			
5			
10			

2. Look for patterns in the table. Describe any patterns that you find.
3. How could this pattern help you solve 35×8 mentally? Explain your thinking.

Patterns in Products

1. Draw and complete the table shown below.

	X 10	X 5
6		
8		
9		
7		
11		
15		

2. Look for patterns in the table. Describe any patterns that you find.

3. How could this pattern help you solve 48×5 mentally? Explain your thinking.

Dinnertime for animals

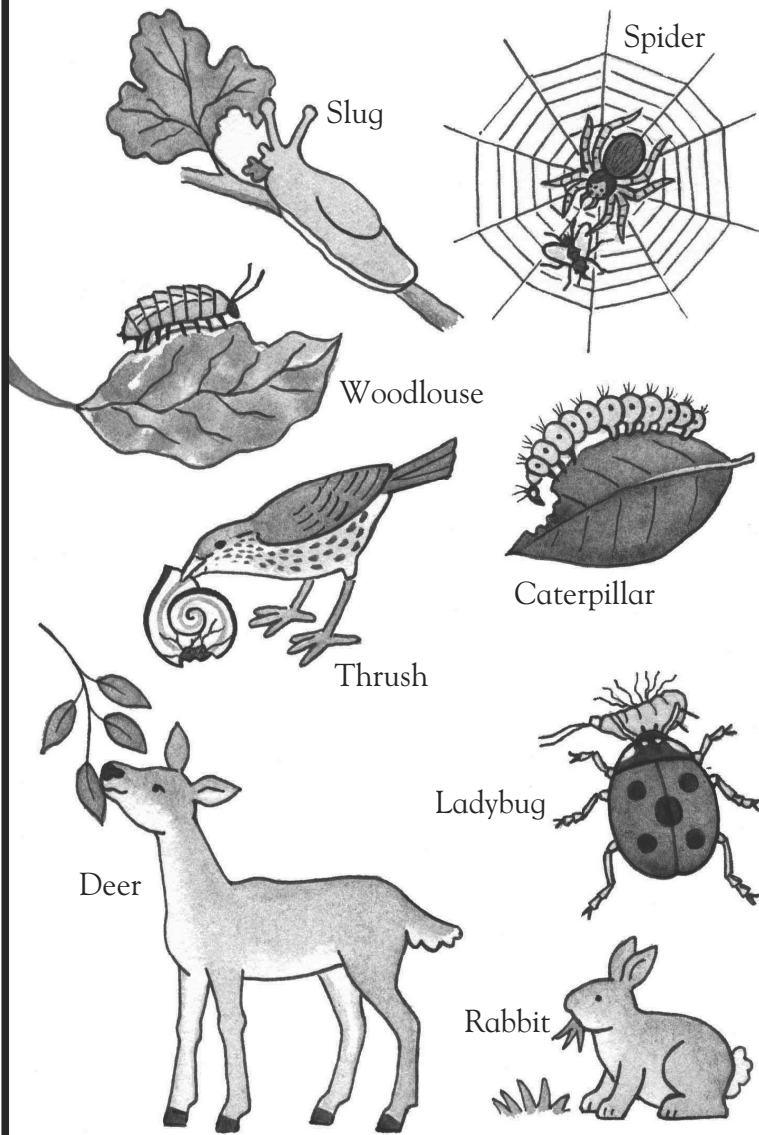


Background knowledge

When animals feel hungry, they need to eat. Food provides the animals with carbohydrates, faats, and proteins, which are important nutrients they need to grow and live. Some animals have to hunt for their food while other animals eat mostly plants. Plants can make their own food using sunlight and gases from the air and water. Animals that eat plants are called *herbivores*. Animals that eat herbivores are called *carnivores*.

Science activity

Can you spot the herbivores in this group of animals? Write their names in the box.



Herbivores

.....

.....

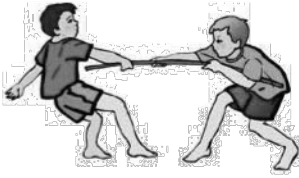
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Science investigation

Find some pictures to compare the skull and teeth of carnivores and herbivores. How do they differ? Draw a picture that compares their teeth. Make paper puppets of carnivore and herbivore dinosaurs and act out a play that shows how dinosaurs eat.



Name: _____

Forces & Motion

Directions: Write the force words that complete each sentence.

push	pull	gravity	friction	force
inertia	machine	energy	balance	Newton

1. The greater the _____ the easier the object will move.
2. To do the job in less time and with less energy, use a _____
3. That rock will roll down the hill due to the force of _____
4. To make something _____ both ends need to have the same weight.
5. It takes _____ to get a job done.
6. _____ is the idea that something in motion will remain in motion, and something at rest will remain at rest, unless affected by an outside source.
7. It would be more difficult to _____ a wagon if it didn't have wheels.
8. If you have a few people _____ on the rope, the box will be easier to move.
9. _____'s theories on motion are still believed correct today.
10. We added wheels to our bureau to create less _____ when we move it.

Name: _____

Natural Resources

Directions: Our earth is the source of everything we use and make. Organize the things we use into the proper natural resource categories. Some words may fit in more than one category.

paper tin glass fruits vegetables plastics structures
sand natural gas rubber iron clay food
clothing aluminum oil companions ceramics medicine

renewable

plants

_____	_____
_____	_____
_____	_____
_____	_____

animals

nonrenewable

minerals

_____	}	_____

fossil fuels

↓

Mystery Source Reading

In the early part of March, the fifth day, I think, at seven o'clock in the morning we left Detroit, all snugly packed in two sleighs.... There was not much of a road, only the Indian trail. We arrived at Royal Oak at sundown, and stayed at William Thurber's overnight....

After a good warm supper, the beds were made on the floor and all camped for the night... After a hearty breakfast the teamsters called out, "All aboard for Pontiac!" and soon we were snugly packed for another day's journey.

At noon we arrived at the famous town of Pontiac.... The town consisted of one little log house, containing three families and a few workmen, who were felling oak trees for timber to construct the Pontiac mill.... At this house we took dinner that was spread on boards laid on barrels. After dinner we left the little town for Silver Lake, where we arrived about four o'clock p.m.

The workmen had occupied a little log shanty while building the house for the family. The... (house) was unfinished....the logs were all up and the roof was on and a rough floor laid down.... The house was fifty feet long and twenty wide, with a ten-foot hall running through the middle.... In the hall was a closed staircase leading to a half-story room above, and also down into the cellar....

Our first night.... a field bed was spread on the loose floor, and a large fire was built in the earthen hearth. We fell asleep talking about the big fire, the big logs which the house was made of, and all the strange things...around us.

Source: Ripley, Paul E., *Lakeland's Paradise*. Waterford, MI: Waterford Board of Education, 1961.

Mystery Source #2 Analysis Sheet

Partners: _____ and _____

What kind of a document is this?

Who do you think wrote this? On what evidence did you base your answer?

When do you think it was written? On what evidence did you base your answer?

What is being described?

What is an example of the writer's feelings?

What is the point of view of the writer?

What does this source tell us about early Michigan history?

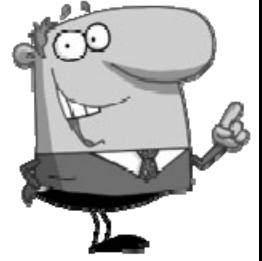
Name _____

Date _____



One Day of Anything Writing Prompt

Sometimes we wake up wishing we didn't have to go to school-that we could do anything we wanted. If you could spend tomorrow doing whatever you wanted to do and could go wherever you wanted to go, how would you spend the day?



Name _____

Date _____

I Am Proud...

We all do things we should be proud of. What are some things you've done that you are proud of?