ROZZY READERS

EDUCATION RANGER: YELLOWSTONE

3-5

Section 1:
Education Ranger

National Parks

Parks in the United States that have been created by and are protected by the government.

Education Ranger

A person who works at the visitor centers in national parks. They teach visitors about the park by answering their questions and telling them cool facts.

National Park Service

The part of the government that keeps national parks safe.

Career Highlight: Education Ranger

Education rangers are people who work at the visitor centers in national parks. They teach visitors about the park by answering their questions and telling them cool facts. Sometimes education rangers may take visitors on a walk or hike through the park.

Education rangers help visitors safely find their way around the park, answer questions about the park, and educate people about the plants and animals that live there.

Education rangers also visit local communities and events to share the importance of national parks with others.

Education rangers know almost everything about the national park they work with so that they can answer any question that a visitor might have!

Content Check: Education Ranger

Below are five statements. If the statement is true, write a "T" on the line next to it. If the statement is false, which means it is not true, write a "F" on the line next to it.

1. Education rangers will not be able to answer any of your questions about the park. _____

2. Sometimes education rangers take visitors on a walk or hike through the park to teach them more about it. _____

3. Education rangers may visit local communities and events to share the importance of national parks with others. _____

Section 2:

Yellowstone

Imagine that you just got a job as an education ranger at Yellowstone! You have to learn all about Yellowstone so you can answer all of the guests' questions.

Learn: Yellowstone

LOCATION:
Yellowstone National Park is 3,472 square miles. Most of the park (96%) is located in Wyoming. Part of the park (3%) is in Montana, and a small section (1%) is in Idaho.

Learn: Yellowstone

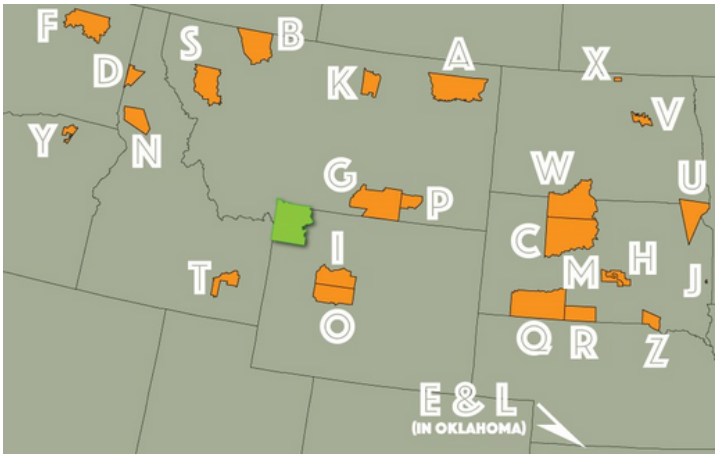
HISTORY:

- Native Americans have lived in the area now known as Yellowstone for more than 11,000 years.
- The Tukudika (a.k.a. Sheep Eaters) are the most well-known group of Native Americans to use the park, but many other tribes and bands lived in and traveled through what is now Yellowstone National Park.
- European Americans began exploring in the early 1800s.
- Yellowstone was established in 1872 and was America's first National Park.

Rock structures like this show that people have been in Yellowstone for more than 11,000 years!

These are replicas of Wickiups. Wickiups provided temporary shelter for some Native Americans while they were in Yellowstone

Tribes associated with Yellowstone:



A - Assiniboine and Sioux
B - Blackfeet
C - Cheyenne River Sioux
D - Coeur d'Alene
E - Comanche
F - Colville Reservation
G - Crow
H - Crow Creek Sioux
I - Eastern Shoshone
J - Fladreau Santee Sioux
K - Gros Ventre and Assiniboine
L - Kiowa
M - Lower Brule Sioux
N - Nez Perce
O - Northern Arapaho
P - Northern Cheyenne
Q - Oglala Sioux
R - Rosebud Sioux
S - Salish and Kootenai
T - Shoshone—Bannock
U - Sisseton—Wahpeton Sioux
V - Spirit Lake Sioux
W - Standing Rock Sioux
X - Turtle Mountain Band of the Chippewa
Y - Umatilla Reservation
Z - Yankton Sioux

Learn: Yellowstone

ANIMALS:
Yellowstone is home to many animals. In Yellowstone there are:

- Almost 300 species of birds
- 16 species of fish
- Five species of amphibians
- Six species of reptiles
- 67 species of mammals

Yellowstone is home to the largest amount of mammals in the lower 48 states. Yellowstone is known for the large hoofed mammals that live there such as bighorn sheep, bison, elk, moose, mountain goats, mule deer, pronghorn, and white-tailed deer.

There are many other large predators that live at Yellowstone such as black bears, Canada lynx, coyotes, grizzly bears, mountain lions, wolverines, and wolves.

The National Park Service works hard to make sure that these animals and their habitats are kept safe. The National Park Service also works to educate people about the animals that live there!

Cutthroat Trout

Elk

Tiger salamander

Learn: Yellowstone

PLANTS

Flowers: Hundreds of wildflowers.

Trees: Common trees are those that have cones and needle-like leaves such as Lodgepole pine, Whitebark pine, Engelmann spruce, and White spruce. There are also some deciduous species including Quaking aspen and cottonwood. Deciduous trees are trees that lose their leaves each year.

Shrubs: Include common juniper, sagebrush, and Rocky Mountain maple.

Lodgepole Pine

Wildflowers

Sagebrush

There are three plant species that are found only in Yellowstone:

- Ross's bentgrass
- Yellowstone sand verbena
- Yellowstone sulfur wild buckwheat.

Yellowstone sand verbena

Yellowstone sulfur wild buckwheat

Ross's bentgrass

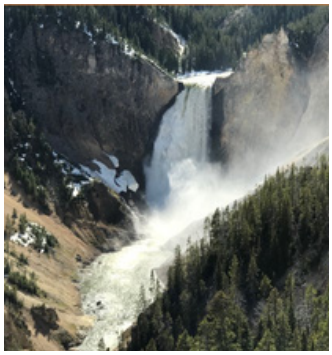
Learn: Yellowstone

TODAY

Today, people visit Yellowstone to participate in a variety of outdoor activities. In Yellowstone, visitors can participate in activities such as camping, hiking, fishing, biking, boating, and horseback riding.

Many visitors come to Yellowstone to view wildlife, hot springs, waterfalls, and the amazing views that the park has to offer.

Hiking



Lower Falls of the Yellowstone River

Mammoth Hot Springs

Horseback Riding

Content Check: Yellowstone

Answer the questions below.

1. The majority of Yellowstone is located in what state?

2. Name at least two trees and two animals that can be found in Yellowstone.

3. In what year did Yellowstone become a National Park?

Section 3:
Math Practice-Adding Time and Using a Formula

Geysers are hot springs that have constrictions where the water flows. The constrictions cause pressure to build up to the point where an eruption occurs.

More than half of the world's geysers are found in Yellowstone. Old Faithful is a famous geyser located in Yellowstone. Though most geysers erupt at random, Old Faithful erupts at regular intervals. This means that you can predict close to when it will erupt next!

Imagine that you are an education ranger that takes visitors on tours to Old Faithful. You use a formula to help predict about what time the next eruption will be so that your visitors can see it.

View the example on the next page to see how you will predict the next time Old Faithful will erupt. Then, predict the next eruption on your own.

Adding Time and Using a Formula

Use the following information to predict the next time that Old Faithful will erupt.

EXAMPLE:

A. Eruption Start Time: 2:10 PM
B. Eruption End Time: 2:15 PM
C. Length of Eruption: 5 minutes
D. Next Eruption: 3:17 PM

Length of Eruption	Minutes Until Next Eruption
Greater than 3 minutes	68 minutes
Less than 3 minutes	94 minutes

1. Find the length of the eruption (C). Do this by subtracting the eruption start time (A) from the eruption end time (B).

2:15-2:10= 5 minutes

2. Use the table to determine how many minutes there are until the next eruption.

The eruption was 5 minutes long. The table shows us that the next eruption will be 68 minutes later.

3. Find when the next eruption will happen. Do this by adding the number of minutes you found using the table with eruption start time.

The last eruption started at 2:10 PM and the next one will be 68 minutes later. That means the next eruption will be at 3:17 PM.

Adding Time and Using a Formula

Use the following information to predict the next time that Old Faithful will erupt.

#1

A. Eruption Start Time: 5:45 PM

B. Eruption End Time: 5:51 PM

Length of Eruption	Minutes Until Next Eruption
Greater than 3 minutes	68 minutes
Less than 3 minutes	94 minutes

1. **Find the length of the eruption (C).** Do this by subtracting the eruption start time (A) from the eruption end time (B).

C. Length of Eruption: _____

2. Use the table to determine how many minutes there are until the next eruption.

Minutes until next eruption: _____

3. **Find when the next eruption will happen.** Do this by adding the number of minutes you found using the table with eruption start time.

Next eruption will be at: _____

#2

A. Eruption Start Time: 7:48 AM

B. Eruption End Time: 7:50 AM

Length of Eruption	Minutes Until Next Eruption
Greater than 3 minutes	68 minutes
Less than 3 minutes	94 minutes

1. **Find the length of the eruption (C).** Do this by subtracting the eruption start time (A) from the eruption end time (B).

C. Length of Eruption: _____

2. Use the table to determine how many minutes there are until the next eruption.

Minutes until next eruption: _____

3. **Find when the next eruption will happen.** Do this by adding the number of minutes you found using the table with eruption start time.

Next eruption will be at: _____

Adding Time and Using a Formula

Use the following information to predict the next time that Old Faithful will erupt.

#3

A. Eruption Start Time: 11:00 AM

B. Eruption End Time: 11:02 AM

Length of Eruption	Minutes Until Next Eruption
Greater than 3 minutes	68 minutes
Less than 3 minutes	94 minutes

1. **Find the length of the eruption (C).** Do this by subtracting the eruption start time (A) from the eruption end time (B).

C. Length of Eruption: _____

2. Use the table to determine how many minutes there are until the next eruption.

Minutes until next eruption: _____

3. **Find when the next eruption will happen.** Do this by adding the number of minutes you found using the table with eruption start time.

Next eruption will be at: _____

#4

A. Eruption Start Time: 7:48 AM

B. Eruption End Time: 7:50 AM

Length of Eruption	Minutes Until Next Eruption
Greater than 3 minutes	68 minutes
Less than 3 minutes	94 minutes

1. **Find the length of the eruption (C).** Do this by subtracting the eruption start time (A) from the eruption end time (B).

C. Length of Eruption: _____

2. Use the table to determine how many minutes there are until the next eruption.

Minutes until next eruption: _____

3. **Find when the next eruption will happen.** Do this by adding the number of minutes you found using the table with eruption start time.

Next eruption will be at: _____

Section 4: ELA Practice
Nonfiction Text Features

Imagine that you are an education ranger. You have learned so much information about Yellowstone to share with visitors, but you want to learn more about some of the features that makes Yellowstone a famous park!

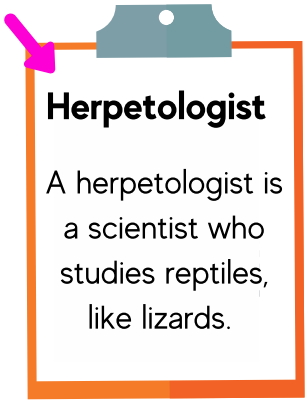
People often read nonfiction texts when they are trying to learn about new topics. Nonfiction text is any text that is true and includes factual information. Nonfiction text often uses features to help the reader learn about the topic.

Before you start reading, review different nonfiction text features you will see in the passage.

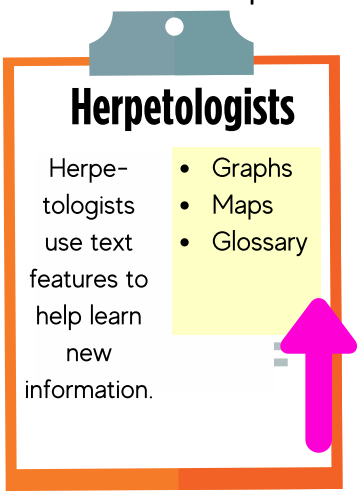
Nonfiction Text Features

Map
An image that shows important information about a piece of land or location.

Heading
A word or short phrase that tells the reader what the paragraph underneath is about.



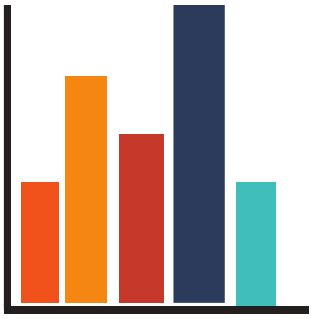
Sidebar
A box with words that provides the reader with additional information about a topic.



Nonfiction Text Features

Graph

A visual way to organize information.



Caption

Words that are underneath or next to a picture to explain what a picture is about.

A spotted black pond turtle resting.

Glossary

A list of important words and their definitions.

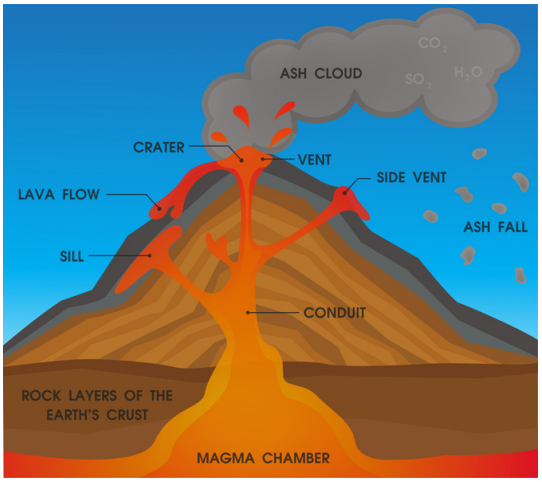
Herpetologist:
A scientist who studies reptiles, like lizards.

Frog:
A tailless amphibian.

Text Features:
Parts of an article or story that are not the main sentences.

Diagram

A drawing or a picture that shows the different parts of an object, like a car. It can also show how something works, like how lava comes out of a volcano.



Nonfiction Text Features

Part of what makes Yellowstone famous are the hydrothermal features that are in the park. You decide to learn about the hydrothermal features, so you can share the information with guests. You will learn about the hydrothermal features by reading nonfiction texts about them.

Read the nonfiction text on the next pages to learn about the hydrothermal features located in Yellowstone.

Make sure to answer the questions located in the purple boxes as you go!

Nonfiction Text Features

HYDROTHERMAL FEATURES IN YELLOWSTONE

Hydrothermal features are features that involve water that is heated up below Earth's surface to extremely high temperatures. When the water below the surface gets too hot, it is pushed up to Earth's surface as hydrothermal features. Hydrothermal features need three things to develop; heat, water, and a natural plumbing system.

Yellowstone has five types of hydrothermal features: Hot Springs, Geysers, Mudpots, Travertine terraces, and Fumaroles

Yellowstone has over 10,000 hydrothermal features, including more than 500 geysers.

HEAT

Yellowstone is on top of one of the world's largest volcanos, which means that magma is present beneath the surface. This magma generates a tremendous amount of heat.

What two text features are shown on this page?

WATER

Rain and melted snow seep deep down into Earth's surface.

NATURAL PLUMBING SYSTEM

Cracks, fissures, and faults in the Earth provide paths in which the water passes. These paths make up the plumbing system.

Nonfiction Text Features

Hot springs: Hot springs are the most common hydrothermal features in Yellowstone. They have an open plumbing system, which allows the water to easily come back to the surface and create a pool of water.

Hot Spring

Geysers: Hot springs that have constrictions in their plumbing, these constrictions stop the water from easily coming to the surface. Once pressure from the water builds up enough it erupts.

Geyser

Mudpots: Hot springs that are acidic enough to dissolve the surrounding rock, and typically also lack water in their systems.

Mudpot

Travertine terraces: Hot springs that rise up through limestone and deposit calcite. The calcite makes the travertine terraces.

Fumaroles: Are also known as steam vents. They lack water in their system, and instead constantly release hot steam.

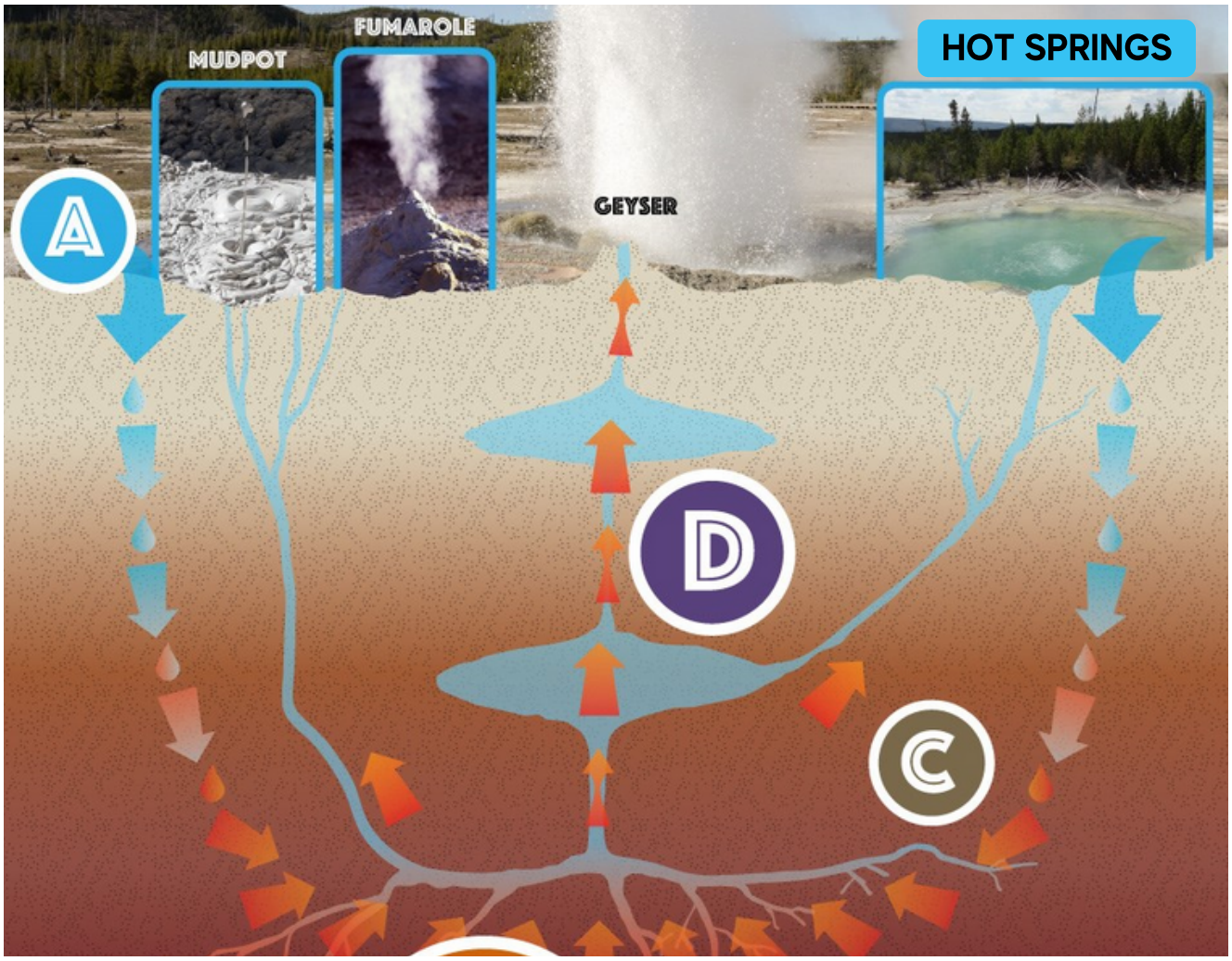
What kind of text feature do you see under the pictures?

Fumaroles

Travertine Terraces

Nonfiction Text Features

How Hydrothermal Features Develop



A: Snow melt and rain water move down through rock layers.

B: Magma below the surface heats the water.

C: Weight of water above causes pressure and heat to build below.

D: Hot water rises through the plumbing to surface as hydrothermal features.

What text feature is shown on this page?

Nonfiction Text Features

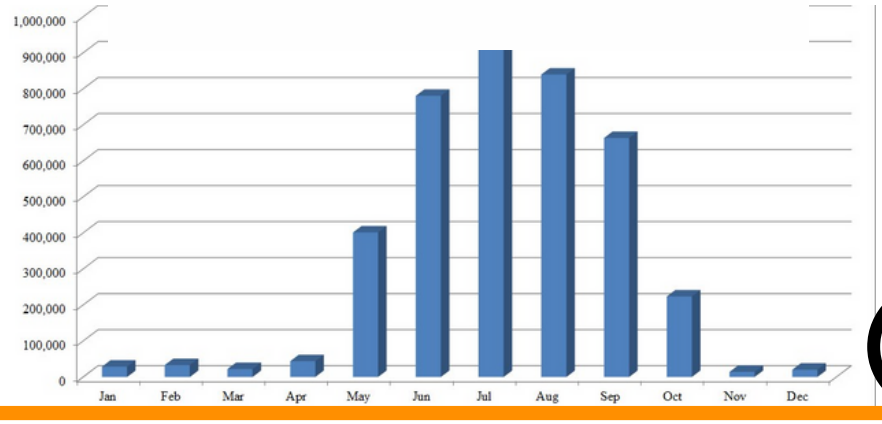
Hot springs: Pools of hydrothermally heated water.

Geysers: Hot springs with constrictions in their plumbing, which causes them to periodically erupt to release the pressure that builds up.

Fumaroles: Also known as steam vents. They lack water in their system, and instead constantly release hot steam.

A

Average Monthly Visitors, Yellowstone National Park 2014-2018



B

C

Look at the three text features labeled A, B, and C. Next to the correct letter, write the name of the text feature and why writers may use it when writing non-fiction text.

A:

B:

C:

Nonfiction Text Features

Use the information you have learned about Yellowstone and hydrothermal features to answer the questions below in complete sentences.

1. In your own words, describe what causes hydrothermal features.

2. List the five types of hydrothermal features that can be found in Yellowstone.

3. How many hydrothermal features are present in Yellowstone? How many of those are geysers?

4. What are the three things needed in order for hydrothermal features to form?