

LESSON 1: VIEWS OF PARASHANT



GEOLOGICAL ADVENTURES AT PARASHANT

EXPLORING THE GEOLOGY OF
GRAND CANYON-PARASHANT NATIONAL MONUMENT



LESSON 1 GUIDE: VIEWS OF PARASHANT

OVERVIEW

This activity is an interactive reading guide to help students explore the “Views of the National Parks” (Views) Virtual Experience for Grand Canyon-Parashant National Monument (Parashant). The guide will help students focus their attention as they interact with the module. Interactive reading guides are excellent strategies to use when assisting students in productive reading. They allow students to find the essential ideas within a text without being distracted by large amounts of information. Students who may find it difficult to differentiate key ideas from the supporting detail benefit from the clues and guidance of reading guides. Essentially, interactive reading guides are developed to assist students with text materials that may be too difficult for independent reading. Students can complete the assignment individually or in pairs at computers.

Objective	After completing this activity, students will have a broad perspective on the natural setting and historical uses of Colorado Plateau and the lands within the Grand Canyon-Parashant National Monument (Parashant).
Concepts	<ul style="list-style-type: none"> ▪ Physical, geological, and ecological settings of the Colorado Plateau. ▪ Historical use of land for farming, hunting, ranching, and mineral production.
Duration	One or two 45-minute class periods, depending upon how many segments of the DVD/web site students are asked to complete:
Audience	Students in grades 6 to 9
Materials	Instructors can download the Views DVD to the school’s public server, order a free copy, or have students access the Views website via the Internet.
Extensions	<p>For all students</p> <ul style="list-style-type: none"> ▪ Ecology Project - Use the Ecology portion of the DVD or web site to design a research project on the ecology of the monument. From the main menu of Grand Canyon-Parashant National Monument, click on Ecology. Assign groups of students to read, summarize, and report to the class on one of five research areas: Mojave, Transition, Great Basin, Colorado Plateau, and Riparian.

EXPLORE

45 Minutes

Answers to the questions in the student guide are shown below. In the activity, whenever students see the symbol “∇”, they should click on the link or phrase next to it. This activity compliments the National Park Service’s Grand Canyon-Parashant National Monument Visitor Center at <http://www2.nature.nps.gov/views/>

Part A – Introduction to the Monument

Go to the homepage of [Views of the National Parks](#). Click on Visitor Center, then on Virtual Experiences, then on Grand Canyon-Parashant, and then click on Explore Grand Canyon-Parashant.

1. What four things might you hear if you are in the country?
A. birds singing B. dried leaves blowing across the ground
C. running water D. quiet
2. One of the factors that make this monument so special is that it is **far** from centers of **human** occupation. Some people call it **isolated**, even lonely, while others travel great **distances** to experience its **solitude**. Rugged and **secluded**, the monument is one of largest, un-fragmented stretches of **sparsely** developed lands in the contiguous **United States**.

Part B – Visitor Center

▽ Visitor Center

On this page, the three buttons below **Visitor Center** (Facts, Activities, and Preparation) link to the same pages as the three hyperlinks in the text on page 3 of the Visitor Center home page (general facts, popular activities, and how to prepare a successful expedition).

1. The monument's expansive landscape encompasses a chronicle of science, **geology**, cultures, and **history**.
2. Two hours
3. Hiking, primitive camping, hunting, and photographing unobstructed views of interesting landforms and sweeping vistas.

▽ Facts

4. True
5. Elevation at the monument ranges from **1500** feet above sea level near Grand Wash Bay at Lake Mead to over **8000** feet at Mt. Trumbull.
6. The monument is a special land filled with canyons, **mountains**, and deserts.
7. Grand Canyon-Parashant National Monument is under the joint management of the **National Park Service** and the Bureau of Land Management.
8. The monument is located on the Colorado Plateau in northwestern **Arizona**.

9. Grand Canyon National Park is to the **south** and the monument borders the state of **Nevada** to the west.

∇ Activities

10. False
11. There are no developed **campgrounds** within the monument; please camp within previously used, undeveloped **campsites** along primary **roads**.
12. At the monument, you should camp at least **1/4 mile** from any water source or reservoir.

∇ Preparation

13. No
14. Three diseases to be wary of at the monument are **Hantavirus**, **Plague**, and rabies.
15. Each person should bring **one gallon** of water for each day at the monument.
16. A. Have you planned out your trip?; B. Have you left your itinerary with a family member or friend? C. Have you collected the proper equipment?

The Colorado Plateau

∇ Colorado Plateau

1. A. Pennsylvania; B. Ohio; C. New York
2. Ancient **volcanic** mountains, plateaus and **buttes**, deeply carved canyons, and amazing ranges in **color** are the region's major claims to fame.
3. Temperatures vary from winter lows below **zero** and summer highs into the **hundreds**.
4. Grand Canyon-Parashant is in the **southwestern** part of the Colorado Plateau.

∇ Geology

5. Some areas on the Colorado Plateau are famous for the colorful **sedimentary** rocks formed many **millions** of years ago when a vast **ocean** covered Arizona and much of the **western** United States.
6. A. sandstone; B. shale; C. limestone
7. Warped and folded rock layers that form giant “steps” are called **monoclines**.

8. Not all of the **rocks** exposed on the Colorado Plateau were deposited by **water** or wind, however. Numerous **volcanoes** dot the region, adding variety to the **landscape**.
9. The bedrock absorbs the water into cavities. It sinks through the ground and reaches the surface again as springs in lower elevations.

∇ Ecology

10. The great ecological diversity of the Plateau is due to differences in **climate** and landforms.
11. Ponderosa pine, lodgepole pine, Douglas-fir, and aspen
12. False
13. Golden eagles, red-tailed hawks, and falcons
14. Riparian areas that thread throughout the **Plateau** are home to frogs, **toads**, snails, beavers, **dragonflies**, and fish.

∇ History

15. Humans have lived on the Colorado Plateau for **12,000** years. First to arrive were big game **hunters**, followed by the **Archaic** culture (8000 years ago) who hunted small **game** and gathered **food plants**. Later, the Ancestral **Puebloans** (300 A.D. to circa 1250) met the Plateau's challenges, and settled into permanent **homes** to farm.
16. Non-native explorers and trappers ventured onto the Plateau between **1776** and **1847**.
17. The resident population of the Colorado Plateau today exceeds **one million**.
18. Human impacts that have affected the status of Colorado Plateau **ecosystems** include forest management practices, **grazing**, logging, mining, **power** generation, introduction of non-native **species**, dams and water diversion, and fragmentation of **wildlands** by roads and other **construction**.

▽ Parashant

19. Grand Canyon Parashant National **Monument** is located in the **southern** portion of the Colorado Plateau called the **Arizona** Strip.

20. 3,200

▽ how far away

21. The monument is located 2,367 **miles** from Washington, DC and 445 miles from **Los Angeles**.

Journey Through Time

▽ Journey Through Time

▽ Nampaweap

1. By pecking flakes from the surface of rock to expose the lighter colored rock underneath.
2. **Archaeologists** have classified rock elements into categories. Some of the elements you will see at Nampaweap are **anthropomorphs** (human-like figures), zoomorphs (**animal-like figures**), and abstract designs. Anthropomorphs typically have **arms** and legs, even fingers and **toes**. Bighorn sheep, **snakes**, and lizards are common **zoomorph** figures. Abstract elements include circles, **spirals**, and various combinations of **lines**.

▽ points to consider when visiting [QuickTime Player needed]

Note: QuickTime Player is needed to view a panoramic and interactive image of the Nampaweap site, but the question relates only to the text on the pop-up window.

3. A variety of factors that contribute to the erosion of petroglyphs, including **wind**, rain, extreme temperatures, **plant growth**, and rock type. The most devastating factor however, is **human impact**.

▽ Sawmill

4. Large scale and economically significant lumbering of ponderosa pine began at Mt. Trumbull in the **1870's**.
5. Sawmill operations used **steam boilers** and flues to generate power.
6. False
7. To determine how to restore it to pre-settlement condition.

▽ Schoolhouse

8. Abraham Bundy

9. A. school, B. church; C. dancehall; D. town meeting site
10. A. corn, B. wheat, C. beans, and D. squash
11. 250
12. A. to stop injury to the public grazing lands; B. to provide orderly use and development; C. to stabilize the livestock industry that was dependent upon the public range.
13. A. 1966; B. 2001

▽ Ranch

14. It is an oasis – a source of abundant water in an arid region
15. A. Paleo-Indian B. Archaic C. Ceramic period
16. A. Navajo; B. Paiute; C. Ute
17. To turn 200 acres of Mojave Desert creosote bush into a cattle range
18. It was made of local rock, not logs, like other homes in the area.

▽ Grand Gulch Mine

19. False
20. Copper proved to be more abundant and was periodically profitable.
21. A group of men from St. George, Utah established an official **claim** on the mine on June 23, **1873**. Profitable exploration of the **ore**, said to be “the richest ever produced by a copper **mine** in the Territory,” was hampered by **isolation** and the long **haul** to a railhead. **Mules** initially packed in tools and **supplies** until the early 1870s when a **wagon road** opened to St. George.
22. It was difficult to haul the large amounts of unprocessed ore long distances.
23. 75 to 80
24. In 1906, a **54**-mile long wagon road was constructed, connecting the mine to St. Thomas, **Nevada** (now under **water** at Lake Mead). It took freight teams a **week** to make the round trip. Between eight to twelve **tons** were hauled each trip at a value of **\$10.00** a ton. Teams included **six** to **ten** horses, with drivers usually **traveling** in pairs.
25. The drop in copper prices
26. A. bunkhouse; B. adobe smelter

LESSON 1: VIEWS OF PARASHANT

This activity compliments the National Park Service's **Views of the National Parks** (DVD and web site) *Grand Canyon-Parashant National Monument Visitor Center*. <http://www2.nature.nps.gov/views/>

EXPLORE

In this activity, you will explore Grand Canyon-Parashant National Monument (Parashant) through the Views DVD or website. Whenever you see the ∇ symbol, click on the button or link to the name that follows it. For true/false or yes/no statements, circle the correct answer.

Part A. Introduction to the Monument

Go to the homepage of [Views of the National Parks](#).

∇ **Visitor Center**

∇ **Virtual Experiences**

∇ **Grand Canyon-Parashant**

∇ **Explore Grand Canyon-Parashant.**

1. What four things might you hear if you are in the country?
 - A.
 - B.
 - C.
 - D.
2. One of the factors that make this monument so special is that it is _____ from centers of _____ occupation. Some people call it _____, even lonely, while others travel great _____ to experience its _____. Rugged and _____, the monument is one of largest, un-fragmented stretches of _____ developed lands in the contiguous _____.

Part B. Visitor Center

∇ **Visitor Center**

1. The monument's expansive landscape encompasses a chronicle of science, _____, cultures, and _____.
2. How long is the drive on a rough dirt road to the monument boundary?

3. List four things the monument provides excellent opportunities to do.
 - A.
 - B.
 - C.
 - D.

∇ Facts

4. Parashant covers more than one million acres. True False
5. Elevation at the monument ranges from _____ feet above sea level near Grand Wash Bay at Lake Mead to over _____ feet at Mt. Trumbull.
6. The monument is a special land filled with canyons, _____, and deserts.
7. Grand Canyon-Parashant National Monument is under the joint management of the _____ and the Bureau of Land Management.
8. The monument is located on the Colorado Plateau in northwestern _____.
9. Grand Canyon National Park is to the _____ and the monument borders the state of _____ to the west.

∇ Activities

10. Fees and permits are required for backcountry camping. True False
11. There are no developed _____ within the monument; please camp within previously used, undeveloped _____ along primary _____.
12. At the monument, you should camp at least _____ from any water source or reservoir.

∇ Preparation

13. Will your cell phone or radio always work in the monument? Yes No
14. Three diseases to be wary of at the monument are _____, _____, and rabies.
15. Each person should bring _____ of water for each day at the monument.



16. The three questions about planning that you should be able to answer “yes” to in order to ensure a safe and enjoyable trip at Parashant are:
- A.
 - B.
 - C.

Part C. The Colorado Plateau

∇ Colorado Plateau

1. The Colorado Plateau covers an area as large as which three states combined?
 - A. _____ B. _____ C. _____
2. Ancient _____ mountains, plateaus and _____, deeply carved canyons, and amazing ranges in _____ are the region's major claims to fame.
3. Temperatures vary from winter lows below _____ to summer highs above _____.
4. Grand Canyon-Parashant is in the _____ part of the Colorado Plateau.

∇ Geology

5. Some areas on the Colorado Plateau are famous for the colorful _____ rocks formed many _____ of years ago when a vast _____ covered Arizona and much of the _____ United States.
6. List three kinds of sedimentary rocks that formed along the edge of this ancient sea:
 - A.
 - B.
 - C.
7. Warped and folded rock layers that form giant “steps” are called _____.
8. Not all of the _____ exposed on the Colorado Plateau were deposited by _____ or wind, however. Numerous _____ dot the region, adding variety to the _____.
9. Describe what happens to the surface water that falls on the Colorado Plateau.



▽ Ecology

10. The great ecological diversity of the Plateau is due to differences in _____ and landforms.
11. Forests of what four kinds of trees are found at higher elevations on the Plateau?
 - A. _____ B. _____
 - C. _____ D. _____
12. Few species of cacti grow throughout the Plateau. True False
13. Name three kinds of birds that soar in the Plateau's skies.
 - A. _____ B. _____ C. _____
14. Riparian areas that thread throughout the _____ are home to frogs, _____, snails, beavers, _____, and fish.

▽ History

15. Humans have lived on the Colorado Plateau for _____ years. First to arrive were big game _____, followed by the _____ culture (8000 years ago) who hunted small _____ and gathered _____. Later, the Ancestral _____ (300 A.D. to circa 1250) met the Plateau's challenges, and settled into permanent _____ to farm.
16. Non-native explorers and trappers ventured onto the Plateau between _____ and _____.
17. The resident population of the Colorado Plateau today exceeds _____.
18. Human impacts that have affected the status of Colorado Plateau _____ include forest management practices, _____, logging, mining, _____ generation, introduction of non-native _____, dams and water diversion, and fragmentation of _____ by roads and other _____.

▽ Parashant

19. Grand Canyon-Parashant National _____ is located in the _____ portion of the Colorado Plateau called the _____ Strip.
20. How many people live in the 14,000 square miles of the Strip? _____

▽ how far away

21. The monument is located 2,367 _____ from Washington, DC and 445 miles from _____.

Part D. Journey Through Time

▽ Journey Through Time

▽ Nampaweap

1. How were images on the rocks shown in the photo made?



2. _____ have classified rock elements into categories. Some of the elements you will see at Nampaweap are _____ (human-like figures), zoomorphs (_____), and abstract designs. Anthropomorphs typically have _____ and legs, even fingers and _____. Bighorn sheep, _____, and lizards are common _____ figures. Abstract elements include circles, _____, and various combinations of _____.

▽ points to consider when visiting

3. A variety of factors that contribute to the erosion of petroglyphs, including _____, rain, extreme temperatures, _____, and rock type. The most devastating factor however, is _____.

▽ Sawmill

4. Large scale and economically significant lumbering of ponderosa pine began at Mt. Trumbull in the _____.
5. Sawmill operations used _____ and _____ to generate power.
6. Sawmills were permanent structures and could not be moved. True
False
7. What is the Mount Trumbull ponderosa pine forest area being studied for today?

▽ Schoolhouse

8. What family began settling in the Mt. Trumbull area in 1916?

9. List four uses of the Mt. Trumbull Schoolhouse.

- A. _____
- B. _____
- C. _____
- D. _____



10. What crops did residents grow?

- A. _____ B. _____
- C. _____ D. _____

11. How many people lived in the area in the 1950's? _____

12. What were the three objectives of the Taylor Grazing Act of 1934?

- A.
- B.
- C.

13. In what year was the schoolhouse closed? In what year was it rededicated after being rebuilt due to fire?

- A. Closed in _____ B. Rededicated in _____

∇ Ranch

14. Why has Tassi Springs been used or occupied by humans for 11,000 years?

15. Name three early cultures that used Tassi Springs.

- A. _____ B. _____ C. _____

16. Continued development of the land in the 1860s led to conflict with which three groups of native people?

- A. _____ B. _____ C. _____

17. What did Ed Yates set out to do in 1936?

18. What made Ed Yates' home unique compared to others constructed in the area?

▽ **Grand Gulch Mine**

- 19. The Parashant region never experienced a gold rush. True False
- 20. _____ proved to be more abundant and was periodically _____.
- 21. A group of men from St. George, Utah established an official _____ on the mine on June 23, _____. Profitable exploration of the _____, said to be “the richest ever produced by a copper _____ in the Territory,” was hampered by _____ and the long _____ to a railhead. _____ initially packed in tools and _____ until the early 1870s when a _____ opened to St. George.

22. Why was an adobe smelter built at Grand Gulch Mine around 1878?



- 23. In the early 1900's, how many people were living at the site?

- 24. In 1906, a _____-mile long wagon road was constructed, connecting the mine to St. Thomas, _____ (now under _____ at Lake Mead). It took freight teams a _____ to make the round trip. Between eight to twelve _____ were hauled each trip at a value of _____ a ton. Teams included _____ to _____ horses, with drivers usually _____ in pairs.
- 25. What caused the Grand Gulch Mine to shut down for two decades following World War I?
- 26. Name two relatively complete buildings that still stand at the mine site.
A. _____ B. _____