# Program Name: Shenandoah National Park: Gem of the Blue Ridge

**Suggested Grade Level**: 5th

**Maximum Group Size for presentation and activities**: 25

**Time Consideration**:

Pre-visit: Two 30-minute class periods for teacher-led pre-visit activities
Ranger-led Classroom Program: 45 min - 1 hour
Post-visit: One or more class periods for teacher-led post-visit activities

## Overview

Shenandoah National Park is an important natural and cultural resource in Virginia's Blue Ridge geographic region. Students in the nine Virginia counties that border this long and narrow national park will discover those resources and the National Park Service mission with ranger-led in-class activities such as modeling park careers, analyzing artifacts, investigating geologic samples, and writing creative responses while gaining essential classroom knowledge about Virginia's history, geology and geography.

**Objectives:**

Following the ranger presentation and classroom activities, the students will be able to

1. name the five geographic regions of Virginia and locate Shenandoah National Park within the Blue Ridge geographic region;
2. identify the three rock types that can be found in Shenandoah National Park and explain the rock cycle using those rock types;
3. define the mission of the National Park Service and describe how national park employees meet that mission through their work;
4. describe three actions people can take to help care for Shenandoah National Park and the environment.

**Virginia Standards of Learning Addressed**

Science Strand: Earth Patterns, Cycles, and Change

5.7 The student will investigate and understand how Earth's surface is constantly changing. Key concepts include

a) identification of rock types;
b) the rock cycle and how transformations between rocks occur;
e) changes in Earth's crust due to plate tectonics;
f) weathering, erosion, and deposition; and
g) human impact.

Virginia Studies

VS.2 The student will demonstrate knowledge of the physical geography and native peoples, past and present, of Virginia by

b) locating and describing Virginia's Coastal Plain (Tidewater), Piedmont, Blue Ridge Mountains, Valley and Ridge, and Appalachian Plateau

Shenandoah National Park
Gem of the Blue Ridge

US History: Skills

USI.2 The student will use maps, globes, photographs, pictures, or tables to
c) recognize key geographic features on maps, diagrams, and/or photographs.

## Background Information

Shenandoah National Park provides outstanding educational and recreational opportunities in the Blue Ridge geographic region of Virginia. Shenandoah National Park stretches along the crest of Virginia's Blue Ridge Mountains from Front Royal to Waynesboro, Virginia, and is bordered by nine counties: Albemarle, Augusta, Greene, Madison, Nelson, Page, Rappahannock, Rockingham, and Warren.

Skyline Drive is the 105 mile-long highway that provides easy access to the park's nearly 200,000 acres of protected land that include mountain summits, expansive views of the Piedmont and Shenandoah Valley, deep forests, open meadows, meandering streams with cascading waterfalls, abundant wildlife, and remnants of past human residents.

The Earth is undergoing continuous change through the formation, weathering, erosion, and reformation of rock. This process is called the rock cycle. The geologic story of Virginia's Blue Ridge region is complex. The Blue Ridge Mountains are the result of the forces of plate tectonics. There have been episodes of mountain building when tectonic plates collided. The Blue Ridge may have been as tall as the Himalaya Mountains in Asia which are over 25,000 feet tall. Mountain building periods were interspersed with periods when tectonic plates split apart causing lava flows which formed volcanic rock layers. Shallow seas submerged the volcanic rock and the sediment from these ancient oceans eventually formed layers of sedimentary rock.

Tectonic forces folded those rock layers under great heat and pressure and changed many of these rocks into metamorphic rocks, such as greenstone. Over time, the forces of weathering and erosion have worn away the mountains to expose the different rock layers and reveal evidence of ancient geologic events. Today, the highest peak in Shenandoah National Park is just over 4,000 feet tall. Volcanic activity, sedimentation, plate tectonics, and weathering and erosion account for why igneous, sedimentary, and metamorphic rock types can be found throughout Shenandoah National Park.

The planning and establishment of Shenandoah National Park is a fascinating story. Over centuries, people have valued the Blue Ridge Mountains in a variety of ways. Hunting grounds, farm fields and pastures, home sites, vacation destinations, copper mines, highways, trails, overlooks, and wilderness areas have all been uses of the land which is now Shenandoah National Park.

Yellowstone National Park was established in 1872 as the first national park in the world. In the early days of the national park idea, most national parks were in the western states where there already was plenty of federal land with unique natural or historic features. These areas could be more easily designated as national parks.
In 1916, the National Park Service was a new federal agency created to manage and care for the growing number of national parks. Because most of the United States

population lived in the east, the desire for a large national park in the eastern United States, within a day's drive of millions of people grew steadily in the early 20th century. However, most of the land in the east was privately owned. After two decades of planning, Congress authorized the creation of Shenandoah National Park in 1926. It took nearly another ten years before the park was officially established on December 26, 1935. President Franklin Roosevelt dedicated Shenandoah National Park "for recreation and re-creation" on July 3, 1936, in a ceremony held at Big Meadows.

Today, Shenandoah National Park is a collage of mountain forests, historic resorts and camps, 500 miles of trails, the headwaters of three Virginia watersheds: Potomac-Shenandoah, Rappahannock, and James, and almost 80,000 acres of federally designated wilderness. More than a million people each year visit this gem of Virginia's Blue Ridge Mountains to enjoy the natural and cultural resources preserved in this national park.

**Vocabulary**

- **geographic regions** – *areas with distinctive geographic characteristics. Virginia is divided into five geographic regions: Coastal Plain (Tidewater), Piedmont, Blue Ridge Mountains, Valley and Ridge, and Appalachian Plateau*
- **igneous** - *rock formed under conditions of intense heat or produced by the solidification of volcanic magma on or below the Earth's surface*
- **metamorphic** - *change in the physical structure of rock as a result of long-term heat and pressure, especially a change that increases the rock's hardness and crystalline structure*
- **preserve** - *to keep in existence; make lasting*
- **protect** - *the act of preventing something from being harmed or damaged, or the state of being kept safe*
- **sedimentary** - *rock formed when layers of sediment are cemented together*

**Materials**

- Internet access to download slide show and student journal http://www.nps.gov/shen/forteachers/classrooms/gem-of-the-blue-ridge.htm
- Student journal (attached) - print one for each student
- maps of Virginia's geographic regions and Virginia road maps

## Pre-Visit Activities

Complete the following pre-visit activities to prepare the students for the Shenandoah National Park Ranger program in your classroom.

1. **Motivational Activity: What Are *National* Parks?**
   Use student journal page 1, *What Are National Parks?* Begin by showing the slide show on national parks. Ask students questions based on the slides.
   Discussion with students:
   - What do you see here? (Elicit student verbal responses of what they notice about each slide regarding particular sights, such as faces carved out of mountains, the Washington Monument, Grand Canyon)

- Do you recognize any of these places? (Students respond in their journal.)
- Have you been to any of these places? (Students respond in their journal.)
- What do all of these places have in common? (All of these scenes are from national parks around our country)
- What are national parks and why do we have them? (National parks are special places set aside to protect unique natural features, scenery, historic sites or heritage areas for all people to experience and enjoy)
- Do you recognize the scenes from the last three slides? (Images are from Shenandoah National Park.)
- What do you know about Shenandoah National Park? (students respond in their journal)

**2. Where in the World is Shenandoah National Park?**

Use student journal page 2, *Where in the World is Shenandoah National Park?* Display a map of Virginia or use a textbook that depicts Virginia's geographic regions. Have the students identify, outline, name, and color the geographic regions of Virginia on the journal page. Ask the students:

- Which Virginia geographic region do you live in?
- Which Virginia geographic region is the school in? Have them draw an "X" on the journal map for the correct location of your school
- Which Virginia geographic region is Shenandoah National Park in? Have them label Shenandoah National Park with "SNP" on their maps.
- Using a Virginia road map for guidance, have the students write in their journals the directions from the school to the nearest entrance station for Shenandoah National Park.

Have the students be prepared to share what they have learned with the park ranger on the day of the classroom program.

## Shenandoah National Park Ranger Classroom Program

The ranger-led classroom program is designed for a 45-60 minute class period. Coordinate with the ranger in advance for the location and starting time for the program. Allow time for the ranger to set up activities and prepare for the program.

**1. Introduction (10 minutes)**

a. Introduce the **Park Ranger**. The ranger will ask students what they know about national parks and Shenandoah National Park. "What parks did you recognize in the slide show that you recently viewed?" "Have you been to Shenandoah?" "Where is Shenandoah National Park?"

b. **Park Ranger** asks "What's special about Shenandoah National Park?"
Ranger shows park items and explains the mission of the National Park Service to protect and preserve all natural and cultural resources in an unimpaired way for future generations.
Ranger asks "What does a park ranger do to protect and preserve Shenandoah?"

**2. Park Ranger Jobs (10 minutes)**

**Park Ranger** will pre-arrange with teacher to select 3 students to become rangers. Ranger hands out the photos of rangers to the rest of the students while the "ranger students" are getting dressed.

Discussion questions using ranger students and uniform items:

- What do you see on the uniform?
- What is this on his/her shoulder?
- Why would it be in the shape of an arrowhead?
- What do you think the things in the arrowhead symbol represent?
- What do you think rangers do?

**Park Ranger** makes the point that there are many jobs to do to fulfill the mission of preserving and protecting our national heritage and natural resources found in national parks.

**3. Exploring Shenandoah's Geology (20 minutes)**

a. Ranger leads discussion of geology of Shenandoah National Park and the rock cycle.

- Do you know the three types of rocks?
- Some rocks come from volcanoes. We call these igneous rocks. Did you know that there were once volcanoes in the Blue Ridge, right where Shenandoah National Park is today?
- Other rocks come from layers of sediment that get cemented together. These are sedimentary rocks.
- Another type of rock comes from one of those sources but are then subjected to intense heat or pressure, causing them to change into a different rock…a metamorphic rock.
- What is the rock cycle?

b. **Activity: Shenandoah Rocks!**

Ranger reviews the elements of the rock cycle. Use student journal page 3, *Shenandoah Rocks!*

- Students are divided into teams of 3-4 students and given diagrams of Shenandoah's geologic history showing bedrock, volcanic evidence, inland sea, and the folding of those layers during tectonic mountain building.
- Students will be given time to observe, describe and identify the 3 samples of rocks and record in their journal. They will place examples of the three types of rocks (sedimentary, igneous, and metamorphic) on the diagram of the rock cycle.
- Students will view the picture profile and diagram profile of Stony Man Mountain. Ranger leads discussion about why it appears to have different levels (face, forehead, nose, beard).
- Students will try to put the rock samples on these diagrams.
- Discussion follows about the weathering and erosion.

4. **Stewardship Message and Discussion (5 minutes)**
   Ranger leads discussion of stewardship and caring for our resources in national parks.
   - "Can I take this rock/leaf/feather home? Why or why not?"
   - "Do you have a favorite toy or possession that maybe you got as a gift? Do you take care of it? Why? How do you take care of it?"
   - "Who does Shenandoah National Park belong to? Who takes care of it?"
   - "The park is like one of our nation's 'favorite' places. Why should people take care of it?
   - Whose job is it to take care of national parks? How can we do it?"

5. **Summary, Conclusion, and Commitment (10 minutes )**
   a. Ranger will engage students in a short discussion about birthdays.
      - How old are you?
      - What do you do for fun on your birthday?
      - How special would your birthday be if you were 100 YEARS OLD?
      - How would you celebrate *then*?
      - How old do you think the Park Service is? In 2016, the National Park Service will be 100 years old! How do you think our country should celebrate?

   b. Journal reflections
      Ranger concludes with discussion. "Based on all we have learned today, what about Shenandoah National Park is important to you to protect and preserve so it is here for another 100 years?" Use student journal page 4 as a post-visit activity to write a letter to the park rangers about what students think is important to "preserve and protect" in Shenandoah National Park.

## Post-Ranger Visit Activities

Following the Shenandoah National Park Ranger program in your classroom, complete as many of the following post-visit activities as possible to conclude the unit of study. Complete the Program Evaluation Form. Return the program evaluation and copies of student work to:

**Shenandoah National Park**
**3655 US Hwy 211 East**
**Luray, VA 22835**
**Attention: Education Office**

1. Use the classroom activities found in the *Good Character, Good Stewards* curriculum supplement.
   http://www.nps.gov/shen/forteachers/classrooms/stewardship.htm
   See *Geology Rocks!*, page 54, and *Building Respect for the Past, Present, and Future*, page 24.

2. Class Discussion
   Remind the students that the Earth is constantly changing and evolving. Geological change can occur very slowly, as in the formation of sedimentary rock or the weathering of exposed rocks. Change can also occur suddenly, as in a landslide or

an erupting volcano. Review how animals, plants, and people use and depend on geologic resources. Ask the students how geologic change can affect living things. How important is geology to living things?

Ask "Now that you realize how important geology is to living things, can you imagine life without geology?" We all live on land that is made of rocks and geologic features and depend on many geologic resources. Ask the students if they think human actions can affect the land and geology. Examples include the mining of metals and coal; drilling for oil and natural gas; farming; using geologic materials for construction; moving earth and rock for the development of homes, stores, and cities; and damming rivers. Remind the students that geologists think it took millions of years to create these resources. Are these resources that we depend on replaceable? If not, how long before the resources are used up?

Ask the students if people should care about geologic resources. Have the students brainstorm ways people can help conserve and protect resources for the future. Examples include recycling aluminum and other metals to reduce mining; using energy-efficient transportation and machines to reduce oil, gas, and coal consumption; following good farming practices to reduce erosion and soil loss; and reducing waste to conserve resources. Introduce the term *stewardship* and have students discuss the reasons why people should conserve resources and protect the land and the environment.

**3.** Use student journal page 4 as a post-visit activity to write a letter to the park rangers about what was learned during the Park Ranger program and what is important to "preserve and protect" in Shenandoah National Park.

## Unit Assessment

1. Accurate and thorough responses in journal
2. Participation in classroom discussion and activities
3. Explain rock cycle using rock types found in Shenandoah National Park
4. Arrowhead illustration identifying the main idea of protection and preservation in National Parks
5. Letter to Shenandoah National Park stating what was learned during the program

## Going Further

1. Take a field trip to Shenandoah National Park to experience the geology and landforms on a ranger-led program in the park. http://www.nps.gov/shen/forteachers/classrooms/fieldtrips.htm
2. Conduct research on a particular species of animal or plant found in Shenandoah National Park and create a presentation (powerpoint, science board, speech, poster) for classmates
3. Have students write a poem, song, rap, email, blog, short story, or play regarding their experience with the ranger visit or to express their feelings about the park and the importance of preserving and protecting it for future generations
4. Use technology like Glogster, iMovie, Kidspiration to create programs or presentations on what the students learned.

5. Explore the social aspects of the creation of Shenandoah National Park through reading.
   a. *Grandpa's Mountain* by Carolyn Reeder
   b. *When the Whippoorwill Calls* by Candice F. Ransom

## Resources and References

National Park Service website
http://www.nps.gov/index.htm Home page
http://www.nps.gov/faqs.htm

Shenandoah National Park website
www.nps.gov/shen Home page
http://www.nps.gov/shen/planyourvisit/directions.htm
http://www.nps.gov/shen/planyourvisit/maps.htm
http://www.nps.gov/shen/naturescience/geologicformations.htm

Print Resources
Lambert, Darwin. *The Undying Past of Shenandoah National Park*. 2nd ed. Lanham: Roberts Rinehart, Inc. Publishers in cooperation with Shenandoah Natural History Association, 2001. Print.

Whisnant, Anne Mitchell, David E. Whisnant, and Timothy Silver. *Shenandoah National Park Official Handbook*. Virginia Beach: Donning, 2011. Print.

# Shenandoah National Park: Gem of the Blue Ridge Region of Virginia Student Journal

**Name**_____

**Date**_____

v. 3/28/2014

# What Are National Parks?

National parks I recognize from the pictures in the slides:

_____

_____

_____

_____

National parks I have been to:

_____

_____

_____

_____

What I already know about Shenandoah National Park:

_____

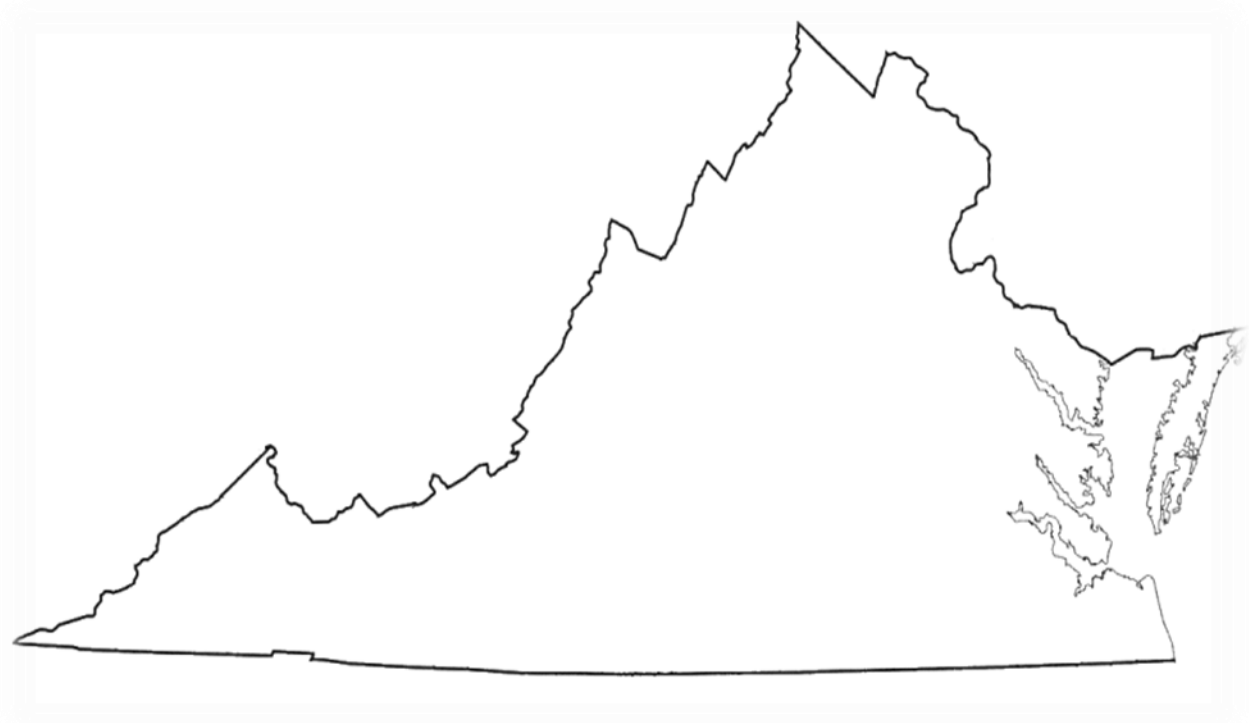
_____

_____

_____

# Where In The World Is Shenandoah National Park?

Using your map resources, identify, outline, color, and label the geographic regions of Virginia. Mark your school with an “X”, and Shenandoah National Park with “SNP”.



Using a Virginia road map, write out the directions from your school to Shenandoah National Park – stating directions traveled, highway numbers, towns, etc.

# Shenandoah Rocks!

Each of the rocks in your box represents one of the three types of rocks: sedimentary, igneous or metamorphic. In the spaces below, describe each rock and decide what type of rock it is. Then place each rock on the Rock Cycle chart and be prepared to tell why you think it is that type of rock.

**Rock 1**

Describe this rock_____

What type of rock do you think it is? _____

Why do you think it is that type of rock?_____

**Rock 2**

Describe this rock_____

What type of rock do you think it is? _____

Why do you think it is that type of rock?_____

**Rock 3**

Describe this rock_____

What type of rock do you think it is? _____

Why do you think it is that type of rock?_____

## Shenandoah's Iconic Mountain: Stony Man

Take a look at the photograph of Stony Man Mountain and the labeled cross section of it. The green-shaded areas on the cross section represent greenstone, a very hard metamorphic rock, which used to be lava.

- What happened to the lava? _____

  _____

- Where is the sedimentary rock now? _____

  _____

- Why are there notches in the profile (for the "eyes and mouth")?_____

Date_____

Shenandoah National Park
Education Office
3655 US Hwy 211 East
Luray, VA 22835

Dear Ranger,

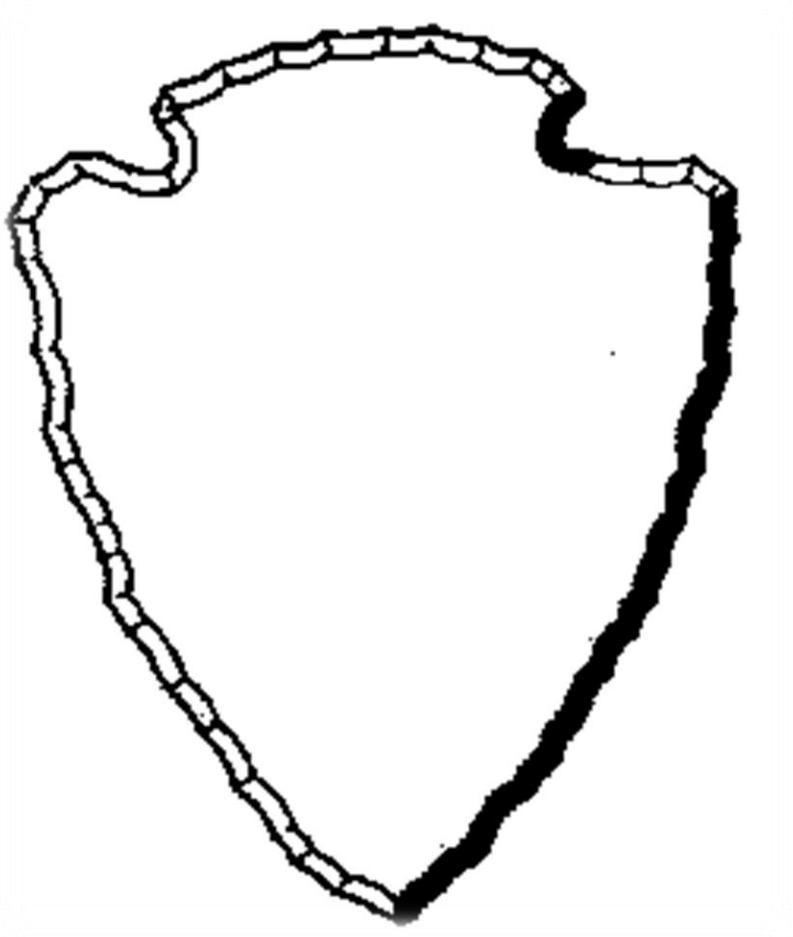
During the *Gem of the Blue Ridge* program today, I learned a lot about national parks and the geology of Shenandoah National Park. I learned:

_____

_____

_____

We also learned that protecting our national parks is everyone's job. In this arrowhead I've put my idea about what I can do to make sure that our national parks and Shenandoah National Park are protected and preserved for future generations.



Sincerely,

_____