

Virtual Ranger Program: Watersheds

National Park Service
U.S. Department of the Interior



Shenandoah National Park

Summary Students will use this worksheet to follow along with the virtual ranger program about the watersheds of Shenandoah National Park. Students will use various methods of learning to discover the importance of water and how water affects living and nonliving components of the Shenandoah mountains.

Suggested Grade Levels 5-8

Objectives

- Understand what a watershed is and why it is important to the ecosystem and habitats to the flora and fauna of Shenandoah National Park.
- Understanding the importance of protecting clean water for plants, animals, and humans.
- Investigate the watersheds within Shenandoah National Park and how that impacts the landforms in and around the park.
- Connect waterways in Shenandoah National Park to the communities and watersheds around it.

Virginia State Standards *Strand: Earth and Space Systems*
5.8 The student will investigate and understand that Earth constantly changes. Key ideas include d) processes such as weathering, erosion, and deposition change the surface of the Earth.

Strand: Earth Resources

- 3.8 The student will investigate and understand that natural events and humans influence ecosystems. Key ideas include a) human activity affects the quality of air, water, and habitats.
- 4.8 The students will investigate and understand important Virginia natural resources. Key concepts include: a) watersheds and water; b) plants and animals; c) minerals, rocks, and ores; and d) forests, soil, and land.
- 5.9 The student will investigate and understand that the conservation of energy resources is important. Key ideas include a) some sources of energy are considered renewable and others are not; b) individuals and communities have means of conserving both energy and matter.

Grades 6-12

- 6.9 The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include a) natural resources are important to protect and maintain; b) renewable and nonrenewable resources can be managed; c) major health and safety issues are associated with air and water quality; e) preventive measures can protect land-use and reduce environmental hazards.

LS.7 The student will investigate and understand that adaptations support an organism's survival in an ecosystem. Key ideas include a) biotic and abiotic factors define land, marine, and freshwater ecosystems.

LS.8 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time. Key ideas include a) organisms respond to daily, seasonal, and long-term changes; b) changes in the environment may increase or decrease population size; and c) large-scale changes such as eutrophication, climate changes, and catastrophic disturbances affect ecosystems.

Virginia State Standards (continued)	LS.9 The student will investigate and understand that relationships exist between ecosystem dynamics and human activity. Key ideas include a) changes in habitat can disturb populations; b) disruptions in ecosystems can change species competition; and c) variations in biotic and abiotic factors can change ecosystems.
Vocabulary	<p>Elevation – Height above a given level; for example, above sea level</p> <p>Macroinvertebrate – An animal without a backbone (invertebrate) that is viewable without a microscope</p> <p>Pollution – The presence of a substance to the environment that has harmful effects</p> <p>Topography – The arrangement of physical features of an area</p> <p>Water Cycle – The circulation of water between the earth’s atmosphere, bodies of water, and land</p> <p>Watersheds – an interconnected area of land that separates waters flowing to different rivers or seas.</p>
Materials	<p>YouTube video: Shenandoah NPS / Virtual Ranger Program: <i>Watersheds</i></p> <p>Link: Virtual Ranger Program: Watersheds</p> <p>Duration: approximately 20 minutes</p>

Shenandoah National Park
Virtual Ranger Program: Watersheds
Student Worksheet

Student Name:

Date:

Why is water important to humans?

Why is clean water important?

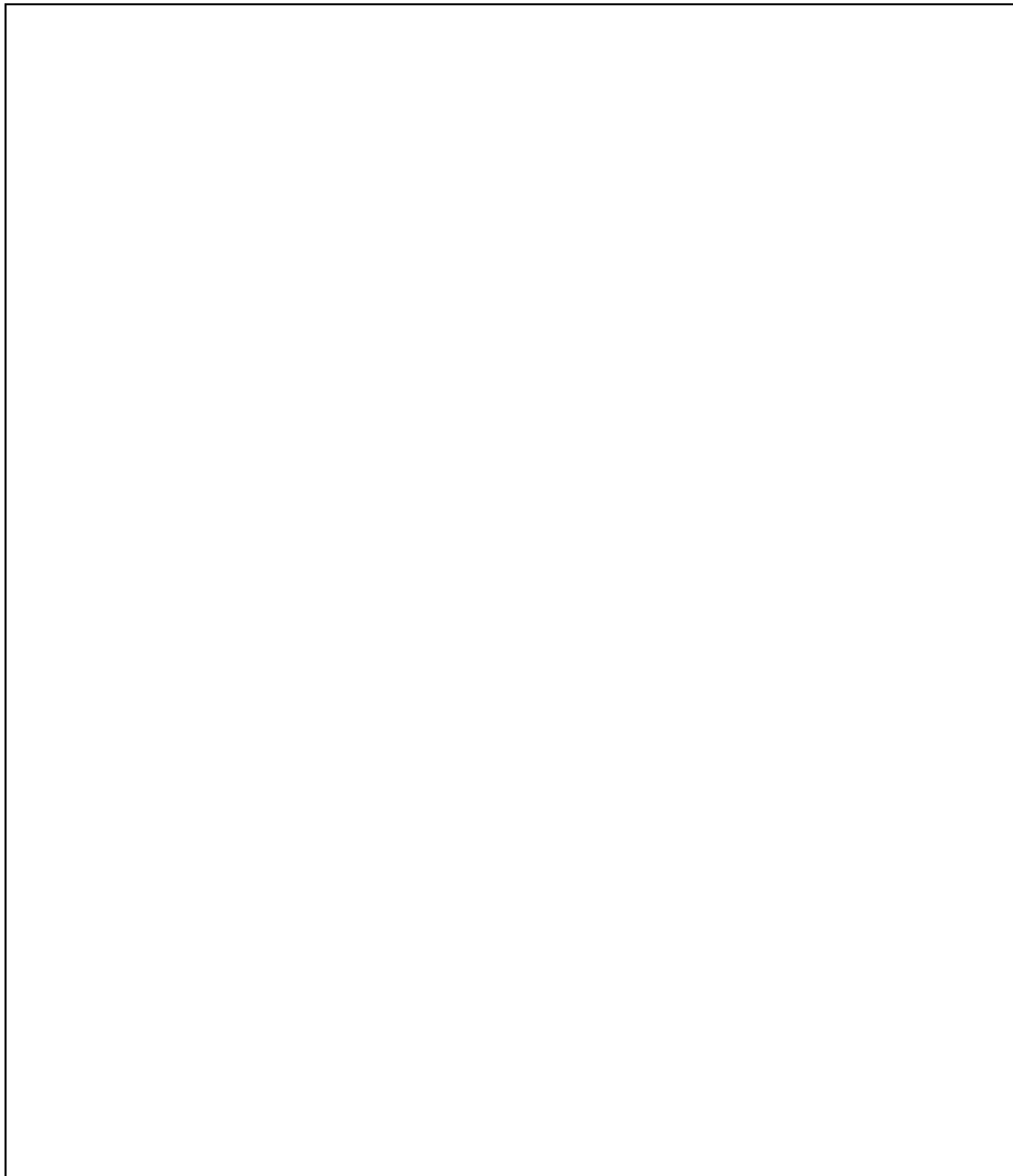
How can people help protect clean water?

What is a watershed?

What is the largest watershed Shenandoah National Park is a part of?

Draw a watershed that you might see in Shenandoah National Park. Include the following:

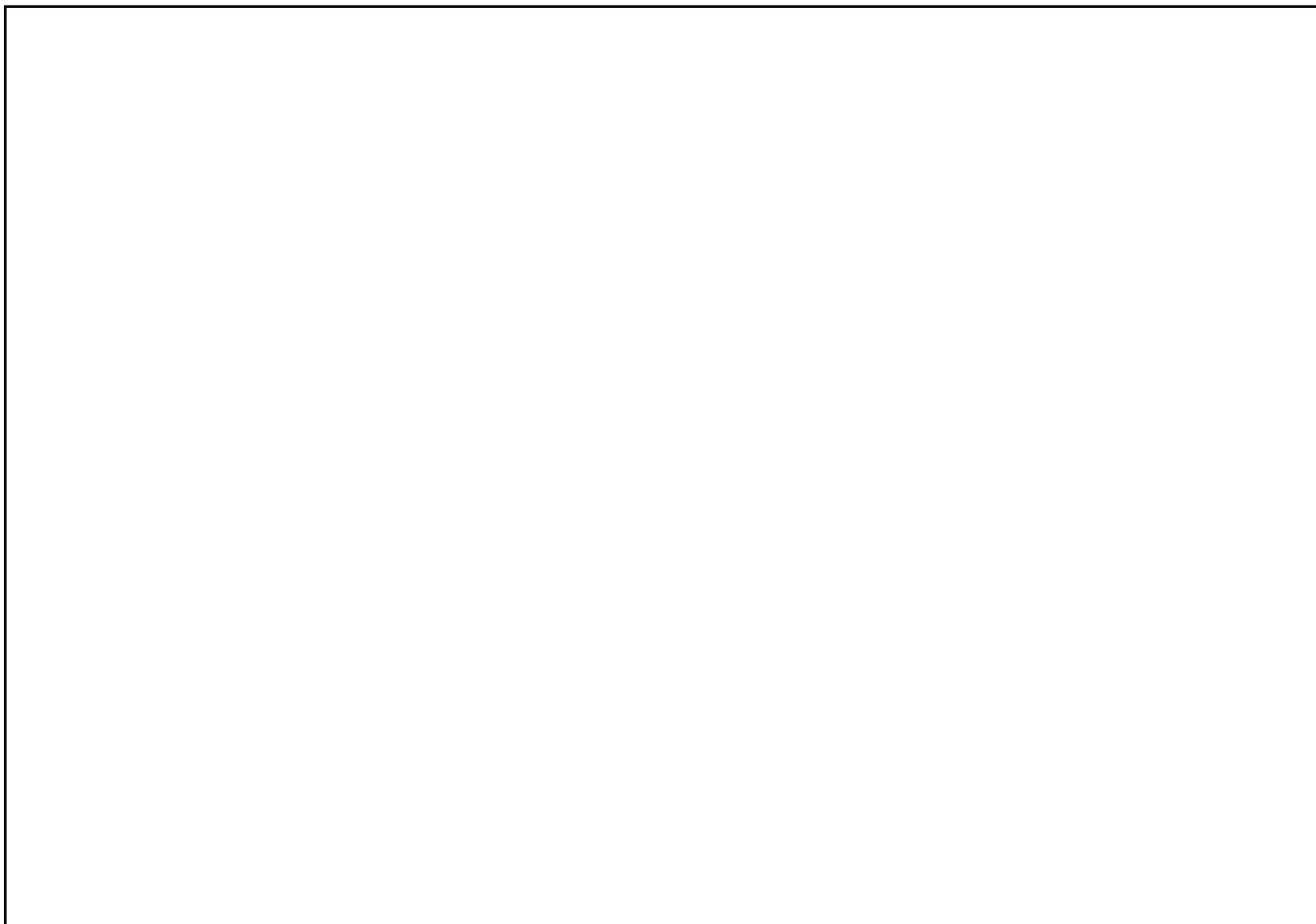
- Water
- Animals that need the water
- Plants that need the water
- Flow Direction
- Rocks
- Three tributaries

A large, empty rectangular box with a black border, intended for a student to draw a watershed. The box occupies the majority of the page below the instructions.

Write the story of a water droplet that you name that falls from a raincloud in Shenandoah National Park. Use the water cycle to describe what happens to your water droplet.

What watershed is part of your community? Name two bodies of water inside that watershed.

All living things need water. In the video, macroinvertebrates are discovered. Draw a habitat within a watershed in the Shenandoah National Park mountains.



What did you learn that surprised you and why?

Shenandoah National Park
Virtual Ranger Program: Watersheds
Teacher Answer Guide

Student Name:

Date:

Why is water important to humans?

Example: Water provides life to all living things. People require water to live as well as for livelihood (i.e. farming) and enjoyment (i.e. water sports).

Why is clean water important?

Example: Clean water lends to greater biodiversity of animals and a healthier ecosystem overall. It is more cost effective to reduce the water treatment process and give people the ability to live.

How can people help protect clean water?

Example: People can help to protect clean water by not littering, reducing erosion, protecting native plants and rocks that clean water naturally, and conserving water in daily use.

What is a watershed?

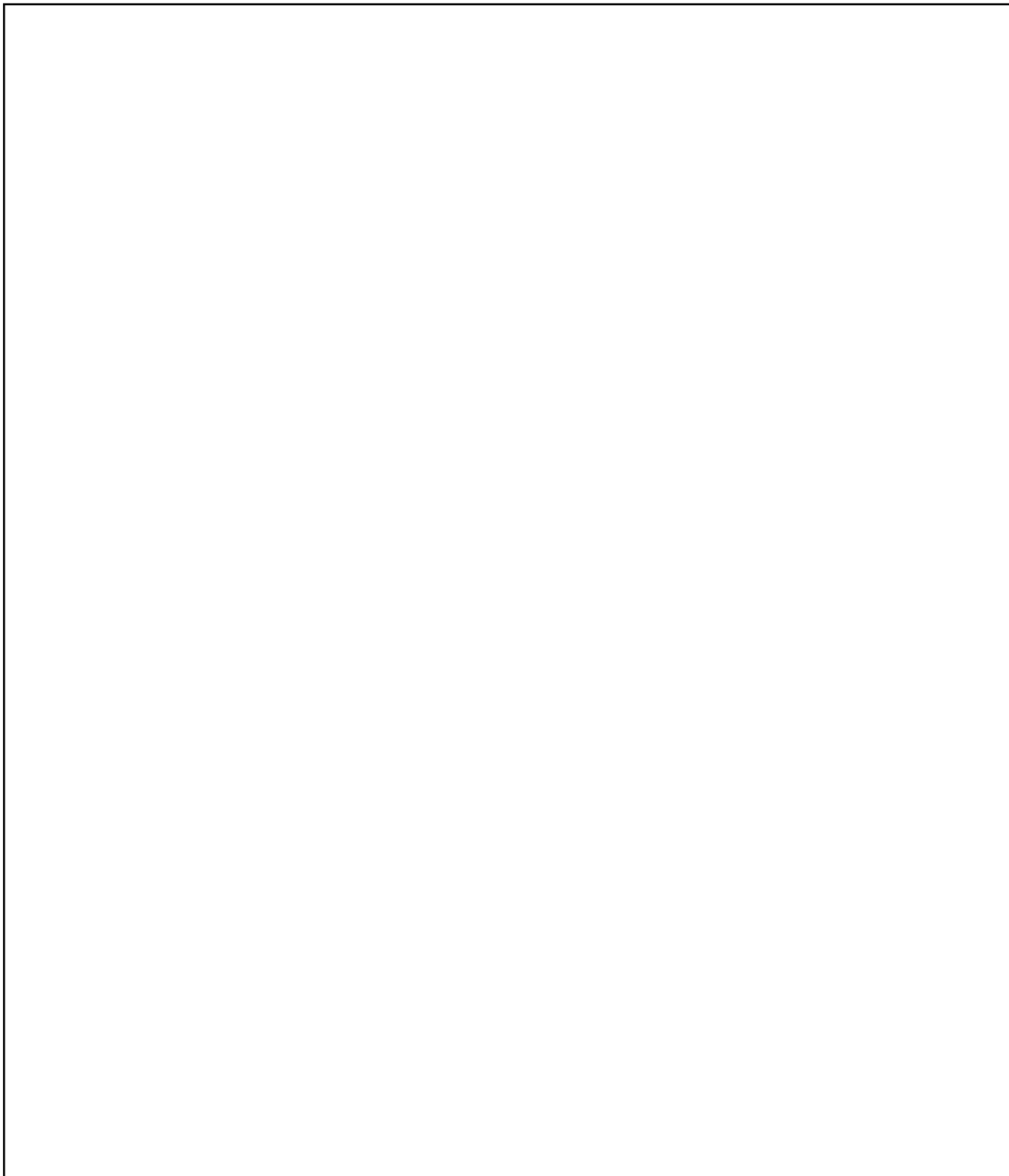
Example: A watershed is an area of land through which water runs in a particular direction.

What is the largest watershed Shenandoah National Park is a part of?

Example: The Chesapeake Bay Watershed

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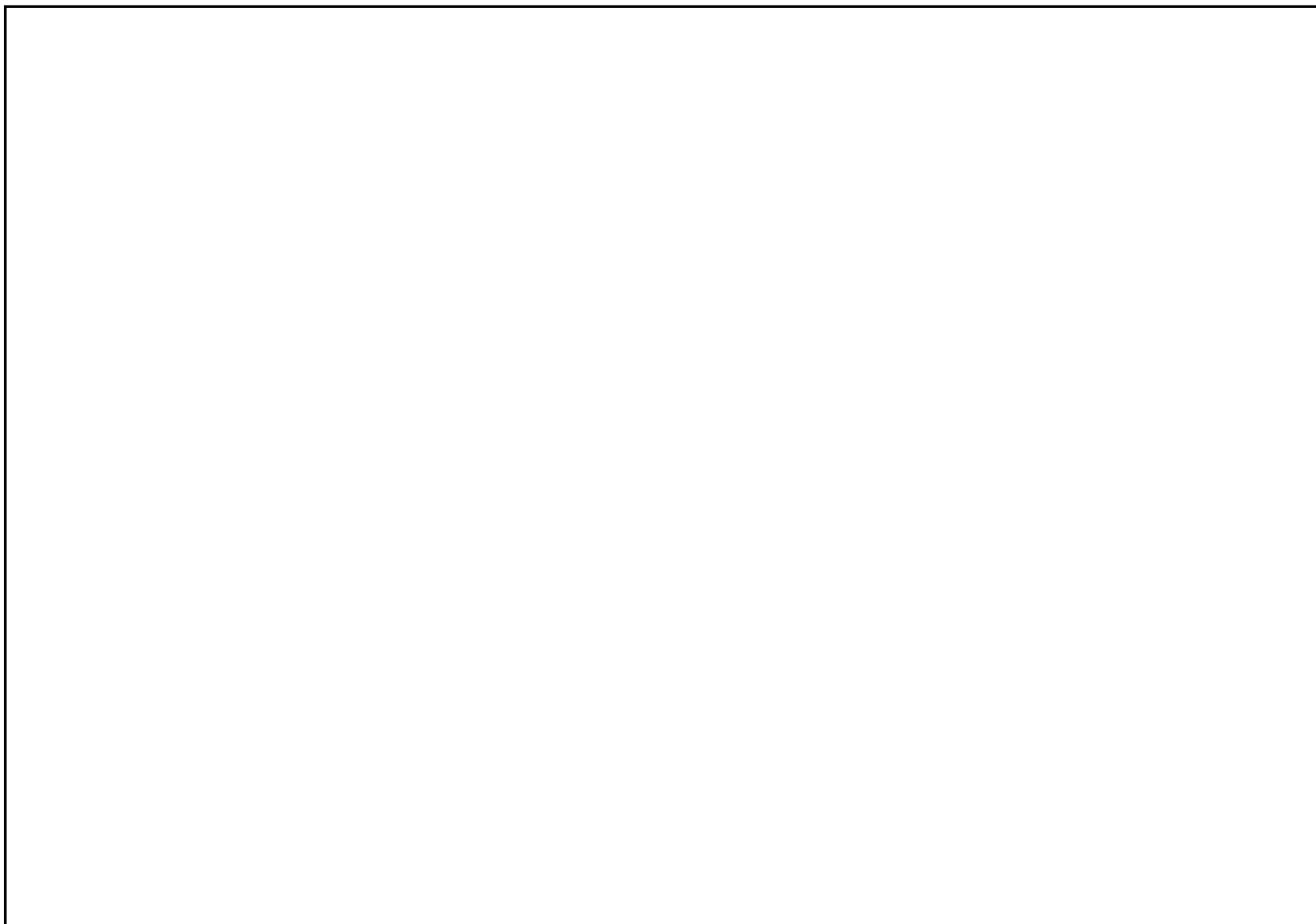
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