

**Learning about Kentucky's Land and Water:
Resource Materials for Teachers
Questions for the Classroom**

Maps and Map Reading

Geographic Information Systems

Global Positioning Systems, GPS

Data layers and sources

Scale and Legend

Topographic Maps

Questions for the Classroom

What is GIS?

What is the scale of your map?

One inch on the map equals how many inches on the ground?

One inch on the map equals how many feet on the ground?

One inch on the map equals how many miles on the ground?

If the map scale is 1:63,360, then one inch on the map equals 63,360 inches on the ground or, $63360/12=5,280$ feet=1 mile.

Can you find your neighborhood and school on the map?

How far is your neighborhood from your school?

If you were a bird, how far would you fly from your house to your school?

If you flew 20 miles per hour, how long would the flight take?

What is the elevation of your school?

What is a contour line?

What is the contour interval of your map?

What does it mean if contour lines are close together? Far apart?

Is the land steep or level near your neighborhood?

How far is the nearest stream, wetlands, sinkhole, spring, or well from your school?

Are there sinkholes in your county? Are there wetlands? Are there mined areas? Are there oil and gas wells? Are there water wells? Are there springs?

What are some things you might want to put on a map?

What Students Should Know

How to read a topographic map

Understand contour lines

Understand the map scale concept and apply it to the map.

Understand the Map Legend.

Understand the importance of where things are in relation to each other and why

GIS is useful

What GPS is and how it can be used.

Geology and Landforms

Sedimentary Rocks

Geologic History: The Building of Kentucky

Fossils

Stream Deposits

Geologic Faults

Physiographic Regions

How the Land has been Shaped

Karst

Questions for the Classroom

What are sedimentary rocks?

What are the different rock types in your county?

When and where were the sedimentary rocks in Kentucky formed?

Why are the rocks older in central Kentucky than in eastern and western Kentucky?

What is a geologic fault?

What is alluvium?

What is karst?

What Students Should Know

Younger rocks lay atop older rocks.

How the rocks in their county were formed.

Approximate ages of the rocks in their county.

Kentucky once lay beneath the sea.

The topography of Kentucky

The relationship between geology and the shape of the land.

The geology of karst.

The Physiographic Regions: Eastern Coal Field, Knobs, Bluegrass, Mississippian Plateau, Western Coal Field, Purchase

The region or subregion they live in.

Water

The Hydrologic Cycle

Kentucky Water Facts

Rainfall

Streams

Droughts

Floods

Water and Early Development

Springs, Wells, and Streams

Water for Communities, Industry, Agriculture, and Wildlife

Water Usage

Water Sources

River Basins and Watersheds

River basin facts

Ground Water

Water in Karst Areas

Questions for the Classroom

How much water falls on Kentucky in an average year?

How many miles of streams in Kentucky?

What is a perennial stream? Intermittent stream? Ephemeral channel?

Where does the water in your house come from?

How much water does the average Kentuckian use each day?

What is ground water?

What Students Should Know

What is the hydrologic cycle?

What a watershed is.

The major river basins of Kentucky

Which river basin they live in and where.

Where their water comes from.

About how much water they use in a year.

Why early settlers established towns where they did.

What an aquifer is.

Water wells and their uses.

Underground flow in karst areas.

Resources and Environment

Minerals

Energy Resources

Oil and Gas

How it was formed

How much we have

Coal

How it was formed

How much we have

Electric Power

Coal-fired power plants

Usage of electricity by Kentuckians

Dealing with CO₂

Hydroelectricity

Agriculture

Importance to Kentucky economy

Prime Farm Lands and Pasture Lands

Recreation

Public Lands

Wildlife Management Areas

State and National Parks

Lakes and Waterways

Large lakes

Ponds

Wetlands

Aquatic life

Fishing

Boat Ramps

Locks and Dams

Questions for the Classroom

Is there a farmer's market in your county?

Energy resources in the county?

Minerals used in the community?

What are the recreational areas in your county?

What Students Should Know

How electricity is generated and where their electricity comes from.

Where their food comes from.

The resources within their county.

Living with the Land

Understanding the Land We Live On

Protecting the Air, Land, and Water

Water quality

Wastewater Treatment

Public

Domestic

Straight Pipes

Wetlands

Storm Water Management

Source and Ground Water Protection Areas

Air quality

Geologic Hazards

Flooding

Landslides
Earthquakes
Unstable Shales
Radon
Mined Areas
Shrinking and Swelling Shales
Sinkholes

Questions for the Classroom

How does water get polluted?

What are some of the pollutants and what are the problems that they cause?

What are the nonpoint sources of pollution in your county?

Where are the areas in your county that might get flooded?

Are there shales in your county?

Should you build a house on or near a sinkhole?

Why should you not throw trash in a sinkhole?

What is the risk of an earthquake where you live?

Are there mined areas in your county?

Why do we need to know about radon? Is it in your county?

How is the wastewater from your house treated?

What percent of your county is on public sewer?

If you could live anywhere in your county, where would it be and why?

If you could live anywhere in Kentucky, where would it be and why?

What Students Should Know

Understand water quality

Why wastewater treatment is important.

Where geologic hazards may occur and what to do about them.

Best uses for floodplains.

What wetlands are and why they are important.

Why it is important to understand the geology of where they live.