

ARCHAEOLOGY FROM ABOVE

Learn to identify symbols and features on a topographic map

OBJECTIVES

At the end of the lesson, students will be able to:

- Identify basic features on a topographical map
- Identify basic symbols on a topographical map
- Demonstrate an understanding of terrain using a topographical map
- Identify suitable living spaces on a topographical map

VOCABULARY

Compass: a navigation tool that uses the magnetic field of the Earth to identify North, East, South and West. “Before GPS, compasses were regularly used to navigate directions.”

Elevation: the height to which something rises to. Beaches tend to have very little elevation change, while mountains have a lot.

Topography: the arrangement of land including its physical features (such as the elevation of mountains, valleys, water, and other natural features). “The topography here shows a low, hilly landscape.”

Contour lines: a line on a map which indicates specific elevation. Contour lines on a map are very useful to inform you how hilly or flat an area is.

Contour interval: the difference in elevation on a map that uses contour lines. When contour intervals are close together on a map, the terrain is very steep.

Map scale: the ratio of distance on a map as compared to the actual distance. Maps that have a lower ratio scale show greater detail of the area.

Slope: the measure of increase or decrease of elevation, this is often called rise (vertical) over run (horizontal). Most mountains have a very steep slope, and plains have almost none.

MATERIALS

- 2 topographic maps (areas of your choice) from the [USGS Topoview](#)
- Printed worksheet for each group
- Rulers or other measuring devices
- Pencils or pens

GRADES: 6-8

Subjects: Social Studies, Geography

Standards:

- [CCSS.ELA-Literacy.RH.6-8.1](#)
- [CCSS.ELA-Literacy.RH.6-8.2](#)

Skills: spatial analysis, inference, analysis of source materials

Duration: 60 minutes

Class size: any; groups of 2-4

BACKGROUND

Before archaeologists begin an excavation, they conduct research of the area to better understand the context of the site. Landscape features, such as the important access to drinking water, help explain why people settled in a particular area and how they may have organized their settlement. Archaeologists use a variety of sources that show a top-down view, such as historic maps, aerial/drone photography, LiDAR (a technology that uses light to measure elevation), and satellite imagery to better understand the terrain.

Topographic maps are useful tools to understanding an area. Contour lines can be very close together (a tight contour interval) which identifies a steep, or heavily sloped, area. This is the case in mountainous areas. Plains and many beach areas have contour lines that are far apart. Areas that are flat do not have elevation changes and so will not have many contour lines. Topographic maps are a tool that assists archeologists in determining where previous settlements would have most likely have been.

There are some interesting facts to be aware of when using contour lines. Each independent line (they can make circles, straight lines or even jagged edges) will always have the same elevation. They identify uphill and downhill locations as well as the slope. Each line is assigned a specific elevation measurement. As much as it may look like it on certain maps, they will never cross another line. They can however, merge together signifying a vertical slope (like a cliff). Contour lines change color every fifth line to assist the reader of the map. This is called an index line. These are some of the elements of topographic maps and how they show information.

Archeologists study people who have lived in the past. There are many eras in human history in which no or very little written information is available about them. Archeologists use whatever remains people in the past left behind to better understand how and where people lived. As water is a vital resource for human survival, archeologists incorporate this knowledge when reading topographic maps. People also need food, and flat areas are less labor intensive to plant and harvest these resources. These maps can offer a tremendous amount of information to archeologists and others who learn how to read between the lines.

PROCEDURES

Beforehand:

1. Download and print copies of two topographic maps from [USGS Topoview](#). Local maps can be good for engaging with local history. One will be used as a group and another in small teams.
2. Familiarize yourself with the maps and choose the identifiers you want students to understand and be able to identify.
3. Choose how to divide the second map so that each group has their own assigned area.

Day-of:

1. Introduce topographic maps and their uses by researchers (including archaeologists). They display three dimensional features of land on a two-dimensional surface.
2. Introduce contour lines and how to calculate contour intervals. Maps will vary as to the elevation which contour lines represent.
3. Explain the symbols used on a contour map and the different scales. Symbols tend to be similar on maps and the legend, or map key, will assist in identification. The scaling of the map is typically identified as a ratio.

4. Hand out the printouts of your two chosen USGS topographic maps. Choose one map to work from as a whole group.
5. As a class, have students identify the following on the first map: (1) scale of the map, (2) location, (3) date of the map; (4) towns, (5) mountains, (6) rivers, and (7) and historical sites. Natural features should also be identified such as: (8) swamps, (9) forests, (10) bodies of water, (11) cliffs, and (12) plains (or flat areas). Each individual map will offer its own opportunities to explore. If using a local map, try finding the location of your school or have students estimate where they live.
6. In small groups of 2-4 students, move on to the second map. Assign each group a specific area of the map and have students identify the terrain with the intention of hypothesizing what living in that area would be like.
7. Hand out “Archaeology from Above” worksheet and have students complete the questions in their small groups.

ASSESSMENT

Students will hand in their “Archaeology from Above” worksheet as a group. Assess their understanding based on completeness and accuracy.

WRAPPING UP

As a whole group, or combining small groups, have the students explain their assigned terrain and whether it would be suitable for people to live there. Consider these questions to ask: Where might drinking water be available? How would people who live there get their food? What are other positive and negative features within each area? Do the students think it would be likely for people to have lived there? Would it have been easy or challenging? Discuss if any sites are near each other and possible relationships between them. What would archaeologists need to consider when excavating on these different landscapes?



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NAMES

You are a team of archaeologists who have discovered artifacts that might be evidence of a settlement of past people in your assigned area. You will need to assess the surroundings before beginning excavations at this site. Using the topographic map, answer the following questions about the location of the site:

1. Is it on a floodplain?
2. Is it on a mountain?
3. Is your site in a forest or open field?
4. What is the nearest town to your site? How far is it?
5. Is your site on a slope? Calculate the slope using the formula rise divided by run.
6. Are there any lakes in the area of your site?
7. Are there any swamps nearby? Is your site in a swamp?