



Finds in the Cellar: Mapping and Analyzing Archaeological Features

Grade: 5th-7th

Subjects: History, Virginia Studies, Math

Time: 40-60 minutes

Class Size: Adaptable

Skills: Computation and estimation, measurement, geometry

Strategies: Have students use real-life data to enhance mathematical skills.

Student will:	SOLs
<p>VS.1 Students will demonstrate skills for historical thinking and geographic analysis by:</p> <p>a) analyzing and interpreting artifacts and primary and secondary sources to understand events in Virginia history</p> <p>VS.2 Demonstrate an understanding of the relationship between physical geography and the lives of native peoples of Virginia by:</p> <p>c) locating and identifying water features important to the early history of Virginia</p> <p>e) describing how American Indians related to the climate and their environment to secure food, clothing, and shelter</p> <p>f) describing how archaeologists have recovered new material evidence at sites including Jamestown</p> <p>VS.3 Demonstrate an understanding of the first permanent English settlement in America by:</p> <p>f) describing the hardships faced by settlers at Jamestown and the changes that took place to ensure survival</p> <p>g) describing the interactions between the English settlers and native peoples, including the role of the Powhatan in the survival of the settlers</p> <p>VS.4 Demonstrate an understanding of life in the Virginia colony by e) describing everyday life in colonial Virginia</p>	<p>VS.1, VS.2, VS.3, VS.4</p>
<p>5.4, 6.5, 7.2 Create and solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of whole numbers and decimals</p> <p>5.8, 6.7 Solve practical problems that involve circumference, perimeter, area, and volume in standard units of measure</p> <p>5.18 Identify, describe, create, express, and extend number patterns found in objects, pictures, numbers, and tables</p> <p>6.10 Represent and make observations and inferences about data within a circle graph</p> <p>7.3 Solve single-step and multistep practical problems using proportional reasoning</p> <p>7.9 Represent and make inferences about practical data in a histogram</p>	<p>Math 5.4, 5.8, 5.18, 6.5, 6.7, 6.10, 7.2, 7.3, 7.9</p>



Background

As archaeologists excavate a site, they find both artifacts (moveable objects such as ceramics, tools, and coins) and features (immoveable objects such as building floors and walls, postholes, wells, or pits). Depending on their type and size, features can also contain artifacts. Jamestown archaeologists have uncovered millions of artifacts and many different types of features such as palisade lines, cellars, and wells.

It is important for archaeologists to record not only *what* they find but *where* they find it. Grid systems are often used to divide sites into square excavation units. Grids rely on one or more datum points from which all reference measurements are taken. Archaeologists choose from a wide variety of tools to establish a grid. Low-tech methods include a compass, measuring tapes, and string. High-tech methods such as total station transits, handheld devices, and drones can capture exact GPS (Global Positioning System) coordinates. Triangulation is often used to obtain precise points.

Archaeologists can then use the grid to map exactly where they find specific features and artifacts. A final site map provides a birds-eye view of uncovered features. Site maps help archaeologists understand how features and artifacts spatially relate to one another and therefore how different parts of the site were used in the past.

This lesson will guide students in mapping a site feature like an archaeologist would using a Jamestown cellar as an example. Students will then analyze artifacts from the cellar using tables and graphs.

Resources and Materials: Lesson includes a student worksheet. Students will need calculators, rulers, and additional sheets of scrap or graph paper.

Procedure

- 1) Review vocabulary terms with students. Emphasize the importance of maps in recording where features and artifacts are found. If needed, review how to calculate percentages and create histograms.
- 2) Provide each student with a copy of the included worksheet. Have them work either individually or with a partner to complete the activity.
- 3) Review their answers as a group using the discussion questions below. If there is time or as homework, have students explore the Map of Discoveries using the following link. What other types of features and artifacts did Jamestown archaeologists discover? How did these finds help archaeologists understand life at the fort? <https://historicjamestowne.org/archaeology/map-of-discoveries/>

Discussion Questions

- As stated in Part III, the discovery of brick ovens in one end of the cellar revealed that the space was used for both storage and cooking. Were students surprised that the cellar was used for multiple purposes? Why or why not? How does this compare to modern spaces? *Answers will vary. Students may compare the cellar to modern kitchens, living rooms, and basements with single or multiple uses.*
- What other types of maps might an archaeologist use to study a site? *Archaeologists use a wide variety of maps. These include historical documents such as John Smith's maps of Virginia and James Fort, geologic and topographic surveys, and satellite maps.*



- Discuss students' answers to Part III Question 5. Are there any ways to recover this information? *Provenience data tells an archaeologist exactly where a find was uncovered on a site. Without that data, archaeologists have no way of knowing how a find relates to other artifacts, features, and areas. Provenience information is crucial to understanding how the find and the space in which it was found were used in the past. Because archaeology is a "destructive science" there is no way to re-create an object or feature's provenience once it is removed from the ground. Archaeologists must then rely on reference texts and historical documents to partially understand how and when it was used in the past.*

To learn more and view additional lesson plans visit *Jamestown Rediscovery* at <https://historicjamestowne.org>



Name: _____

Finds in the Cellar: Mapping and Analyzing Archaeological Features

Vocabulary

Archaeologist: a scientist who studies how people lived within the past

Artifact: an object made or used by a person in the past

Context: related to provenience, an artifact's or feature's location on a site and its surroundings that help determine how and when it was used in the past

Datum point: a chosen geographic point on a site from which all reference measurements are taken

Excavation: the scientific removal of soil and artifacts from an archaeological site

Feature: a non-moveable part of an archaeological site, such as pits or building walls

Finds list: a record of all artifacts found at a site, part of a site, or a context

Provenience: related to context, the exact spot on a site where an artifact or feature was found including its depth in the ground

Site: a place used by people in the past containing artifacts and features

Site plan: a map of all excavated features on a site

Background

As archaeologists excavate a site, they find both artifacts and features. It is important for archaeologists to record not only *what* they find on a site but *where* they find it. Before excavating, archaeologists use a grid system to divide a site into square excavation units much like a chessboard. These grids have at least one datum point from which all measurements are taken. Archaeologists can then use the grid to record exactly where they find specific features and artifacts.

A final site map provides a view of all uncovered features. Archaeologists use site maps to understand how features spatially relate to one another and therefore how different parts of the site were used in the past.

Archaeologists at Jamestown have uncovered millions of artifacts and many different types of features such as palisade lines, cellars, and wells. One feature, found near the middle of the fort, was a cellar that once belonged to a building. Over time, the building either fell or was torn down and the cellar was filled in with dirt. Archaeologists are able to determine the cellar's original size and depth by mapping the changes in soil layers and the arrangement of holes left by the building's posts. They can also understand how the cellar was used by analyzing the thousands of artifacts it contained.

Imagine you are an archaeologist excavating this cellar. Follow the directions below to map and analyze your finds.

Directions

Part I

- 1) Using your scrap or graph paper and your ruler, draw a graph with an X axis of 40' and a Y axis of 60'. Label point (0,0) "Datum." Title your X axis "East" and your Y axis "North."
- 2) Plot and label the following:
Corner A: 18' N, 15' E. Corner D: 32' N, 22' E.



Corner B: 27' N, 15' E.

Corner E: 32' N, 29' E.

Corner C: 27' N, 22' E.

Corner F: 18' N, 29' E.

3) Use your ruler to connect the corners. You should have a feature shaped like a backwards L.

4) Title your map "Plan of James Fort Cellar" and add a scale.

Calculate the cellar's exact area and perimeter. Be sure to include the appropriate units.

Area:

Perimeter:

Part II

Finds lists help archaeologists understand how specific areas of a site were used in the past. Imagine you excavated the following artifacts from the floor surface of the cellar you just mapped. Fill in the remaining column.

Artifact Category	Artifact Count	Percentage of Total Finds
Glass beads	40	
Tobacco pipe fragments	19	
Armor pieces	25	
Faunal material (animal bones)	21	
Ceramic sherds (pieces)	64	

Graph your results on your graph or scrap paper with a histogram. Be sure to label your X and Y axes and add a title.

Part III

Use the table and graph to analyze your finds.

1) What could faunal material tell archaeologists about life at James Fort?

2) Objects can serve many purposes and often had several functions in the past. How might the colonists have used glass beads?



- 3) Why might beads and ceramics have higher counts as compared to some of the other artifact types?

- 4) Looking at all of the artifact types, how do you think this cellar was used? Explain your answer.

- 5) Archaeologists found two brick ovens in one end of the cellar. How do these finds change your interpretation of how the colonists used this space? (Remember that features, like artifacts, can have multiple uses.)

- 6) Using what you have learned, describe how archaeologists use artifacts, features, and space together to understand a site. Include why recording provenience data is so important. What happens if an artifact or feature is missing this information?