

Instructional Plan: Orienteering I and Orienteering II

The overlying objective of the Nassau BOCES Orienteering Program is to provide specific content aligned to each grades' science curriculum while also providing real world applications for NYS ELA and Math Common Core Standards. Alignments are on reverse side of this document.

Vocabulary (teacher may add to list or request emphasis)

compass	bearing
magnetic north	true north
contour lines	topo map
map legend	declination

Program Logistics:

- Group Size: 15 students/naturalist
- 1 adult chaperone/student group
- 1.5-2 hr program and is typically combined with another program.
- The Pond is located at Caumsett State Historic Park. The Program is also possible at a location near your school.

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pricing and to schedule:**

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www.nassauboces.org/outdoors



*We are more than
just a field trip...*

*We provide a
learning environment
for your students!*

Students orienting a topo map
of Caumsett to north to
find their way.

Lesson Objectives:

Students will be able to...

Orienteering I & II:

- Identify the parts of a compass.
- Determine cardinal points.
- Read and follow a bearing.
- Use pacing to measure distance.
- Demonstrate compass skills by following a simple course.
- Work as a team to follow a course
- Give examples of finding one's way without a compass.

Orienteering II

- Read and understand the Legend on a topo map.
- Orient the map to north using a compass.
- Determine approximate traveling distance using the map scale.
- Consider all factors and ease of travel to determine the best course to follow to reach various points on the map.

Activities (can include)

- Step by step instruction in using a compass
- Use of 3-point "triangle" courses or circle games to reinforce compass skills.
- Following a compass course through fields.
- Use of landmarks and staying true to course while pacing.
- Discussion of natural factors that can support finding one's way.
- Reading a map key or legend.
- Estimating distances with use of the scale on a map.
- Use of topographic maps and orienting it to North.
- Assessing contour lines to determine the best path.
- Finding the group's Lunch stashed in the woods!

Assessment

- The program will end with a summative "Q & A."
- Students can complete related writing tasks back in the classroom.

Standard Alignments for Orienteering I & II

Grades 3- 5

Standards Type	Key Standards or Code	Standard Description	Instructional Activities
NYS Science Core Curriculum	Standard 1: Analysis, Inquiry and Design <i>Scientific Inquiry</i>	Key Idea 1: To develop explanations of natural phenomena in a continuing creative process. Key Idea 3: The observations made while testing proposed explanations provide new insights into phenomena	Orienteering II: Students will use topo maps to understand concepts such as contour lines. Orienteering I & II: Observations of plants' growth patterns and alignments to the Sun are used to determine direction
	Standard 6 Interconnectedness: Common Themes <i>Magnitude/Scale; Patterns of Change</i>	Key Idea 3: The grouping of magnitudes of size, time, frequency and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affects the behavior and design of systems. Key Idea 5: Identifying patterns of change is necessary for making predictions about future behavior and conditions.	Orienteering II: Students will use topographic map of Caumsett to determine distances and elevations. Students will use contour lines to predict the safest and easiest route to take as opposed to a shorter, straight line course.
	Standard 4 Physical Setting <i>Key Idea 1</i> <i>Key Idea 2</i>	Performance Indicator 1.1f: The Earth and celestial phenomena can be described by principles of relative motion and perspective. 2.1q: Topographic maps represent landforms through the use of contour lines	Orienteering I & II: 1.1: Students will discuss how the position of the Sun and stars can be used as additional means of determining direction. Orienteering II: 2.1q: Students will use topo maps to determine elevation and distances.
NYS Social Studies	Standard 3 Geography	Key Idea 2: Geography requires the development and application of the skills of asking and answering geographic questions; analyzing theories of geography; and acquiring, organizing, and analyzing geographic information.	Orienteering II: Map skills are reinforced. Students apply new compass skills to use of a top map to locate specific points in Caumsett
	Unifying Themes Science Technology & Innovation	Applications of science and innovations in transportation, communication, military technology, navigation, agriculture and industrialization	Finding one's way has implications to military applications and to many careers. The BOCES Student Guide provides background and history about the use of the compass.
NYS Common Core	Supporting Standards	Description	Instructional Activities
Math	Operations and Algebraic Thinking	Grade 3: Represent and solve problems involving multiplication and division. Grade 4: Use the four operations with whole numbers to solve problems. Grade 5: Analyze patterns and relationships.	Activities involving scale, pacing and determining elevation from contour lines use numerical data to solve real-world tasks and propose ideas of patterns and relationships. Instruction in the degrees of a circle and "dialing-in" compass bearings supports student understanding of angles and their measurement. Simple practice courses using geometric shapes and circle games reinforce geometric concepts
Math	Measurement and Data	Grade 3: Solve problems involving measurement and estimation of intervals. Represent and interpret data Grade 4: Solve problems involving measurement. Represent and interpret data. Geometric measurement: understand concepts of angle and measure angles Grade 5: Represent and interpret data.	
Math	Geometry	Grade 3: Reason with shapes and their attributes Grade 4: Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Grade 5: Classify two-dimensional figures into categories based on their properties.	
ELA College and Career Anchor Standards <i>Speaking and Listening</i> Grades 6-12	Comprehension & Collaboration	1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.	Students will participate in collegial conversations and work collaboratively as a team as they acquire new (compass) skills.
	Presentation of Knowledge and Ideas	4. Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.	Expressing a view point appropriately with valid reasoning comes into play when deciding on a path to the next point on a course.
	Vocabulary Acquisition and Use	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.	Students will use content-driven vocabulary throughout the program and practice the use of root words, prefixes and suffixes to determine meaning (ex.: geo = of the Earth)