



2018 MAHPERD Orienteering High School Unit Plan

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Background Information

Orienteering is a sport in which participants race to find checkpoints marked on a map. It's fun for all ages, and can be done casually or competitively. There are many variations of orienteering, and many different games that build orienteering skills.

“Welcome to the world of orienteering! If you're looking for a new adventure, a lifetime sport that will take you, literally, off the beaten path, constantly challenge you, and let you discover new things about yourself and what you can do, orienteering may be the sport for you. Orienteering is often called the thinking sport because it involves map reading and decision-making in addition to a great workout. It's a sport that everyone can enjoy, regardless of age or experience. The competitive athlete can experience the exhilaration of running through the woods at top speed, while the non-competitive orienteer can enjoy the forest at a more leisurely pace. Most events provide courses for all levels, from beginner to advanced, and the sport has been adapted for small children and people in wheelchairs.” - Orienteering USA (OUSA)

“Orienteering is a sport that combines both a physical and a mental element. The basic idea in orienteering is to proceed from course start to finish by visiting a number of control points in a predetermined order with the help of map and compass. In order to choose the best possible route, orienteers look at the characteristics of the terrain, and the winner is determined by the fastest time to complete the course. What is unique to orienteering is that an orienteer must navigate and make quick decisions while running at high speed.” International Orienteering Federation (IOF)

Purpose/Intent of Orienteering Unit

Orienteering is a great fit for any Physical Education, Elective or Wellness program. This activity is a lifetime recreation and competitive activity that offers our students the opportunity to learn and practice a variety of physical and navigational skills. Already well established in the curriculum of the United Kingdom and other countries, orienteering has long been recognized for its educational benefits. Students learn and practice a variety of skills including: decision making, cardiovascular endurance, self-reliance, confidence, and goal setting.

Orienteering Unit Objectives

By the end of the orienteering unit students will be able to:

1. Orient a map using land features.
2. Identify features on a topographic map.
3. Determine their location on a map using map reading skills.
4. Route choice: Find multiple routes between two controls and explain the pros and cons of each.
5. Navigate to a series of controls.
6. Articulate personal and interpersonal wellness benefits of Orienteering.



Orienteering Websites and Resources

For a list of up-to-date internet resources see the [Navigation Games Teacher resources page](#).

- [British Schools Orienteering Association](#) (BSOA)
 - [British Orienteering Tri-O UNIT PLAN](#) - Elementary/Middle School
 - [BSOA Teaching Orienteering in Schools UNIT PLAN](#) - Middle/High School
 - [BSOA Orienteering Lesson Plans](#) - designed to enable teachers to deliver orienteering activities to pupils within the grounds of their school.
- [Guidelines for Orienteering in British Schools PE](#)
- [International Orienteering Federation](#) (IOF)
 - [Orienteering in simple English E-Book \(28 pages\)](#)
 - [Orienteering at school for ages 6-12 E-Book \(52 pages\)](#) - Middle School
 - [Orienteering at school Ages 13-15 E-Book \(60 pages\)](#) - High School



SHAPE Standards

Standard 1: The physically literate individual demonstrates competency in a variety of motor skills and movement patterns.

S1.H1.L1 Demonstrates competency and/or refines activity-specific movement skills in 2 or more lifetime activities (outdoor pursuits, individual-performance activities).

Standard 2: The physically literate individual applies knowledge of concepts, principles, strategies and tactics related to movement and performance.

S2.H1.L1 Applies the terminology associated with exercise and participation in selected individual-performance activities, outdoor pursuits appropriately.

S2.H1.L2 Identifies and discusses the historical and cultural roles of games, sports and dance in a society.

Standard 3: The physically literate individual demonstrates the knowledge and skills to achieve a health-enhancing level of physical activity and fitness.

S3.H1.L1 Discusses the benefits of a physically active lifestyle as it relates to college or career productivity.

S3.H3.L1 Identifies issues associated with exercising in heat, humidity and cold.

S3.H3.L2 Applies rates of perceived exertion and pacing.

S3.H4.L1 Evaluates, according to their benefits, social support network and participation requirements, activities that can be pursued in the local environment.

Standard 4: The physically literate individual exhibits responsible personal and social behavior that respects self and others.

S4.H1.L1 Employs effective self-management skills to analyze barriers and modify physical activity patterns appropriately, as needed.

S4.H2.L1 Exhibits proper etiquette, respect for others and teamwork while engaging in physical activity.

S4.H3.L1 Uses communication skills and strategies that promote team or group dynamics.

S4.H3.L2 Assumes a leadership role (e.g., task or group leader, coach) in a physical activity setting.

S4.H4.L1 Solves problems and thinks critically in physical activity settings, both as an individual and in groups.

S4.H5.L1 Applies best practices for participating safely in physical activity, exercise and dance (e.g., injury prevention, proper alignment, hydration, use of equipment, implementation of rules, sun protection).

Standard 5: The physically literate individual recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction.

S5.H1.L1 Analyzes the health benefits of a self-selected physical activity.

S5.H2.L2 Chooses an appropriate level of challenge to experience success and desire to participate in a self-selected physical activity.

S5.H4.L1 Identifies the opportunity for social support in a self selected physical activity.



S5.H4.L2 Evaluates the opportunity for social interaction and social support in a self-selected physical activity.

MA State PE Standards

STANDARD 2: Physical Activity and Fitness Students will, by repeated practice, acquire and refine a variety of manipulative, locomotor, and non-locomotor movement skills, and will utilize principles of training and conditioning, will learn biomechanics and exercise physiology, and will apply the concept of wellness to their lives.

2.17 Demonstrate developmentally appropriate competence (basic skills, strategies, and rules) in many and proficiency in a few movement forms and motor skills (individual/dual sports, outdoor pursuits).

2.26: Apply safe practices, rules, procedures, and sportsmanship etiquette in physical activity settings, including how to anticipate potentially dangerous consequences and outcomes of participation in physical activity

(Massachusetts Comprehensive Health Curriculum Framework, Physical Health Strand, 1999).



Lesson 1 Introduction to Orienteering

Objectives - SWBAT

1. Identify IOF map symbols/features on a topographic map
2. Orient a map using features on the map
3. Re-orient a map using features on the map from a new location
4. Identify map features as they exist in the terrain

Materials Needed

- Computer
- Projector
- Internet access > [youtube videos \(pulled up ready to play\)](#)
- Whiteboard/poster paper
- Markers
- Pencils
- Map of school grounds for the area you will be teaching - students will be matching the map to the landscape. [something as simple as google map aerial of school]
- Clipboards (Optional)
- IOF Orienteering Map Symbols poster or handouts (APPENDIX)

Lesson Set Up

- ☐ Map of school grounds for each student or pair of students
- ☐ Clipboards (Optional)
- ☐ Computer & Projector with youtube videos pulled up ready to go
- ☐ Whiteboard or poster with heading: "Essential skills for Orienteering"
- ☐ Closure questions written on board for verbal review OR type up and print out closure handouts for each student (optional)

Lesson Progression

What is Orienteering? 8 min

Watch two short Youtube videos to show students orienteering in real time.

- 1) [Running Wild: Orienteering | The New York Times](#) (3:21 total running time > *****STOP at 2:56 *****

There is one comment at 2:58 that, taken out of context, does not help set a good tone for the unit.) Basic overview/introduction to the sport of Orienteering. *Spotlights Thierry Gueorgiou (FRA) the greatest orienteer of all time (14x World Champion). Thierry retired in 2017 - his last race was July 6, 2017 in Estonia. Highlight video of his last race - "[The last run of the King of orienteering.](#)" (5:40)*

- 2) [2016 Australian Schools Orienteering Championships Highlights](#) (3:29)

Shows high school age students competing on school grounds event as well as forested terrain.

Review of Running Wild video - checking for understanding whiteboard/poster prompt 5 min

What skills are needed to be able to participate in orienteering?

From watching the videos - have students identify as many skills as they can that they will need to engage in the sport of orienteering. Write the heading - "Essential skills for Orienteering" on the board. Have students recall skills demonstrated in the videos and make educated guesses.

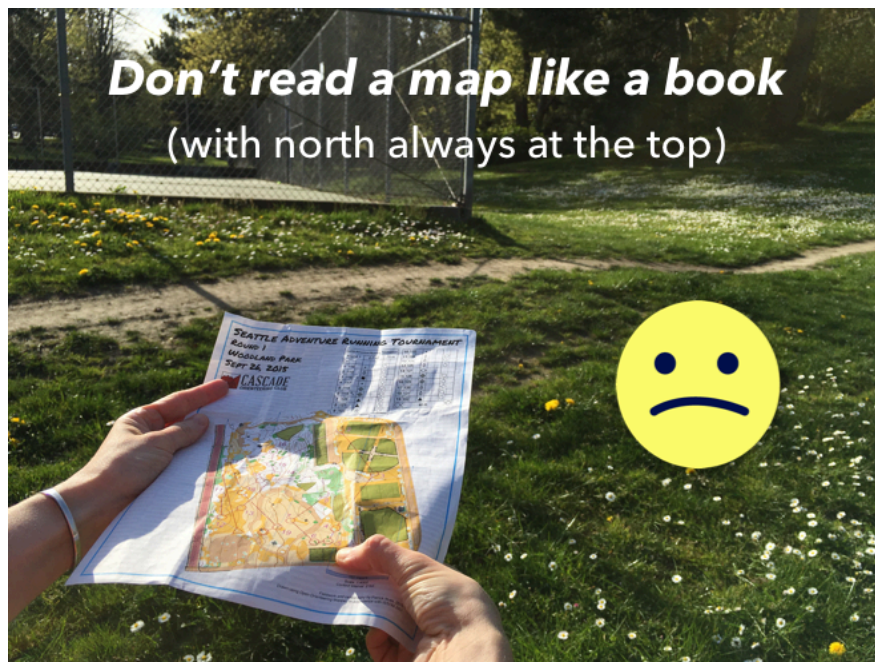
Orienting a map 10 min (Outside using map of your school grounds)

The most important skill in orienteering is... orienting the map!

You can orient the map two ways:

- 1) Visually - matching the terrain that you see around you to how the features are laid out on the map
- 2) Using a compass to align the lines of magnetic north on the map with the red magnetic north compass needle
- 3) Maps aren't meant to be held like books, with north always at the top. Maps are meant to be oriented to match the terrain. So if you see a building ahead of you in real life, rotate the map so that the same building is also ahead of you on the map.

Have each student hold their map according to the features around them.



Images from Cascade Orienteering Club

**Map Walk/Symbol Walk ~20 min**

1. Each student or pair of students needs a map of your school building or school grounds.
 - a. [Tip: Some students may do better with a clipboard to carry their map on.]
2. Have a walking route picked out in advance.
3. During the walk have students identify features that you point out as they exist on the map. i.e. you walk by a fence for a sport field - the students should be able to identify:
 - a. the symbol for a fence on the map
 - b. match the orientation of the map to their current location and feature

Closure 5 min

Have the students work with partners or alone to review what they learned from class.

1. Describe the sport of orienteering in your own words.
2. List two map features and draw or explain the symbol used to represent the feature on a topographical map.
3. Explain how to orient a map.

Up Next

Next class will focus on

- Review of orienting a map with the terrain
- Review and practice of map reading skills - more on topographic map symbols - introduce contour lines



Lesson 2 Topographic Map Skills

Objectives - SWBAT

1. Understand how contour lines represent a 3D in 2D form on a topographic map
2. Apply map symbol knowledge to terrain
3. Understand the historical context of orienteering in the US and abroad

Materials Needed

- Computer
- Projector
- Internet Access > [Navigation: Contour lines \(Pulled up ready to play\)](#)
- Challenge Sheet 1 - 1 for each student or pairs (APPENDIX)
- Challenge sheet answers (APPENDIX)
- Pencils
- School ground map that uses symbols
- Topographic map for each student (any location - does not have to be of school grounds)
- Clipboards (optional)

Lesson Set Up

- ☐ Scout your schoolground area for different kinds of terrain features. You should have a list of features for the students to choose from and find.
- ☐ Print/copy Challenge Sheet 1 for each student or pair.
- ☐ Gather or print topographic maps (of anywhere, as long as it has contour lines) for each student or pair.
- ☐ Have Contour video ready to play.
- ☐ Write closure questions on board.

Lesson Progression

Picture Hunt 20 min Review of identifying map symbols and their features in the terrain

1. Give students a map of school grounds.
2. Have students circle five feature of the map that each represent a different terrain feature - **examples are** a trail juncture, fence corner, and building corner, boulder, dense forest, open land/field, paved area/road, marsh, stream, pond, etc.
3. Send pairs or small groups out to take a picture of five (or more) different terrain features on the map legend as they exist in real life.

Extension (Optional): Upload students pictures and create a slideshow that matches their picture of actual terrain with the map symbol that represents the feature.

Getting to know a map 25 min

1. Show this short video that explains and demonstrates how contour lines depict 3D terrain onto 2D maps. [Navigation: Contour Lines](#) (1:14) from [A BEGINNER'S GUIDE TO UNDERSTANDING MAP CONTOUR LINES](#)
2. Have each student complete Challenge sheet 1 to test their understanding of contour lines.
3. Map reading practice - Each student needs a **topographical map (must have contour lines)**. This can be of the school grounds or ANY topographical map.



4. Have students circle: highest point, lowest point, steepest incline, a hill, a saddle, a drainage (re-entrant), any special features.
5. Pair share to check work with another group.
6. Hand out Master Key - students check their work.

Closure 5-10 min

1. Draw and explain 3 topographic map symbols and the feature they represent.
2. Explain what contour lines are/what they do on a topographical map.
3. How/why was orienteering created?
4. Reflect on your current navigation awareness/skills.
 - a. What skills/concepts are you confident with already? Why?
 - b. Which navigation skills/concepts are hard for you at this point? Why?

Up Next

- Map reading practice skills
- What does orienteering have to offer us from a wellness perspective?



Lesson 3 How To Use The Map: Line-Orienteering and Building a Wellness Connection

Objectives - SWBAT

1. Apply their understanding of the connection between map symbols and terrain features.
2. Analyze various wellness benefits of Orienteering for themselves as well as others.

Materials Needed

- Computer
- Projector
- Map of school grounds with a Line-O course
- Map Handling handout for each pair of students (APPENDIX)
- Pencils/Paper

Lesson Set Up

- ☐ Have computer and projector set up with [Orienteering Techniques - Handrails Video](#) pulled up
- ☐ Draw a connected line on the school map that follows and connects handrails (such as sides of buildings, trails, fences, etc). For this lesson an image from Google Maps will work if no other map is available.
- ☐ Map handling handout for each pair of students.

Lesson Progression

Introduce Handrails 5 min

1. Play [Orienteering Techniques - Handrails Video](#): The Bresemans introduce handrails using the Catching Features video game
2. Give each student or group a Map Handling Handout
3. Using the example below (next page) - have students identify what objects on this map are handrails. Image can be projected rather than printed.

Line Orienteering 30 min

1. Hand out the pre-made Line-O map for each pair or small group of students.
2. Send students out in staggered starts and/or have them alternate direction.
3. Goal is for students to navigate the Line-O course using their understanding of handrails and understanding map symbols.
4. Extension - Place control flags at a few points along the course and have students count how many they found along the line.
5. Extension - Also place control flags off of the line. Use stickers, pin punches, or codes/words to check that students visited the flags on the line but not those off of the line.
6. Extension - Have students use a GPS tracking app while they complete the Line O. Compare the GPS track to the line on their map when they return to see how well they followed the Line O course!

Example Line-O map ([full map pdf](#)):



Building Wellness Connections 15 min

1. Have students individually reflect and write about the following prompt for 3min: “In what ways can orienteering benefit you and your wellbeing?”
2. Next, have students arrange in small pairs or 3-4.
3. As a group brainstorm a working list of as many potential benefits of Orienteering in each domain of the Wellness Hexagon as they can in 3min.
 - a. Physical
 - b. Emotional
 - c. Environmental
 - d. Spiritual
 - e. Intellectual
 - f. Leisure
 - g. Occupational
 - h. Social
4. Have groups report out a few responses for each of the 6 Wellness domains.

Closure 5 min

Goal Takeaway of today's closure: Reinforce students understanding of the connection between map symbols and how that symbol exists in real life out on the terrain they are navigating.



Have students pair up or get in small groups:

- 1) Point to (or circle and label) a feature on the map that WAS on the line O and describe where you were.
- 2) Point to (or circle and label) a feature on the map that was NOT part of the Line O activity and explain where that area is in real life and what it looks like.
- 3) Explain how using a handrail can aid in navigation.

Up Next

- Capture the Flag-O



Lesson 4 - Capture The Flag-O

Lesson concept by Jake Jones LSRHS

Objectives - SWBAT

1. Navigate to a variety of controls to capture their opponents flags
2. Successfully apply team strategies to territorial game
3. Communicate with team members to defend their own team's flags

Materials Needed

- Map of school grounds with 8 controls - 1 map for each student
- 10 hula hoops
- 8 “flags” (bean bags, rubber chickens, tennis balls tied in pinnies, etc)
- 8 controls out around campus (must be able to fit a hula hoop at each control location)
- Pinnies (two colors; half class in each color OR more colors; divide class into smaller teams)
- Whistle

Lesson Progression

Set Up

- ☐ [Before class ~10min] Place hula hoops and flags at chosen controls.
OR
- ☐ [During class ~5min] Create two teams
- ☐ Divide up hula hoops, flags and pinnies to the two teams.
- ☐ Give each student a map with the controls marked for each team.
- ☐ Have students go and place hula hoops and flags at their teams determined controls.

Review Rules of Capture The Flag ~2 min

- 2 (or more) teams competing simultaneously to try and capture all the flags of their opponents while defending their teams flags from being captured.
- Each round is completed when one team collects all of their opponents flags.
- If a player captures an opponent's flag, and is tagged by their opponent, the flag is returned to its original control location and the tagged player must return to home base before they can go after another flag.
- No goaltending controls/flags.

Game Play ~25 min; as many rounds as you can play in the time you have in your class

- Teams have 5 minutes to go place the flags and hoops at the controls marked for their team on the map, place 2 of the hula hoops at the Home Base area. One for each team. (Or, if you have the equipment set up before the start of class, you can just go over which controls are for each team and play!)
- Teacher blows one whistle blast signaling “PLAY” [Two whistle blasts = GAME OVER; Three whistle blasts = COME BACK NOW]
- Teams play until teacher blows two blasts signaling GAME OVER.
- When students hear three whistle blasts they must retrieve the equipment they set up at the start of class, or the equipment they were assigned to pick up and COME BACK NOW to the designated class meeting location.

**Game Play Variations:**

- 1) Instead of a person going back to the starting point when they get tagged; you need to find the closest control on the map and go touch it to get back in the game.
- 2) Have students who are tagged return to home base area into a JAIL near the team hula hoops. Teammates must tag the player in the jail to release them back into the game. No jail guards.

Closure ~5min

Short class discussion

1. What skills helped you navigate to a variety of controls to capture you opponents flags?
2. What strategies did your team use during during capture the flag? How did they work out for your team? Are there any other strategies that might be more useful next time you play?
3. What and did your team communicate to one another about defending your flags? How was this communicated? If your team did not communicate, what influenced this decision?

Up Next

- Poker-O



Lesson 5 - Poker-O

Objectives - SWBAT

1. Apply their map reading knowledge to find specific points on a map.
2. Route choice: Find multiple routes between two controls and explain the pros and cons of each.

Materials Needed

- Deck of playing cards
- 10 or more orienteering control flags or brightly colored survey tape
- Orienteering map or aerial photo of school grounds
- Poker hand explainer (Appendix)
- Plastic sandwich baggies

Lesson Set Up

- ☐ Set a score orienteering course by circling at least 10 different locations on an orienteering map or aerial photo. [Example score course - (See Appendix)]
- ☐ Place two playing cards in each plastic bag and attach one open bag to each control.
- ☐ Hang the controls at the locations marked on the score course map.

Lesson Progression

Explain Hierarchy of Poker Hands 5 min

Give each student a Poker hand explainer handout and give a few examples of hands and which one would win in a matchup.

Poker Orienteering 35 min

Review the rules of Poker

1. The object of the game is to make the best possible poker hand by trading cards at the controls.
2. Each student starts with five cards and a score orienteering map.
3. Students can better their poker hand by trading one of the cards in their hand for a card at one of the controls. In order to trade again they must visit another control first and come back.
4. Students must be back at the start before the time limit is reached.
5. The student with the best poker hand wins.

Set a time limit that allows the faster students to visit some of the controls multiple times to increase the strategic component. All students start and finish at the same time.

Poker-O Variations

1. Students work as a team and can split up and communicate back.
2. Students work as a team but the hand stays at the start and the students must run their card to the control to trade.
3. There are penalties for returning late, e.g., downgrading the hands or face values.
4. Some special cards are available at the start, but only after visiting all the controls (this one might require that the controls have punches or stickers to verify each visit).

**Closure ~5min**

Short class discussion

1. What strategies did your team use to plan your route? How did they work out for your team?
2. Are there any other strategies that might be more useful next time you play?

Up Next

- Scooter-O



Lesson 6 - Scooter-O

Objectives - SWBAT

1. Apply map reading skills in an indoor setting
2. Navigate to a series of indoor controls using a novel movement experience

Materials Needed

- Scooters (minimum 6 scooters - maximum needed 1 for each student)
- Scooter-O course maps (5 of each course - A, B, C, D)
- Scooter-O Control Key Map (1)
- 10 Cones
- 10 "Punches" (stickers, stamps/stamp pads, pin punches, e-punches)
- Whiteboard with leaderboard table OR computer & projector of leaderboard

Lesson Set Up

- ☐ Print out Scooter-O maps
- ☐ Place cones and punch supplies around the gym

Lesson Progression ~35min

Round 1 - Team Relay

- Divide the class into 4 teams with at least 4 teammates in each team.
- Each team needs one map for each of the 4 courses - A, B, C, D
- Teams decide which teammate is going to complete which course.

Round 2 - Mario Kart Challenge

- Create new teams of a maximum of 6 people for each team.
- These team members compete on the same course - either A, B, C, OR D at the same time. No punches are needed, each racer must touch each cone with their hand. First one to complete the course wins!

Round 3 - Individual Challenge Series

- Each student must compete in at least 1 contest of this round.
- Students may challenge 1, 2, 3, 4, or 5 classmates at any time to a race on a course. Same guidelines as round 2 only with more choice and the ability to race in smaller groups.
- Students may choose any course to race.

Scooter Variations

For the round 1 team relay

- Have extra teammates push teammate on scooter to each control location.
- Have extra teammates communicate the control route from the start line while the teammate on the scooter travels to each location without the map.

Closure

Short discussion (in small groups or whole class)

1. What was your favorite round? Why did you like it more than the others?



2. What strategies did your team use? If your team did not use any strategies, what ideas do you have for a team doing this activity in the future?

Up Next

- Poison Score-O



Lesson 7 - Poison Score-O

Objectives - SWBAT

1. Understand the precision map reading skills needed to determine the exact location of a point in the terrain.
2. Plan a route between points that can be completed in a limited time.

Materials Needed

- School ground maps with a 10-15 locations marked
- Map legend if not included on map
- Controls markers for all controls + at least 5 extra
- Pin punches, stickers, or some other mode of determining whether a student has visited a control

Set Up

- ☐ Circle points on a map of the school grounds.
- ☐ Attach the pin punches or stickers to each marker and make note of which one belongs to your “real” controls markers (marked on the map) and which ones are “poison” markers (not on the map).
- ☐ Place control markers at all locations circled on the map and a few locations nearby that are not circled.

Lesson Progression

Symbol Review ~5 min

1. Review the symbols on the map making sure that students are aware of the level of detail depicted on the map.
2. Distribute score maps and have students identify the features in and around some of the control circles

Poison Score-O 20-30 min

1. The object of the game is to visit and punch as many points marked on the map as possible in the given time limit while avoiding points not marked on the map.
2. Explain the rules and clearly define the time limit.
3. All students start at the same time.
4. As students return check their punch/sticker cards and assign points - 1pt for each visited control, -1 for each poison control punched.
5. Extension - assign more points to harder controls.

Closure

1. What strategies did you use to determine whether or not a control flag was the one you wanted?
2. How did route planning go? Would you change your route if you were to play again?

Up Next

- Orienteering Course & Unit Reflection



Lesson 8 - How to Combine Map and Compass Skills Together: Orienteering Course!

Objectives - SWBAT

1. Apply navigation skills to complete an orienteering course on school grounds

Materials Needed

- 8-15 control markers
- 8-15 orienteering code cards (See Appendix), stickers, or pin punches
- Topographic map with orienteering course (8-15 sequentially marked controls)
- Scorecard - 1 for each student
- Class clock/watch (for students to note their start and finish times)
- Leaderboard (optional)
- Pencils
- Orienteering Unit Reflection - 1 for each student (End of Lesson Plan)

Lesson Set Up

- ☐ Determine 8-15 control locations on school grounds
- ☐ Mark the 8-15 control locations on a map of school grounds, number the controls
- ☐ Place controls out on campus in the locations marked on your map
- ☐ Print out scorecards
- ☐ Print out Orienteering Unit Reflection sheets

Lesson Progression

Skill Review 5 min

1. Review rules of orienteering, especially the requirement to visit controls in number order, not crossing uncrossable features. (See Appendix)
2. Review orienteering strategy, including picking a route that uses linear features (handrails) and allows you to get to the control quickly and safely. Optionally introduce the concept of thumbing (keeping your thumb approximately on your location on the map).

Full Orienteering Course 35 min

- Each student gets an orienteering map and a paper score card.
- Make pairs or trios of students.
- Have each student write down their start time on the top of their scorecard RIGHT BEFORE they take off on the course.
- Send 2 or 3 students on course in :15 sec intervals (for a class of 24 students this takes 3-4 min)
- When students complete the course, have them write down their finish time.
- Have students log their course time (finish time minus start time) on the leaderboard!

Extension for students who complete the course very quickly:

- A. Redo the course by memory (without the map)
- B. Redo the course (with the map) to try and decrease their time
- C. Run the course backwards
- D. Run only the odd- or even- numbered controls

**Unit Self-Reflection Assignment** 10 min

1. Handout the Orienteering Unit Reflection sheet
2. Have students turn this in before they leave, or next class if they need more time to complete it

Closure 5 min

1. Share an appreciation for a classmate about how they helped you learn/grow this unit.
2. Share one of your favorite aspects/benefits of orienteering and why.



Appendix

General posters/handouts

History of Orienteering
Rules of Orienteering

Lesson 1

IOF Orienteering Map Symbols
Lesson 1 Closure Question Handout

Lesson 2

Challenge Sheet 1
Challenge sheet answers
Lesson 2 Closure Question Handout

Lesson 3

Map Handling Techniques handout
Example Line-O map

Lesson 4

Capture the Flag-O map

Lesson 5

Poker hand explainer
Example score course

Lesson 6

Scooter-O maps

Lesson 7

Poison Score-O maps

Lesson 8

Code Card

LS Orienteering Course
Orienteering Unit Reflection



History of Orienteering

[History of Orienteering IOF](#) < (Link)

The word “orienteering” was coined in Sweden, and means crossing unknown land using a map and compass. It started in Sweden, in the late 1800s. Norway held the first sporting event open to the public, in 1897. It grew from there into Finland and Denmark, and beyond. Ten countries came together to found the International Orienteering Federation in 1961. It was recognized by the International Olympic Committee in 1977, and became an Olympic affiliated sport in 1988.

The IOF is growing rapidly, and as of 2017 has 70 members. The organization aspires to seeing orienteering in the Olympic and Paralympic Games. The official orienteering disciplines are foot, mountain bike, ski and trail orienteering. The IOF maintains a world event program, including World Cup races and the annual World Orienteering Championships.

[A History of Orienteering in the United States](#) < (Link)

The first orienteering events in North America were held on November 10, 1941, at Dartmouth College in Hanover, N.H. Orienteering started to take off in the US in the 1960s, and the United States Orienteering Federation was founded in 1971. The U.S. Military Academy in West Point started holding public events in the mid 1970s, and the cadets have dominated college-level orienteering every since. A number of international events have been held in the US, including a World Cup in 1986, the World Championships in 1993, and the Veterans World Cup in 1997 (which draw 2200 orienteers).

The US Team has represented the United States at every World Orienteering Championship since 1974. Junior World Championships events were introduced in 1990; currently, the USA sends 12 young men and women to JWOC each year. The junior national coaches work year-round with the top teens in the country; any teen competing at intermediate level and above, and willing to commit to regular training and team calls, is welcome to [apply for the national program](#) < (Link). Tryouts for the US team going to the summer world championships are held in the spring of each year. School teams compete for the championship cups at Junior Nationals races each year; in 2017 these competitions will be held in Massachusetts at the end of April.

Massachusetts orienteering

Peter Gagarin of Massachusetts is a five-time U.S. elite champion; his personal results in masters categories in the 1980's and 1990's place him at the very top of all-time non-European orienteering results, regardless of category. Fun Fact: He is the only Orienteer to be featured on the Wheaties box!

Pat Dunlavey of Massachusetts was one of the best orienteering map-makers raising the quality of U.S. maps to world standard. Larry and Sara Mae Berman of Cambridge, MA, published the national orienteering magazine 1986 to 1999. There are three orienteering clubs in Massachusetts: the New England Orienteering Club (focused on putting on a regular series of recreational events in the spring and fall), Cambridge Sports Union (a small club dominated by elite orienteers), and Navigation Games (dedicated to teaching children how to orienteer).



A number of elite and junior national team members live and train in Massachusetts.

**Key Terms**

Term	Definition
Orienteering	The sport of navigating your own way with a map.
Orienting the map	Aligning your map with the real world so that what is in front of you on the map is also in front of you in the terrain.
Terrain	Land, either forested or urban, where orienteering takes place.
Topographic map	A map that shows the shape of the land, typically through the use of contour lines.
Contour line	A line showing connecting points at an equal elevation. When lines are closer together the terrain is steeper. When they are farther apart the terrain is more gentle.
Handrail	A linear feature such as a trail, road, fence, stream, or rock wall that you can easily follow and use as a navigational aid.
Control	The point on the map (and in the terrain) that you are trying to find.
Control card	A card for indicating that you have visited the control points. It usually has numbered squares that you punch with a pin punch or decorate with a sticker.
Pin Punch	A special hole punch used for punching control cards. Each one has a unique pattern.

Orienteering Rules 101

There are many variations of orienteering courses. These rules are specific to the most common form, a point-to-point race.

Only a map and compass may be used to aid an orienteer with navigation on a course.

The competitor uses a detailed map, made specifically for orienteering, that has a start, several (10-30) control points, and a finish. Each runner starts by themselves and must visit all of the controls in order and return to the finish. They choose the route between each control and navigate on their own. The runner with the fastest time wins.

The map indicates the kind of terrain (open forest, thick forest, roads, fields, ponds, marshes, etc) as well as the landforms present (with the use of contours). Orienteering maps are more detailed than most hiking and road maps, down to having the position of individual boulders indicated on the map.

IOF Orienteering Map Symbols

Land forms

	Contour
	Index contour
	Form line
	Slope line
	Contour value
	Earth bank
	Earth wall
	Small earth wall
	Erosion gully
	Small erosion gully
	Knoll
	Small knoll
	Elongated knoll
	Depression
	Small depression
	Pit
	Broken ground
	Special land form feature

Water and marsh

	Lake
	Pond
	Waterhole
	Uncrossable river
	Crossable watercourse
	Crossable small watercourse
	Minor water channel
	Narrow marsh
	Uncrossable marsh
	Marsh
	Indistinct marsh
	Well
	Spring
	Special water feature

Rock and boulders

	Impassable cliff
	Rock pillars/cliffs
	Passable rock face
	Rocky pit
	Cave
	Boulder
	Large boulder
	Boulder field
	Boulder cluster
	Stony ground
	Open sandy ground
	Bare rock

Man-made features

	Motorway
	Major road
	Minor road
	Road
	Vehicle track
	Footpath
	Small path
	Less distinct small path
	Narrow ride
	Visible path junction
	Indistinct junction
	Footbridge
	Crossing point with bridge
	Crossing point without bridge
	Railway
	Power line
	Major power line
	Tunnel
	Stone wall
	Ruined stone wall
	High stone wall
	Fence
	Ruined fence
	High fence
	Crossing point
	Building
	Settlement
	Permanently out of bounds
	Paved area
	Ruin
	Firing range
	Grave
	Crossable pipeline
	Uncrossable pipeline
	High tower
	Small tower
	Cairn
	Fodder rack
	Special man-made feature

Technical symbols

	Magnetic north line
	Registration marks
	Spot height

Vegetation

	Open land
	Open land with scattered trees
	Rough open land
	Rough open land with scattered trees
	Forest: easy running
	Forest: slow running
	Undergrowth: slow running
	Forest: difficult to run
	Undergrowth: difficult to run
	Vegetation: very difficult to run, impassable
	Forest runnable in one direction
	Orchard
	Vineyard
	Distinct cultivation boundary
	Cultivated land
	Distinct vegetation boundary
	Indistinct vegetation boundary
	Special vegetation feature

Overprinting symbols

	Start
	Control point
	Control number
	Line
	Marked route
	Finish
	Uncrossable boundary
	Crossing point
	Out-of-bounds area
	Dangerous area
	Forbidden route
	First aid point
	Refreshment point

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Copies of these map symbols and of the IOF pictorial control descriptions can be downloaded from www.maprunner.co.uk
The full ISOM 2000 specification is available from www.orienteering.org





Lesson 1 Intro to Orienteering Closure Questions

Name _____

Class_____

Date_____

1. Describe the sport of orienteering in your own words.
2. List two map features and draw or explain the symbol used to represent the feature on a topographical map.
 - a.
 - b.
3. Explain how to orient a map.



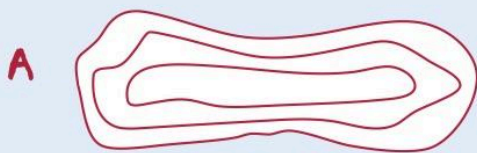
Ozone

Challenge Sheet 1

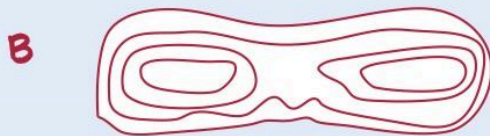
Contours - Which of the contour shapes on the left match the profile shapes on the right?

Answer

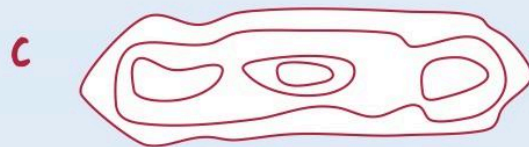
A = B = C = D = E = F = G = H =



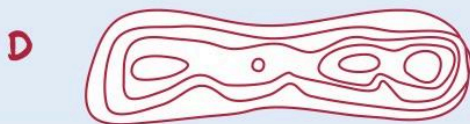
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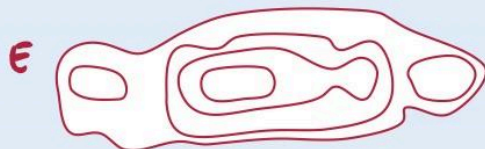
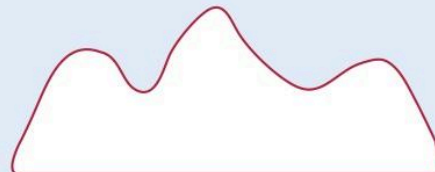
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3



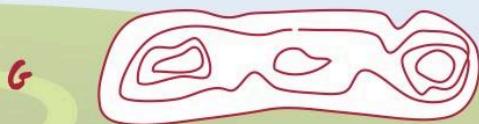
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5



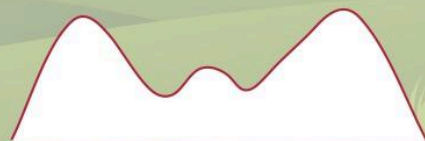
6



7



8



The Ozone logo, featuring a large red 'O' with a blue arrow pointing upwards and to the right, and the word 'zone' in a colorful, multi-colored font (blue, orange, green, blue).

Challenge Sheet Answers

Challenge Sheet 1 - Contours

A = 7, B = 6, C = 4, D = 2,
E = 5, F = 1, G = 8, H = 3

Challenge Sheet 5 - Spot the Difference

Acorn Woods

Scale 1:15,000
Contours 5 metre

A map of Acorn Woods showing a green landscape with a small house, a road, and a river. The map is titled 'Acorn Woods' and includes a scale of 1:15,000 and contours of 5 metres.

1. Draw and explain 3 topographic map symbols and the feature they represent.
2. Explain what contour lines are/what they do on a topographical map.
3. How/why was orienteering created?
4. Reflect on your current navigation awareness/skills.
 - a. What skills/concepts are you confident with already? Why?
 - b. Which navigation skills/concepts are hard for you at this point? Why?



Map Handling Techniques



1. Orient the Map

Keep the map matched to the terrain



2. Fold the Map

Keep only the area you need in sight



3. Thumbing

Move your thumb along the line you are traveling on the map as you go

Questions to Ask Before You Start Moving

1. Where Am I Now?
2. What am I trying to find?
3. What will lead me from here to there?

Questions to Ask As You Are Moving

4. How Will I Know I'm On Course?
5. How Will I Know I'm Almost There?
6. How Will I Know If I've Gone Too Far?



Line-O

Lincoln-Sudbury RHS

scale 1:4000
contours 2m



Fieldwork and drafting by Ed Despard
www.navigationgames.org

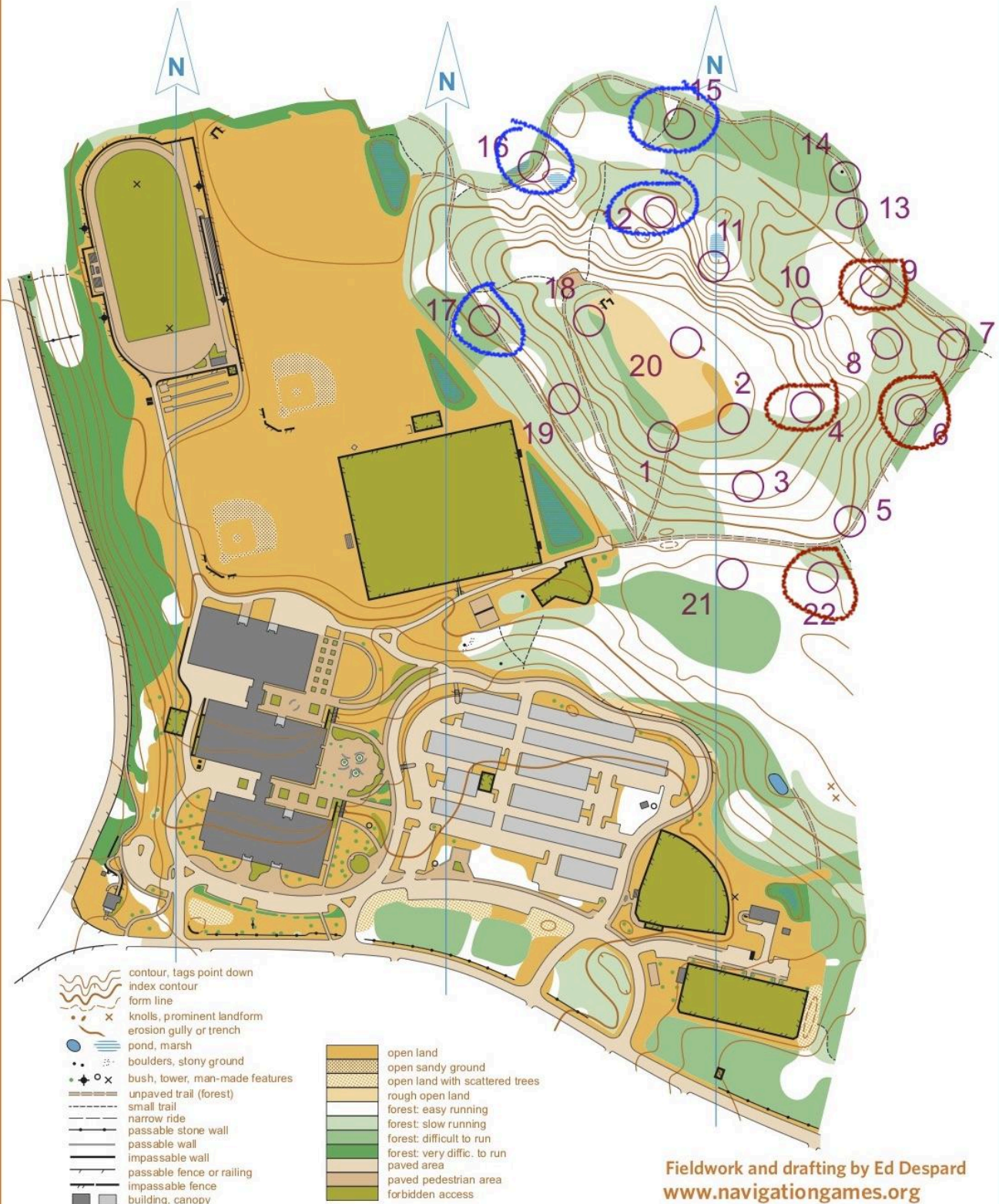


Capture the Flag Map

Lincoln-Sudbury RHS

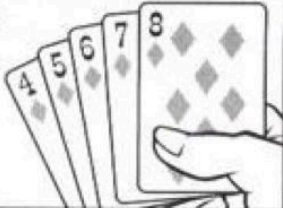
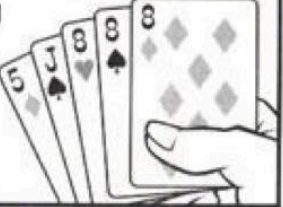
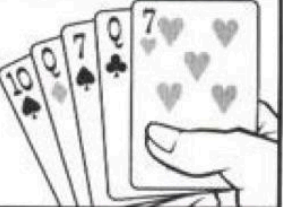
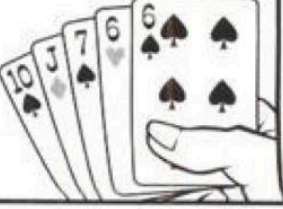
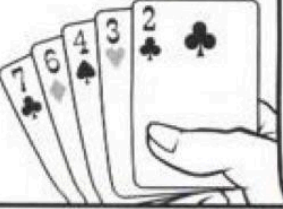
scale 1:4000
contours 2m

Each team selected four control locations for their flags





Poker Hand Explainer

POKER HAND RANKINGS	
1. Royal Flush A, K, Q, J, 10 all of the same suit	
2. Straight Flush Any five card sequence in the same suit	
3. Four of a Kind All four cards of the same rank	
4. Full House Three of a kind combined with a pair	
5. Flush Any five cards of the same suit, but not in sequence	
6. Straight Five cards in sequence, but not in the same suit	
7. Three of a Kind Three cards of the same rank	
8. Two Pair Two separate pairs	
9. Pair Two cards of the same rank	
10. High Card Otherwise unrelated cards ranked by the highest single card	



Poker-O aka (Field Score-O)

Lincoln-Sudbury RHS

scale 1:4000
contours 2m

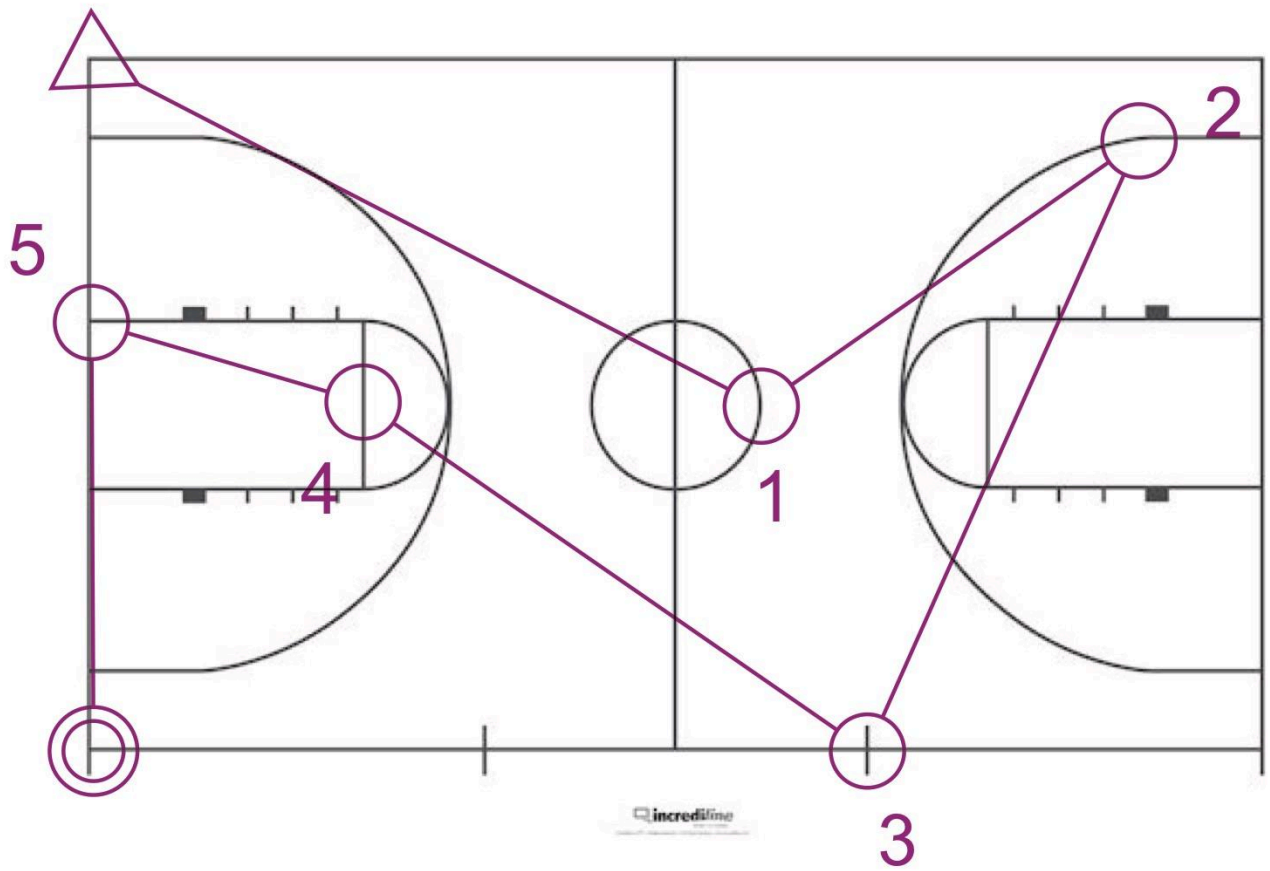
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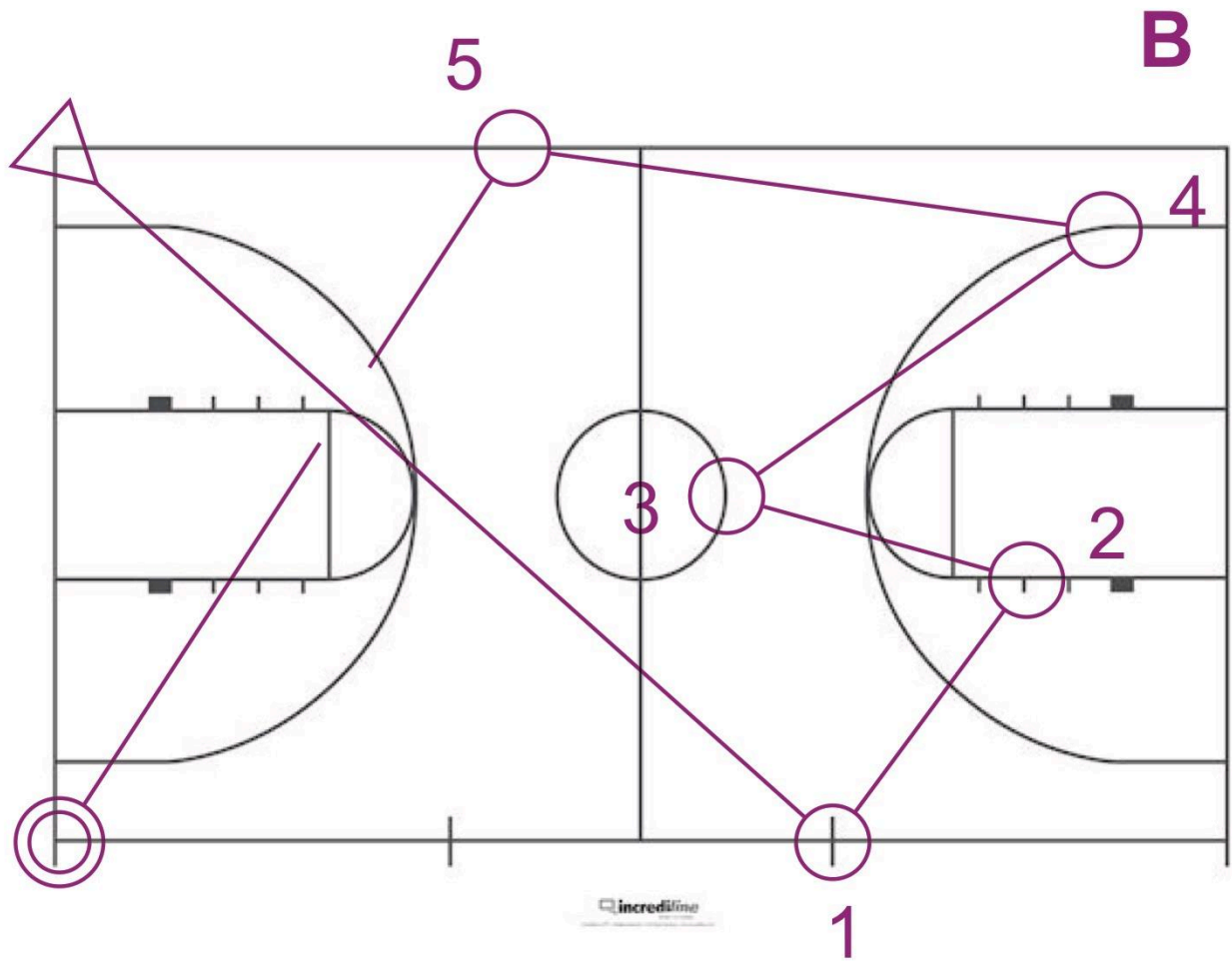
Fieldwork and drafting by Ed Despard
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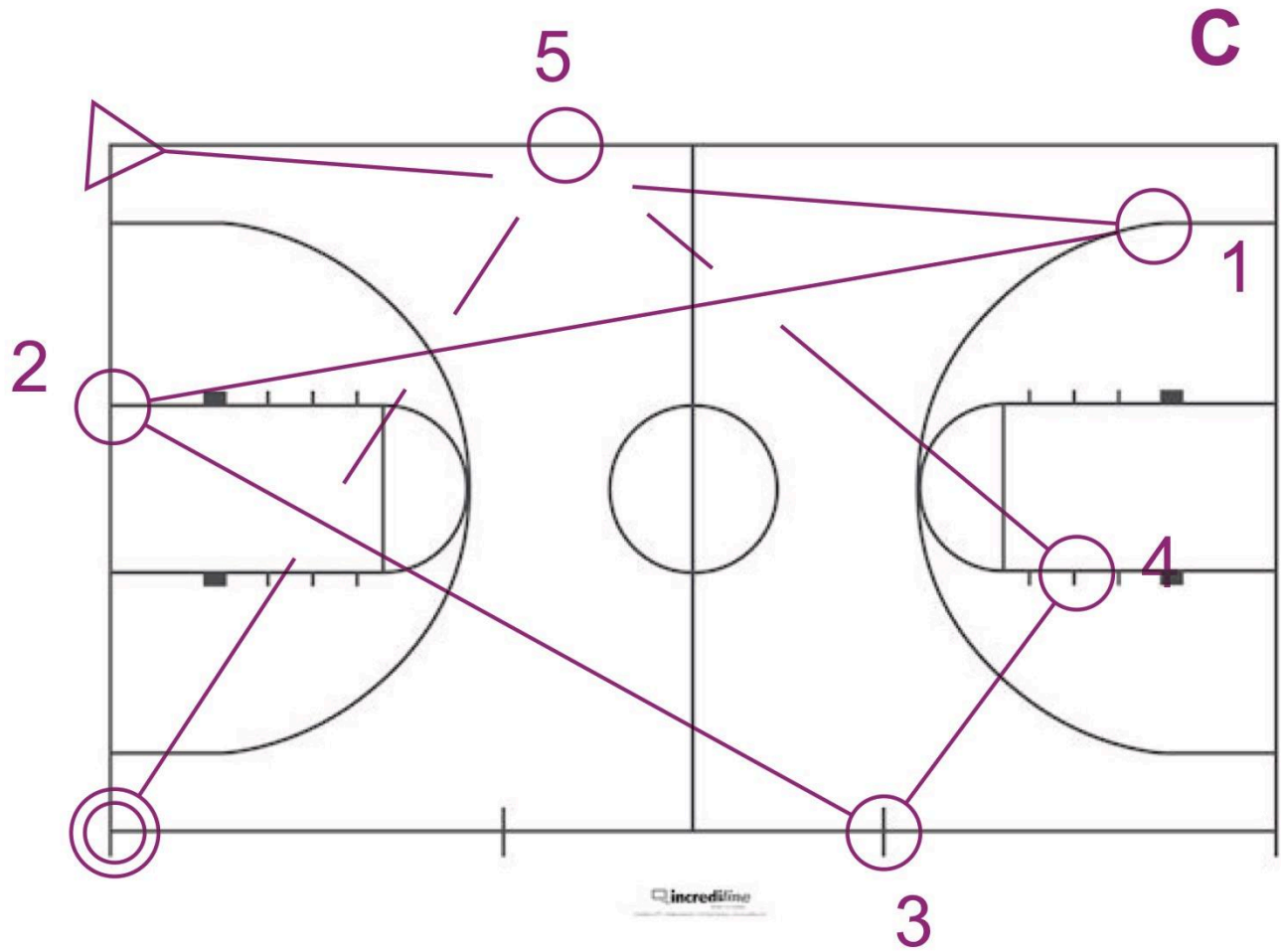


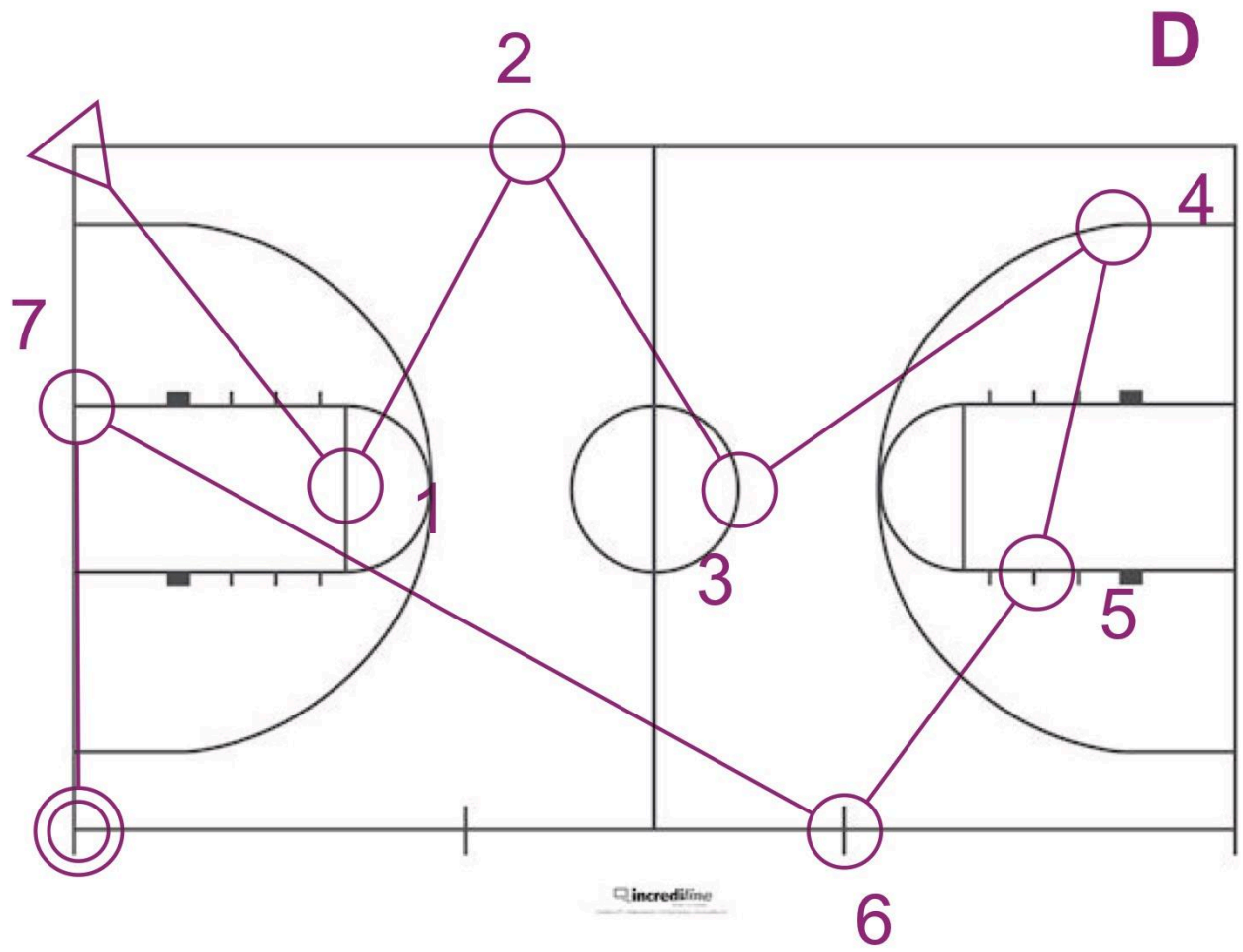
Scooter-O Maps

A



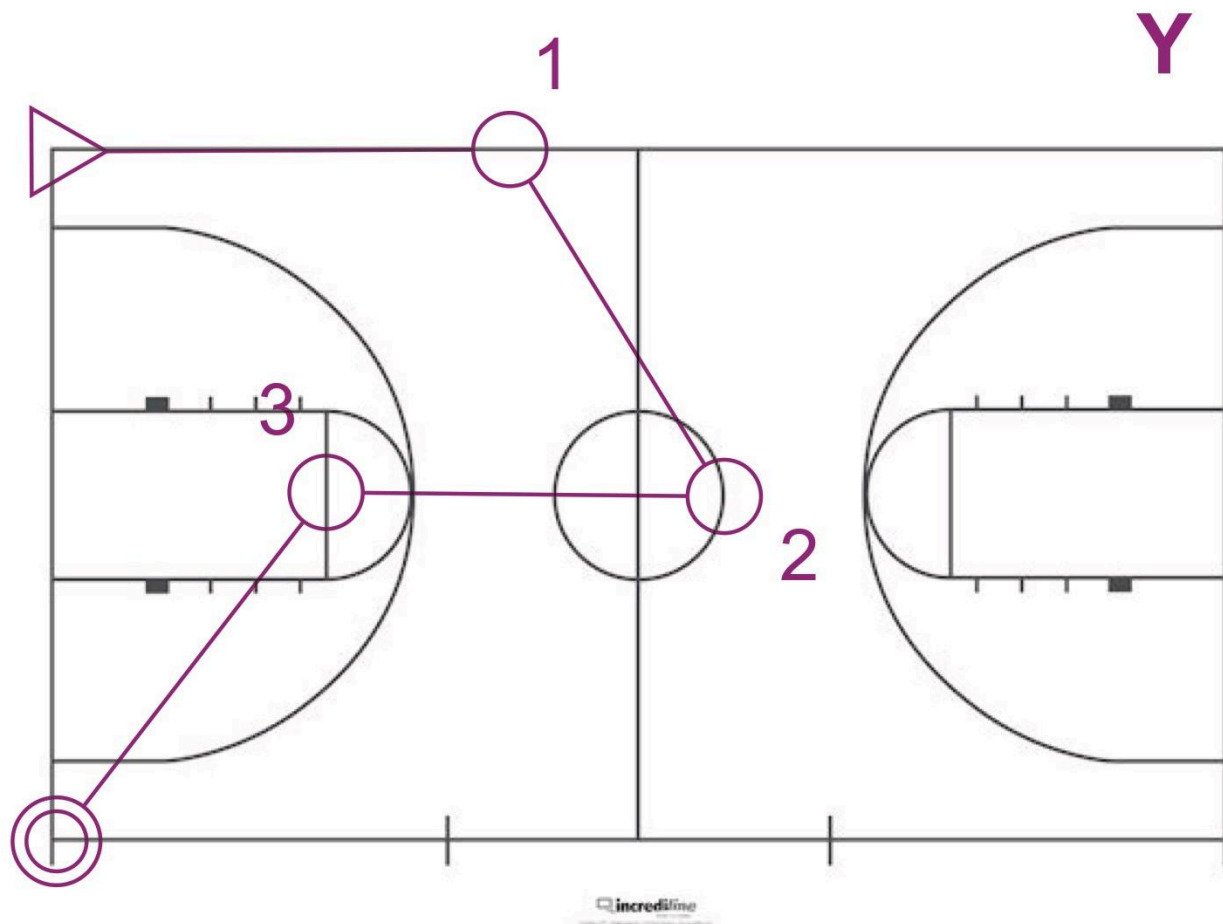






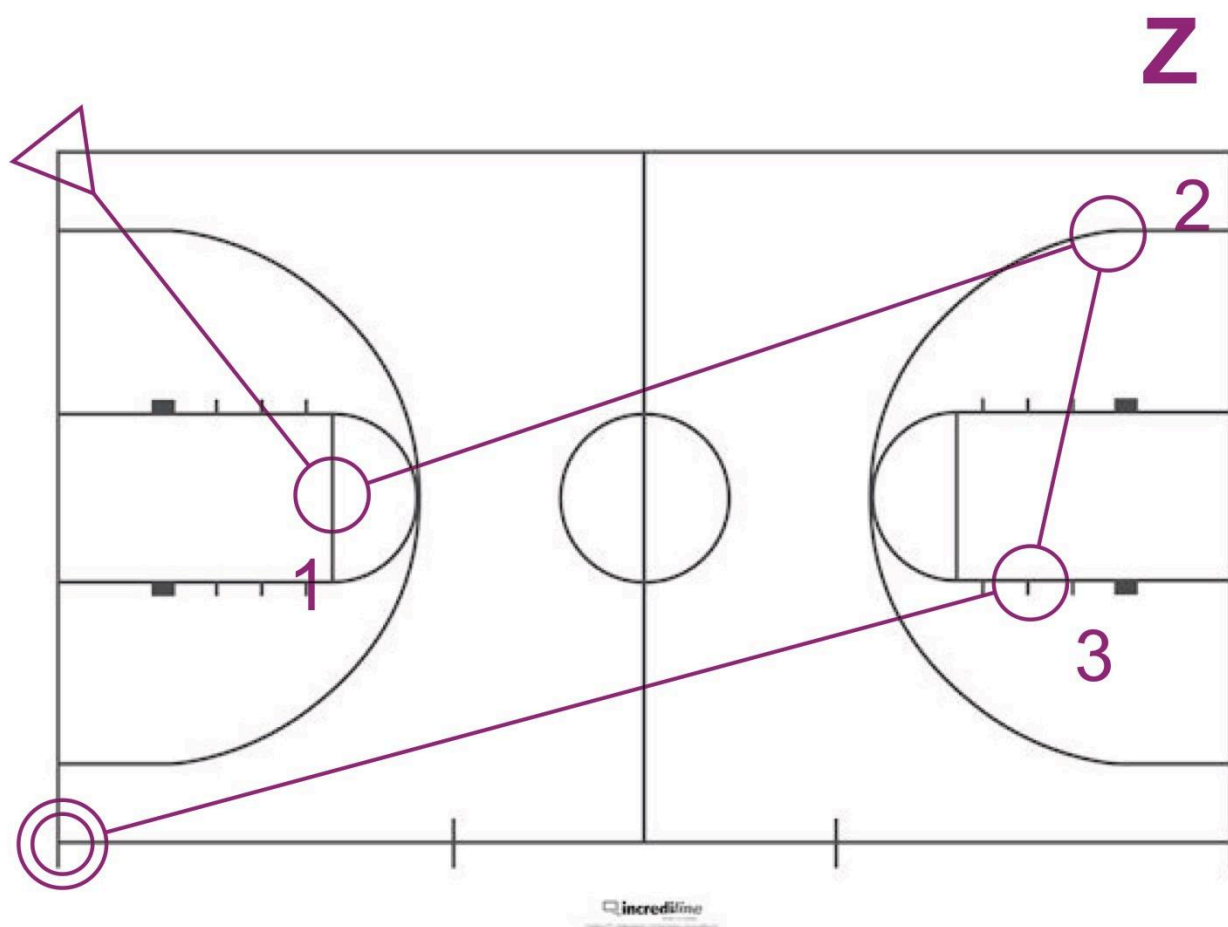


Scooter-O Warm Up Course (Optional)





Scooter-O Warm Up Course #2 (Optional)





Poison-O

Lincoln-Sudbury RHS

scale 1:4000
contours 2m

Poison-O Arrows point to possible “poison” locations.
Students should NOT have those marked on their maps!



**Example Codes for Control Locations**

(You could also use stickers, number sequences, mini math problems, names of bones, skill cues, etc.! Any curriculum connections you can think of!)

AK
CL
BB
EC
MS
SG
EB
CB
SS
GG
NO
MG
SM
JJ
VC



LS Example Point-to-Point Orienteering Course

Lincoln-Sudbury RHS

scale 1:4000
contours 2m



**Orienteering Unit Reflection**

Name _____ Class _____ Date _____

1. What is **one thing** you can do now that you could not do before this unit?

2. Explain **two ways** to orient a map.

3. Explain why knowing how to orient a map is important in orienteering **and** in your life.

4. Share **three skills** (physical, social, intellectual, emotional, or environmental) you practiced in this unit.

5. Explain **three ways** orienteering can benefit your overall wellness.



Acknowledgments and References

Erin Schirm developed and shared with us orienteering lesson plans for middle school. The boundary run and game, as well as the gathering in response to a signal, were based on his first lesson plan. Erin's approach of using games and emphasizing communication has been an inspiration.

The Arithmetic Grid O game was taken from the Counting Cones activity in British Orienteering's Tri-O packet:

https://www.britishorienteering.org.uk/images/uploaded/downloads/schools_tri_o_resources.pdf

Animal-O: Andrea Schneider of Orienteering USA and David Yee observed animal orienteering in Europe and brought back reports, and our first animal O activities were based on those reports.

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