Introduction to Orienteering

Hanover Conservation Council

Version of November 6, 2004

These notes were originally prepared for our "Score-O" event. After the meet, the control flags will be taken down—but the locations are still marked with a short piece of blue surveyor's tape, if you want to go and practice.

1 Goal

Orienting is an international sport where individuals—armed only with a compass, map, and their wits—visit a sequence of control points in the backcountry.

In today's "score-O" meet, we have a set of controls of varying difficulty and score level; within the time limit, you need to visit whichever controls you want, in whatever order.

Logistical Stuff

A few notes:

- The control flags have a number of things (like playing cards) hanging on them, left over from previous events. For today, make sure you look for the Los Alamos business card with the blue number.

Safety:

- You should not need to leave the Oak Hill/Storrs Pond property.
- There are a few extremely steep hills to the north of the pond. You should not need to go up or down them; be careful.
- If you get truly lost, head southwest: you should hit Reservoir Road or Rt 10.

Please check in before you go home, so we know who's still out in the woods.

2 Your Tools

2.1 Map

Like other maps, *orienteering maps* show things like roads, buildings, trails, and water. However, they also show other things, such as:

- boulders and cliffs
- fences and stone walls
- marshes
- significant vegetation boundaries
- contour lines
- "misc man-made objects" (usually marked by an "X")

Orienteering maps are typically 1:15000 or 1:10000. The Oak Hill/Storrs Pond map is the latter, meaning that 1cm on the map equals 100 meters on the ground. (An international sport, orienteering tends to do things in metric.)

For today's map, we've pre-marked the control locations and (with a triangle) our intended start point.

2.2 Pace-counting

From the map, you can figure out a route to where you want to go. *Measuring distance* is a very useful tool in following this route. You can do this by knowing how many *paces* it takes you to go 100 meters (1 cm on your map), and counting paces while you're moving.

We've marked a 100-meter distance here at the start. Go and traverse that (walking, jogging, running—however you think you'll be moving), and count each time your right foot goes down. (For me, it's 43.) Note that in the woods, this count will only be approximate—things like rough terrain can cause your pace count to vary.

Get in the habit of counting paces all the time. This will help you stay connected with your route on the map ("I should see a creek crossing in another 80 paces"). This will also help on open-woods segments ("that boulder should be about 30 paces in that direction").

2.3 Compass

The compass has a needle that points to magnetic north.

- The bad news: the earth's magnetic north pole is not at the north pole, so "magnetic north" is usually not the same direction as "true north." (The term "declination" refers to this difference.)
- The good news: in orienteering, the maps are always drawn to magnetic north, so you don't have to worry about that!

You can use your compass for a couple of things.

Orienting the Map. It's nice to have the map oriented the same way the earth is. You can do that by putting the compass on the map, and then turning both, until the compass needle points in the same way that "north" does on the map.

Try to always hold the map so that's oriented to the earth around you. Also, try to keep track of where you are on the map (e.g., by keeping your thumb there)—it's amazing how much time you can lose if you have to keep stopping and looking that up again.

Relating the Map to the Earth. The compass has a turnable *housing* that contains an *orienteering arrow.*

If you know where you are on the map, and the map says you want to go off to some other point, you can use the compass to *take a bearing* and figure out where, on the earth, you should move to go in that direction.

- Lay the compass on the map, and point it along the line
  - from where you are
  - to where you want to go.
- Rotate the housing so the arrow points north on the map.
- Now, hold the compass out, and move it so the needle lines up with the arrow in the housing.
- Look along the direction of the compass. That's where you want to go!

Aim far: pick a tree or some other object as far out as you can in the direction of travel.

Relating the Earth to the Map. Sometimes, you don't know where you are on the map. For example—you're on a winding trail, and you know where the trail is on the map, but you don't know *where* on the trail you are. You can use a compass bearing to help solve this problem, too:

- Point the compass along the direction of the trail
- Rotate the housing so it lines up with the needle.

- Lay the compass on the map and orient it so the housing lines up with north on the map.
- Now find the place on the trail where it points the same way as your compass!

(I've even used this technique on the tangent the contours, to figure out where I was on a mountainside.)

Measuring Distance. Compasses usually have tick marks to help you measure distances on the map. On the loaners we have from Dartmouth, you should use the centimeter scale.

3 Plan

The basic idea is to get to the next control point as quickly as possible!

But to find the fastest route for you, you need find the balance between what's fastest for you to run—and what's fastest for you to navigate. (You also want to not get lost—and to quickly figure out where you are again when you do.)

Attack Point. The first thing orienteers do when they plan a route is to find an *attack point*: a clear, obvious point near the control that you can use as a base for attacking it.

For "easy" controls located at things like buildings or trail intersections, the attack point is probably the control itself. But for more advanced ones (e.g., out in the woods somewhere), look for something clear, like a trail intersection, not too far away. Orient to that attack point, then head to the control from there. If you can't find it, don't go running 300 meters further; go back to the attack point and try again, or perhaps find a different attack point.

A friend of mine (and multi-time US champion) advises a "green light/red light" approach.

- **Green Light.** Run really fast to your attack point.
- **Red Light.** Then walk really slowly (navigating carefully) to your control.

Handrails. When possible, orienteers will try to make use of easy-to-follow linear features, such as trails, creeks, fences, or stone walls.

Beginner courses are typically designed to make it possible to use such handrails for most of the routes.

On the other hand, advanced orienteers will typically travel in more direct lines *through* the woods, and only use handrails if they lie directly in the path.

Catching Feature. You can use a large, easy-to-find feature *beyond* your target (a "catching point") or *on the way* to your target (a "collecting point") to help plan.

Aiming off. You probably will drift off your bearing, particularly in open woods. A nice trick is to just accept this, look for a nice catching feature to one side of the target, and deliberately *aim off*, so you hit that feature instead of disappearing into space.

Use the earth. Look at the hills and slopes and contours, and use this information!

Beware similar features. If you think you're in the right place but can't find your target, look at the map again. Is there another similar site, near your target, that you may have found by mistake?

If in doubt, don't wander randomly; go back to a clearly defined place, and try again.

Pace Counting. As noted before, count your paces all the time, and use that to stay connected with your map.

At the Control. When you get to the control, look to see if it's the right number, then punch your card. Since the control is on the map, you now know exactly where you are!

Example

We've set up a "practice" control on today's course, #00. Look at where it is on the map.

- Where is a nice attack point?
- Can you visualize, from the map, what the land will look like there?
- What's the easiest/quickest way to get to the attack point from where you are now?
- When you get to the attack point, how will you find the control? What direction will you travel? How far in should the control be?

4 The Next Level

After you bag some tough controls today—wondering if you're in the right place, taking a few more steps, looking on the south side of that next boulder and seeing the control exactly where it's supposed to be—you might be hooked. (I was!)

The next step is to start attending some "club" meets. Here are a few things to help you get ready:

- In a typical meet (unlike a score-O), there will be a choice of several color-coded courses, ranked by length and difficulty of navigation. You'll have to pick one; you then need to visit each control on that course, in order.
- In a typical "club-level" meet, the maps usually don't have the controls marked on them; you have to copy them from a master map.
- When you find a control, take extra care to verify that the label on the flag matches the label on your clue sheet—often, many controls, for different courses, can be clustered together in the same region.
- At the upper (and more fun) levels, expect to find long legs between controls, with very few trails or handrails.
- At the more fun levels, the control flags (like we tried with the 40s today) will be exactly where they say the are. "North side of NW boulder" means you may not see it if you're standing on the south side, or standing at the wrong boulder.
- Once you get beyond beginner, the "clue sheets" will have no text descriptions, just the symbols. (But don't worry; it's not hard to figure out.)

Besides regular meets and "score-O" meets, other variations exist. Some that I've done include:

- "Billygoat"-style events: typically long distance (over 10 miles), and combining various course types
- "Tri-sport" events: with a running segment, a mountain bike segment, and a kayak event (where every control was at "edge of body of water").

For more info on orienteering and area clubs, see `http://www.cs.dartmouth.edu/~sws/orienteering/`.

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