Adventure Racing/Navigation 101

Adventure Racing (AR) is a multi-sport, team event in which racers navigate their way from checkpoint to checkpoint using a map, compass and route strategy within a set time length.

Typical disciplines:
- Navigation (map without a compass)
- Orienteering (map and compass – "bushwhacking")
- Road & trail/mountain biking
- Trekking/trail running
- Canoeing (sometimes)
- Other (rock climbing, swimming)
- Amazing Race-style challenges (we add these to some shorter races)

Why adventure race?
- Multi-sport challenges
- Blend of endurance and speed, brains and brawn
- Wilderness experience, explore new places
- For all levels of abilities
- Teamwork
- Act like a kid (treasure hunt)
- Anticipation, memories
- Like no other sport/event

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What to Expect

- **Pre-Race briefing:**
  - Explain the course, rules, hand out maps and the passport
- **Passport:**
  - Must get signed or punched at every checkpoint.
- **Control points or Checkpoints (CP):**
  - All teams must locate the CPs. Some will be manned and some will be a triangle flag with a hole punch
- **Transition Areas (TA)**
  - Where teams transition from one activity to another (bike, trek, paddle). Usually bike or paddle gear can be left at TA while doing other activity.
- **Gear check:**
  - Many races will have random locations throughout the course to check if the team and individuals have all mandatory gear (see Required Gear on site)
- **Finish:**
  - Performance is based on how many CPs you get within a set time limit. If you get 30 checkpoints in 3 hours but another team gets 31 checkpoints in 3:59, they finish above you.

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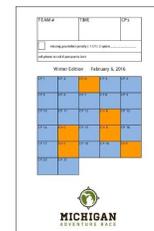
Compass Elements, How to Use

- Rotate compass housing to align with the desired direction ("bearing", e.g., west or 270 degrees) with the direction of travel arrow.
- Follow the direction of the travel arrow on the compass, keeping the magnetic needle aligned with the orienting arrow on the housing (red in the shed).
- To determine what direction you are facing, point the direction of travel arrow and rotate the compass housing until the needle is aligned with the orienting arrow.

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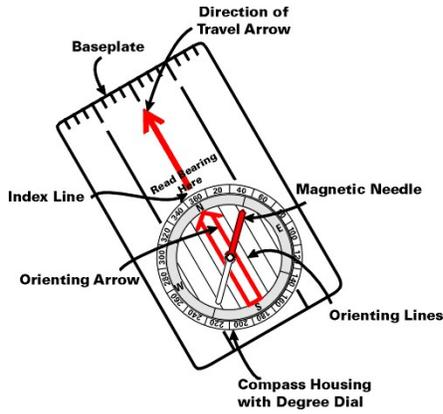
How to Navigate with Compass & Map

**To find the Bearing from point X to Y**
- Align the edge of the compass with starting (X) and finishing (Y) points
- Rotate the compass housing until the orienting lines on the compass line up with the N/S orientation lines on the map. North on the compass degree dial should match North on the map. Read bearing.

To "orient the map"
- Rotate the map and compass together until the red end of the compass needle points north (red in the shed).

To go from X-> Y
- Follow the direction of the **travel arrow** on the compass (the arrow on the baseplate, not the red end of the compass needle), keeping the needle aligned with the orienting arrow on the housing. Use objects such as trees in the distance to follow rather than always looking down at compass.

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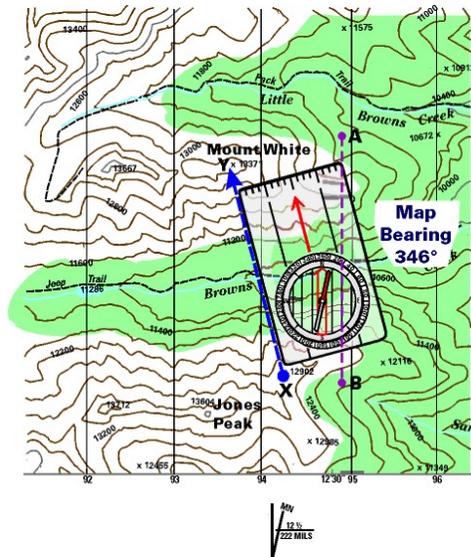
Common Mistakes

- Orienteering only works if you know where you are (X).

- Ensure that you are lining up the compass with direction of travel arrow pointing from X (where you are) to Y (destination), not Y to X.

- When you rotate compass housing to line up north/south lines on compass with those on the map, make sure that north on the compass matches north on the map.

- Make sure you know how far you have to go (distance)
  -On a 1:24,000 scale map, every 1 cm = 240 meters
  -On a 1:10,000 scale map, every 1 cm = 100 meters

- Try counting your steps or paces (every other step) in the woods to get a good idea of how far you are going. And measure how long it takes you on average to travel 100, 400, 800 meters in various types of terrain.

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Topography and Topographic Maps

Basic Features
•**Steep slopes** - contours closely spaced
•**Gentle slopes** - contours less closely spaced
•**Summits/hilltops** –concentric circles (knoll is a smaller hill)
•**Depressions** - concentric circles with lines radiating to the center
•**Spurs** – bulge off of a ridge line. U-shaped series of lines off high ground.
•**Reentrants** (gullies)– Indentations along ridges (marking water drain). V-shaped series of lines off high ground.
•**Saddles** – area between summits
•**Ridges** - parallel lines sloping down hill

Colors
Green: woods, brush
Blue: water
White: light vegetation
Brown: contour lines
Red/gray: urban areas

•**NOTE** – Look for low spots and water. Water flows down hill.

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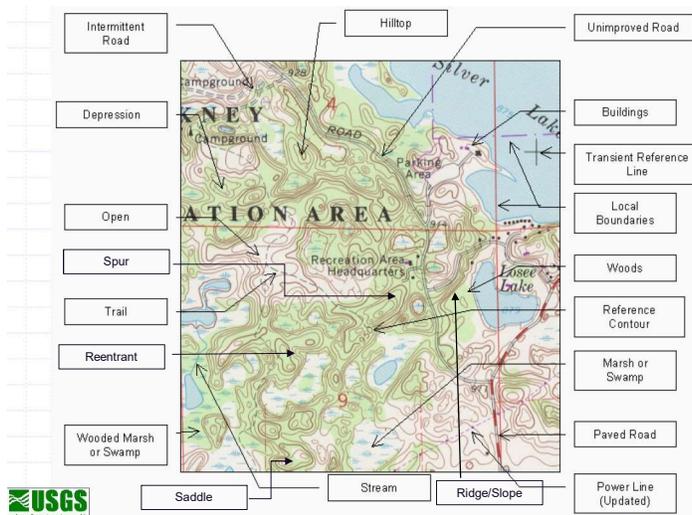
Strategy

Trails
- Is the trail on the map? How confident am I about this?
- Will it take me where I need to go; could it suck me into where I don't want to go?
- How fast can I travel on trail vs. off-trail? How much farther is it to take the trail? How certain is it I will know where I am along the way and at the end?
- Does it have attack points ("kinks" or intersections, elevation changes, natural features) that tell me where I am?
- If it's winter, are the trails likely to have been used prior to the race? Can I tell where they are? What trails are groomed? (Pre-run trails when possible)

Terrain
- The sure (slow) thing vs. the (fast) unknown (e.g., going over a hill on bearing vs. wrapping around)
- Where is the terrain usually brutal? Near creeks, reentrants (fall lines), low areas around wetlands
- Where does the terrain help guide you ("handrails")? Creeks, reentrants, ridge lines.
- Stay within sight of creeks and reentrants but above them… e.g. on ridge lines or "spines"
- Pay careful attention to contour lines
- Climbing vs. descending. Climb early while fresh?

Measurement
- Pre-race: compass ruler, map wheel
- During race: compass, pace counting, stopwatch, counting features (e.g., reentrants)

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Strategy

Attack Point
- A location that you are confident that you can identify and take a compass bearing from.
- Best strategy if the control isn't on or near a handrail or other large, distinct, easily identifiable feature, choose an
- Your accuracy in following the bearing decreases as the distance you travel increases.
- Note: using an attack point is also useful in less challenging situations, where you don't have to use a compass.

Handrail
- Features that you can follow easily (like a handrail on a staircase).
- Trails, roads, fences, streams, ditches, edges of fields, and other long, narrow features just as easily.
- Takes much less concentration than following a compass bearing.

Aiming Off
- Deliberately aiming to one side of a feature on or near to confidently predict which side it will appear on.
- For example, if you aim right at a bend on a stream, but don't see it when you hit the stream, you won't know whether to go upstream or downstream to look for it.

Visualization/Collecting Features
- Constantly visualize features in your mind before you get to them, then identify the features as you pass them, and locate or "collect" them on the map. "There should be a reentrant (gully) coming up on my right, and then there'll be a marshy area off to my left"
- If necessary, break a long leg up into several shorter sections between identifiable features, even if it means following a zig-zag course.

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Strategy

Catching Features
- Lets you know if you've gone too far.
- Look on the map a short distance beyond the CP you are heading for, and pick out a big, distinct feature that you can't fail to recognize. If you arrive at this catching feature, you will know you have overshot the control, and can turn around and go back. "Catches" you.

Recovery/Relocation
1. When you feel you have lost contact with the map, stop. Stop sooner rather than later.
2. Orient the map with the compass.
3. Re-establish your location by looking at the oriented map and the features around you.
4. If you can't relocate right away, then reconstruct with teammate(s) where you think you went since the last place you knew you were.
5. If you still can't figure out where you are, go to a feature that you know is on the map (e.g., hilltop, trailhead, water feature) or return to the last place of known position.
6. Once you have relocated, don't rush to make up lost time except when you know where you are (e.g., a trail, road, on a river).

End Game
- Exiting an orienteering course
- Managing time (e.g., measure distance from furthest point)
- Design with the end in mind: finish near the finish, create loop that maximizes CPs and gets you back closer to the finish, plan for short on time and long on time

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Strategy

Practice
- Review past races, attend clinics, get tips online
  - ✓ MI Backyard (now Michigan Adventure Club) race analysis. Cooper and Michelle Green and guest racers explain their logic for route selection from Michigan Adventure Races and other events. My #1 source for navigation tips.
  - ✓ Mark Lattanzi's Navigation Tips site. Great resource from an expert navigator.
  - ✓ High Profile Adventure Camp. The longest running adventure camp in the U.S. gives aspiring first timers to experienced racers the skills and knowledge needed to participate and excel in adventure races. Camp Benson, IL, check online for 2017 date.

- Yankee Springs Permanent Orienteering Course http://michigano.thecyberdesigner.com/permanent-course.htm. New course planned for Seidman Park in Ada in 2017.

- Do it yourself
  - ✓ Use online topo maps or free phone gps app (e.g., Terrain Navigator Pro); hike off-trail
  - ✓ Draw a line from one point to another, find every feature as you pass by it
  - ✓ Create "streamer" courses for each other (or create online and then find features)

Race
- Jan. 28   Michigan Adventure Race: Winter Edition, 3 hours, Rockford
- May 20   Michigan Adventure Race: Ludington Edition, 6 and 12 hrs, Ludington State Park
- July 28-30 Michigan Adventure Race: Epic Edition, 6 and 18 hrs, Caberfae Peaks Resort
- Oct. 7   Michigan Adventure Race: ArtPrize Edition, 4 hrs, Grand Rapids

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