The NJROTC

Area Six

Leadership Academy

Orienteering

Training

Manual

July 2009

ACKNOWLEDGMENTS

INTRODUCTION

Every element of the Navy Junior ROTC program was designed with the purpose of developing young leaders.   Orienteering was included in our curriculum with exactly this goal in mind. It's such a great blend of physical and intellectual effort: the higher order thinking skills of deciphering a map on the run, the physical and mental demands under time pressure; classroom theory coupled with in-field practice; both individual and team effort.

Your role as a cadet selected for Leadership Academy is not only to improve your own leadership skills, but also to improve your orienteering skills and in turn your orienteering team' skills. This handbook is designed to aid you, the Leadership Academy graduate, improve your orienteering ability, and better equip you to assist your Naval Science Instructor coach the team.

You will improve your knowledge of orienteering rules and understanding of map symbols and control codes. You will learn how to make an orienteering map and how to set a fair, challenging course. You will learn how to run an orienteering team practice, how to prepare for a meet, how to use effective course strategies, and how to analyze your team's performance afterward. Finally, you'll learn how to host a challenging meet for other units to enjoy.

I encourage you to carefully study this manual and share it with your team.   I hope to improve it every year. Please send me any suggestions or ideas for inclusion in next year's manual to pheiffermt@training.navy.mil. I will give you and your unit full credit for any ideas or activities that I include in next year's version.

I wish you every success this coming year. May you run swiftly and navigate accurately.
LCDR Matthew Pheiffer
USN (Ret), SNSI, Hilton Head Island H.S. NJROTC

TABLE OF CONTENTS

I.   Get Ready

Your Naval Science Instructor is the Orienteering Team Coach, and therefore bears overall responsibility for the training, performance, and safety of the team. **But your instructor greatly depends on you, as a cadet leader and Leadership Academy graduate, to run the team**.

At my unit, I design the training calendar, determine the meet schedule, review my cadets' meet performances, and keep a watchful eye during practices. My Orienteering Team Commander and Team Assistant do the important stuff: Design courses, set and unset courses, lead the cadets on conditioning runs, teach orienteering strategies, and conduct meet pre-briefs. They are also in charge at the start and finish tables of our annual meet, and they determine the lineup of who is running what course for upcoming meets. Those are pretty significant responsibilities that require dedicated, knowledgeable orienteers.

In my experience, the most active, competitive NJROTC orienteering teams are the ones that have both instructors and cadets focused on improving their knowledge and skill of this demanding sport. This typically means educating yourself, insisting on more practices per week and more meets per season, and challenging your instructor, your teammates, and yourself to make your orienteering team the premier team at your unit.

Things you can do between now and the start of "Orienteering Season" (for most of us that's sometime in September) to help your instructor and your team get off to a great start:

o   If your unit doesn't have an orienteering team, start one. Read this manual, and get started!
o   Visit the USOF website and read everything on it. Be the smartest orienteer on your team and then make it your goal to make everybody else just as smart.
o   Start your orienteering conditioning. Be the fastest orienteer on your team and then make it your goal to make everybody else just as fast.
o   Come in during the summer and offer to inventory and check all of the unit's orienteering equipment. Make recommendations to the instructor on what equipment needs to be ordered.
o   Review the orienteering team schedule and make recommendations. Call or email all the units (including other service JROTCs) within a couple hour bus ride. Also look at the Orienteering Club schedules, if you're a lucky unit near one.
o   Make preparations for the first practice (very important)
o   Arrange with your instructor to come to every 1st year class and teach an intro to the sport with a (very easy) White course. Do this prior to the first regular team practice (great recruiting tool).
o   Make a permanent orienteering display (the kind you put inside one of those locking display cases).
o   Make some orienteering posters and plaster them all over the unit.
o   Review your unit's orienteering Letter of Instruction (LOI) if you host a meet and make recommendations for any needed changes or improvements.
o   Convince your instructors to host an orienteering meet (if you don't already) and offer to take charge of meet preparations, including writing the LOI.
o   If you don't have an orienteering-style map of your campus or a nearby wooded area suitable for regular practices, then make one!
o   If your unit already has an Orienteering Team Commander, tell him or her that you're going to take on some or all of the above listed tasks. Great way to get the job next year!

Before I go any further, I assume that you have acquired, through the normal course of Naval Science instruction, the following baseline knowledge: (If you don't, review Unit 9 of the Cadet Field Manual)
You know how to use a compass.
You know how to orient yourself and your map to North.
You know how to pace count and measure distances on the map.
You know how to follow along on your map as you travel through the terrain. Or to put it another way, how to thumb your map and terrain associate.

Many units have only two orienteering reference documents: the Cadet Field Manual (CFM) and the U.S. Army Orienteering Handbook (USAOH), which can be ordered through the Joint Universal Management System (JUMS). Actually, a lot of the material in the CFM (Unit 9: Orienteering) is directly from the USAOH, so that's really only one resource. One purpose of this manual is to provide an additional resource to your unit to improve your orienteering program. Speaking of the Cadet Field Manual, go back and re-read Unit 9; there's a lot of useful information in there; particularly Section 9-5, Land Navigation Techniques. And now that I have you thinking about the CFM,

The **Orienteering Ribbon** is actually one of the most difficult ribbons to earn, partly because of the skill and physical demands, partly because of the (sometimes) scarcity of orienteering meets in which to compete.   Happily, in recognition of this fact, the NJROTC program designers have decreed that "participation in organized orienteering events is not required for cadet qualification in orienteering".

The knowledge is pretty basic: be able to read an orienteering map, measure distances on it, use a compass, pace count, and explain control symbol, aiming off, and attack point. You have to complete two 3-4 kilometer courses "using a properly prepared map", and then be debriefed afterward on what you did right or wrong.
This may be a problem at units without ready access to any kind of orienteering map. That's where you and this manual come in.
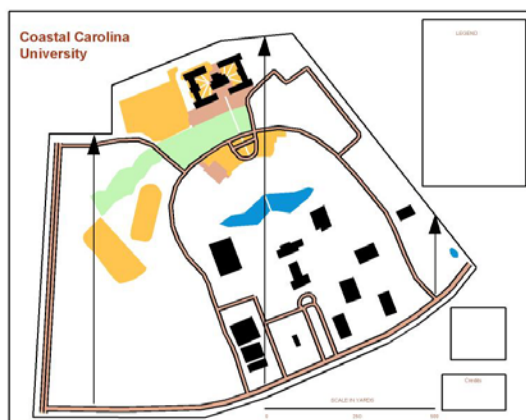
So, Leadership Academy Cadet, make it your goal to get as many cadets in your unit to earn the Orienteering ribbon as possible. Remember, it's called the Orienteering ribbon, not the Orienteering Team ribbon. Everybody can potentially earn it, and it can be done locally.

First, prepare a campus map and design two courses (see sections V and VI). Then announce an "Orienteering Ribbon Qualification Opportunity". That's all you need to say to attract 1st year cadets.

You can get this done over two days after school. Teach the cadets everything they need to know on Monday and have them run a 3 kilometer White course (in pairs). On Tuesday, have them run a different 3K White course, then debrief everybody on their performance.

If you're feeling ambitious, prepare a short quiz on required knowledge. Everybody who completed both courses and passed your quiz earned the ribbon. You'll be a hero. Plus, if you do this before orienteering season starts, you have just done your recruiting and tryouts for the Orienteering Team. Shear genius.

II.   *Know the Rules*

Many of our units host orienteering meets. While our meets are not sanctioned by the United States Orienteering Federation, we should follow the official rules as closely as possible.
 The official USOF Rules for Orienteering can be found at http://www.us.orienteering.org/binder/rules.html.

Many of our meets *do* abide by most of the major rules of orienteering, but often vary widely with regard to competition classes, time limits, penalties, and scoring. Often this is a result of instructor preference, or as a result of the hosting unit's circumstances. For example, a unit surrounded by development with no nearby forested terrain may elect to host an "urban orienteering" event. A unit lacking a map may offer a "bearings only" meet. A unit's orienteering meet specifics are usually contained in its Letter of Instruction (LOI).

To be an effective cadet leader and improve your orienteering team:
- o **Download the complete USOF rules to serve as a team reference, and read them!**
- o **Host an orienteering meet, and endeavor to run it as nearly as possible in accordance with USOF rules.**
- o **Carefully study every LOI prior to upcoming competitions in order to back up your instructor and pick up on anything out of the ordinary that would affect your team strategy.**

Most of the basic characteristics and rules of orienteering apply in every circumstance. Help educate your orienteering teammates on these rules. **The following rules are particularly relevant to NJROTC meets and are taken from the USOF Rules of Orienteering (December 2008).**

Rule 2: Definition and basic characteristics of orienteering
- o Orienteering is a sport in which the competitor independently aided by map and compass must visit in a prescribed order a number of features marked in the terrain (by control flags) and on the map. In a regular orienteering competition the task is to run this course in the shortest time.
- o In orienteering both the running and the navigating skill of the competitor shall be tested, but in such a way that the navigating skill is decisive.
- o Orienteering competitions shall be held primarily in forested terrain, which, ideally, is unfamiliar to the competitors.
- o It shall be possible to solve the orienteering problems with the map, aided by the control descriptions and a compass.
- o Sporting fairness shall be the primary consideration when organizing an event.

Rule 12: Training

o The hosting unit should when possible offer training areas for competing cadets. The terrain, map, course and control descriptions should be as similar as possible to the competition area.

o The hosting unit may charge a reasonable fee for maps and training.

o Adequate free instruction shall be provided for cadets new to orienteering.

Rule 14: Event Information

o This may be in your LOI, but as a minimum it should be provided to each unit upon arrival and check in.

o A description of the terrain, unusual map characteristics, control flag and marking device arrangement, refreshments, out of bound areas

o Map scale, contour interval

o Course lengths for the individual classes

o Safety bearings, instructions when one is lost

o Starting times and intervals; time limit when not 3 hours, finish closing time

o Deviations from and additions to standard orienteering map symbols or control codes

o Dressing and washing facilities, heads, first aid

o Parking, check in area, start and finish areas, awards ceremony location

o The procedure at the start and finish for distributing and collecting maps, control descriptions, control cards, and SportsIDs (if used)

o Protest procedures

Rule 22: Maps

o Recognize that often the maps used for NJROTC competitions do not conform to USOF map standards; however, in all cases the following standards should be maintained.

o Terrain conditions which are not visible on the map _but which may influence the outcome of the event_ must be clearly communicated in writing to the competitors. Overprinting map corrections or amendments is best, but simple corrections may be drawn on a sample map when displaying the competition map is possible.

o The map shall be printed on good quality and if possible waterproof paper. The <u>hosting unit</u> should provide a protective case or lamination if required.

o The center of any triangle or circle indicates the precise position of the feature, but it shall not be actually marked.

o The control circles shall be numbered showing the required sequence. The numerals shall be printed with their tops oriented exactly toward North. The numbers shall be placed as not to conceal important map features. The control circles and connecting lines should be interrupted or drawn thinner when they obscure important objects on the map.
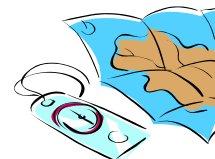
Rule 23: Competition Courses

o The progression from White, Yellow, Orange, and Brown is one of increased length and technical difficulty. Brown, Green, Red and Blue are equivalent in technical difficulty, with only the length increasing.

o The order of visiting the control locations shall be prescribed by the host unit and observed by the competitors. <u>If visiting the control locations out of order is likely to be advantageous then the host unit shall check that they are visited in the proper order</u>.

o When setting courses, don't place two control flags within 100m of each other on similar features.

o Don't place controls on hazardous terrain.

o When legs cross deep water or dangerous gorges, special control locations shall be located at safe crossing points. Courses shall be set so that swimming won't be necessary or tempting as a route choice.

Rule 25: Course markings on the map

o The center of any triangle or circle indicates the precise position of the feature, but it should not be actually marked.
o The control circles shall be numbered showing the required sequence. The numerals shall be printed with their tops oriented exactly toward North. The numbers shall be placed in such a way that they do not conceal important map features.
o The triangle and circles shall be joined in numerical order by straight lines.
o The control circles and connecting lines shall be interrupted or drawn thinner when they obscure important objects on the map.
o Courses are normally drawn in purple, but may be drawn in red (must be mentioned in Meet Information).

Rule 27: Control descriptions

o Control descriptions describe the control site accurately but briefly, using the International Orienteering Federation symbols on all but the White and Yellow courses.
o On the White and Yellow courses, words approximating the meaning and order of the International Orienteering Federation symbols shall be used.

Rule 29: Control flags and equipment:

o A control flag is used to mark a control feature. The flag is three squares arranged in triangular form 30cm square, divided diagonally, one half white and one half orange.
o The flag must be hung as shown on the map, and in accordance with the control description.
o When you arrive at the control feature, you must be able to see the control flag.
o Each control location has a number (not less than 31) or two letters which constitute the control code. If you use numbers or letters that can improperly read upside down (e.g. 89 and 98), put a line beneath to indicate the proper stance. Don't put other confusing figures or marks on the control flag.
o Hang all control flags, mark all control codes, and attach all marking devices the same way throughout the course (so cadets don't play "hunt for the punch").
o You can man any control location. Make sure your safety observers remain quiet, inconspicuous, and don't help approaching competitors.
o You should have water at least at the start, the finish, and every 2.5 km. Water stops should be shown on your map.

Rule 30: Control card

o If you're hosting a meet, you can attach your control card to the map or even print it on the map.
o When competitors lose their control card, or a control mark is missing, or it's proved that the control points were visited out of order, the competitor is DQ'd unless alternate proof is accepted.
o The control card should be no bigger than 10cm x 21cm and made of sturdy material.

Rule 31: The Start
o The start location and the map issue point shall be situated so competitors can't see which route the previous runner takes.
o The start and finish should be arranged so those finishing can't communicate with those waiting to start.

Rule 32: The Finish
o After crossing the finish line, competitors shall hand in their control card (and map, if required).
o There shall be first aid supplies at the finish.

Rule 33: Timing and placing
o The finishing time shall be taken at the moment the runner's chest crosses the finish line, or if electronic punching (epunching) is used, when the stick is inserted into the scoring receptacle.
o Times shall be given in minutes and seconds, or minutes and hundredths of minutes.
o If the absence of a control mark is not the fault of the competitor (e.g. missing or broken punch) and the competitor states that he/she visited all the control locations in the proper sequence, in the absence of proof to contrary, the competitor will not be disqualified.

Rule 35: Fairness
o **All participants shall demonstrate a high degree of fairness, a sporting attitude, a spirit of comradeship and honesty.**
o You may not obtain outside help or collaborate in running or navigation except in a non-competitive class.
o You shall not seek to obtain an unfair advantage over fellow competitors, nor intentionally run with or behind other competitors during the event in order to profit from their skill.
o Prior investigation of the competition area is forbidden.
o Show respect for other competitors, instructors, spectators, and residents of the competition terrain and areas.

Rule 36: Equipment and aids
o You can pick what clothes you wear, but you should wear long pants to prevent cuts, infections, etc.
o If you wear a race # bib, don't conceal any information on the bib.
o Only a compass and the map provided by the organizer may be used to navigate.
o Personal aids not used directly for navigation are permitted (e.g. magnifying glass, flashlight, glasses)
o No other electronic gadgets may be used to navigate (e.g. GPS, cell phone, pedometer, radio, altimeter)

Rule 37: Conduct during the event
o You take part at your own risk.
o Move in the terrain as silently as possible. Don't shout, make signs or draw other competitors' attention either to help them or to confuse them.
o It is the duty of each competitor to help anyone who is injured.
o Be careful when running along or crossing traffic.
o Once you cross the finish line, don't return to the competition area without permission of the organizer.
o Even if you don't finish your course, return to the finish and turn in your control card and map. Don't attempt to influence the competition or other competitors.
o Don't waste or contaminate water at the water stations.
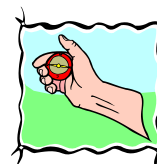
Rule 38: Out of bounds areas
- o Don't cause damage to the competition terrain. You're responsible for any damage you cause.
- o Don't enter the following without permission in the Event Information: a) yards and gardens, b) Sown land and land with growing or standing crops, c) limited access highways or fenced railways, d) areas marked "out of bounds"
- o Don't cause damage if you cross fences, ditches, or forest plantations. If you open a gate, close it.

III.   *Understand the Map*

Orienteering is, first and foremost, navigating by map reading. An orienteering map is a highly detailed topographic map that you use to make your route choices. **Anything which affects progress will be on an orienteering map.** Paths, roads, and open ground where running is easy; high fences, marshes and lakes, heavy vegetation, and cliffs where running is difficult or impossible; the shape of the ground and how much climb you'll encounter. Therefore, you must be an expert at interpreting the map.

Orienteering map symbols have very specific meanings. Go to http://www.orienteering.org/, the International Orienteering Federation website. Go to the Document Library, and download a copy of the International Specification for Orienteering Maps. Everything you ever wanted to know about every single symbol on an orienteering map is here. Study this, and you'll be a genuine orienteering map expert.

Let's go through the IOF Orienteering Map Symbols guide on page 12, section by section, and I'll point out some things I and my cadets have had problems with due to our unfamiliarity with real orienteering maps.

LAND FORMS

You should all be familiar with the concept of contour lines by now. Something I ignored at first was that every fifth contour is drawn with a thicker brown line called an **index contour**. This
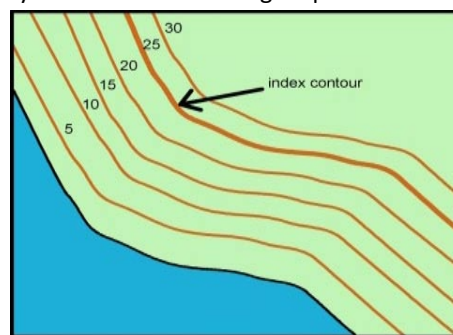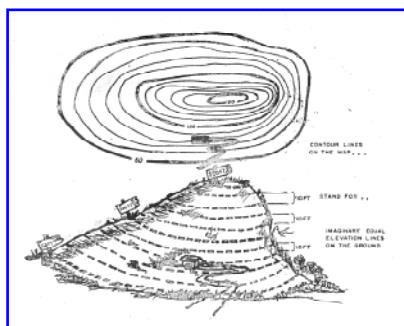
makes it easier to pick out height differences and figure out the overall terrain shape. That's very useful when you're trying to quickly make a route choice.

Re-entrants baffled me, at first. The term was unfamiliar and I didn't even know what one looked like, but boy, do course designers like to put control markers in them! A re-entrant is located on the side of a hill. Water runs down a re-entrant. Think of it as an "entering" of the land *into* the hill, where water would naturally flow down. A deep re-entrant has many contour lines close together. A spur, on the other hand, is just an extension of a hill. You can easily mistake the symbol for a **knoll** with that

for a **boulder** if you're not observant and notice one is a brown dot and the other is a black dot. Yes, I have screwed that up before.
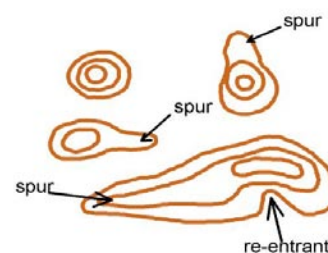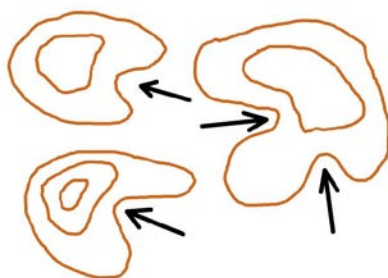
The brown x means a **special land form feature**, but exactly what it is should be identified in the legend. Make sure you look it up and commit it to memory before beginning.

WATER AND MARSH

The only water feature pitfall I have encountered is not looking close enough at the **solid black outline** of a stream or marsh. That means it is uncrossable and should not be attempted! Look on the map upstream until the stream is no longer outlined, or you see a crossing point, and then plan your route accordingly.

ROCK AND BOULDERS

Pay attention to the symbols for **impassable cliffs** versus **passable rock faces**. Don't risk life and limb trying to Rambo down an impassable cliff! Oh by the way, when the map designer uses a symbol for impassable, un- crossable, or unclimbable, it means not only can't the average orienteer conquer this feature, but he is not allowed to try! Be sensible and be safe.

MAN-MADE FEATURES

Look at the symbols for **visible path junction** and **indistinct junction**. This has happened to me. If you're running down a path and are anticipating a trail coming up on your right, you could be in for an unpleasant surprise when you shoot right by it because the map shows the junction as indistinct, meaning the two paths don't exactly meet. Plan ahead when you see this situation coming up. You'll really need to thumb the map, pace count, and terrain associate, not to mention slow down and look more carefully.

Observe the symbols for **crossing points** with and without a bridge. If there's been heavy rain recently and you choose a route that crosses a stream at a point without a bridge, realize that you may not be able to cross safely. Have a backup plan in mind or select a different route in the first place.

The symbol for a **power line** has little tic marks that indicate the pylons. If the map has been drawn correctly, those tic marks indicate the exact positions of those pylons, and they can be handy navigation aids.

Stone walls and fences bear mention. If the symbol includes the double dot or tic mark that means the average orienteer won't be able to scale them and shouldn't attempt to for safety's sake. Also, a **ruined** stone wall or fence may be so fallen down that you run right over it without noticing it (yes, this happened to me), so it may not be a reliable navigation aid or catching feature.

In general, be cautious using **ruins** for navigation, as all that remains of a man-made building may be a concrete foundation which is covered with leaves and debris.

I know that the little x and o for **special man-made features** are *supposed* to be defined in the legend, but there may be so many types of objects that the course designer decided to just leave the special man-made feature title. So the little x could mean all of these: light pole, flagpole, street sign, little green junction box, concrete utility marker, mail box, etc.   If this is the case, you need to be smart enough to keep in close contact with your map and count each man-made feature you pass.

VEGETATION

Make sure you know the difference between open land and rough open land. Open means mowed grass and meadows, areas where both visibility and runability are unimpeded. Rough open means visibility is fine, but runnability is hampered, areas like high grass, stickers, or felled trees. As far as the shades of green are concerned, in my experience, it all pretty much looks like fight and slows me to a walk. My recommendation is to avoid the greens and stay in the white or yellow as much as possible.

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
- .42 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

IV.   Master the Control Codes

You can find the control with careful map reading. But the control circle encloses a big area; there could be a lot of features in it. So control descriptions are intended to give you a clearer picture of exactly where the marker is within the control circle.

Orienteering is an international sport; major championships have runners from all over the world. So the International Orienteering Federation (IOF) devised a set of symbols and a standard way of displaying them.

Learn these symbols! They can really help you zero in on the control marker. The complete IOF control description guide is at http://www.orienteering.org/ under the Foot Orienteering tab.

Green		5.2km		215m		Description
Start	▷	▨		⊙		paved area, W edge
1	AQ					fence, SW side
2	SW					depression, NW end
3	EF					ruined stone wall, E end
4	RT					marsh, E edge
5	HY	■				building, SW corner
6	UK					the lower spur, SE side
7	IJ	•				knoll, top
8	OL	/				road path junction, NW side
9	PM				⎕	ruin, W side, water station
10	NZ					re-entrant, upper part
11	WR	◇				field, S edge
12	DC					cliff, E foot
13	VY					gully, NE side
14	JV	⊗				rootstock
15	TI					pond, NW edge
16	KA					trail fence junction
○ ⟨		150		⟩ ◎		150m from pt 16 to finish

Reprinted with permission, available at http://www.maprunner.co.uk/.

The information is always displayed the same way. Look at the example above and you'll get the idea. The first two columns provide the control number and code. The third column tells you which of several similar features, and the fourth column names that feature (e.g. control 6). The fifth and sixth give more information about the appearance of the feature. Column seven tells you exactly where on the feature the control is hung. The last column contains other information (water stop, manned station, etc.).

For a good online quiz of control codes go to http://www.fortnet.org/icd/.

Land forms

		Terrace
		Spur
		Re-entrant
		Earth bank
		Quarry
		Earth wall
		Erosion gully
		Small erosion gully
	o	Hill
	•	Knoll
		Saddle
		Depression
	ˇ	Small depression
	˅	Pit
		Broken ground
	x	Ant hill

Rock and boulders

		Cliff, Rock face
	•	Rock pillar
		Cave
	••	Boulder
		Boulder field
	▲	Boulder cluster
		Stony ground
		Bare rock
		Narrow passage

Water and marsh

		Lake
	•	Pond
	v	Waterhole
		River, Stream, Watercourse
	---	Minor water channel, Ditch
	....	Narrow marsh
		Marsh
		Firm ground in marsh
	o	Well
		Spring
	x	Water tank, Water trough

Vegetation

		Open land
		Semi-open land
		Forest corner
		Clearing
		Thicket
	—	Linear thicket
		Vegetation boundary
	o	Copse
	o x	Distinctive tree
	o x	Tree stump, Root stock

© Simon Errington 2007. simon@maprunner.co.uk

Man-made features

		Road
	---	Track/Path
	– –	Ride
		Bridge
		Power line
		Power line pylon
		Tunnel
		Stone wall
		Fence
		Crossing point
		Building
		Paved area
		Ruin
		Pipeline
	T	Tower
	T	Shooting platform
	o	Boundary stone, Cairn
	↑	Fodder rack
	▲	Platform
	o x	Monument or Statue
	■■	Building pass through
		Stairway

Special features

	x	Special item
	o	Special item

V. Make a Map

To run effective practices, you really need an orienteering style map of wherever you regularly train.   Assuming you train on your school campus most of the time, what can you do if you lack an orienteering map? Plenty, as it turns out, and it doesn't have to cost you anything, except your time and effort.

Even if your team uses a nearby park to practice, **making a map of your school campus should be a top priority**. Your school campus is an ideal area for beginners -- many easily identifiable features, a little bit of woods, not too big an area. By tackling this map first , you will not only have your first map done and ready to use sooner, but you will be able to do a better job of making the map before you tire of the task or run out of time. The time spent on this first "easy" map will be time well spent investing in the future of your orienteering team. You can use your campus map to refine your mapping skills, to teach others how to conduct field work, and to introduce cadets to basic orienteering skills long after you seek more challenging areas to map.

To make an orienteering style map of your campus, follow these steps:

Find a copy of any campus map that might already be in existence. This might be an architectural sketch in black and white (ask your principal). This can be pretty useful as it's probably highly accurate, down to the parking spots and the light poles. Maybe your school has a campus map posted in the school lobby or in front of the school. A little detective work will reveal who made it. If your school has a large campus map displayed somewhere but you can't find the original, take a digital photo of it.   If all else fails, use Google Earth and zoom in to your campus. Make sure you rotate the map so North is at the top of the page. Get the area you want on screen and save it as a JPEG or BMP.

Whatever map you come up with will serve as your background map. If it's a paper copy, scan it and save it as a JPEG or BMP at a high resolution.
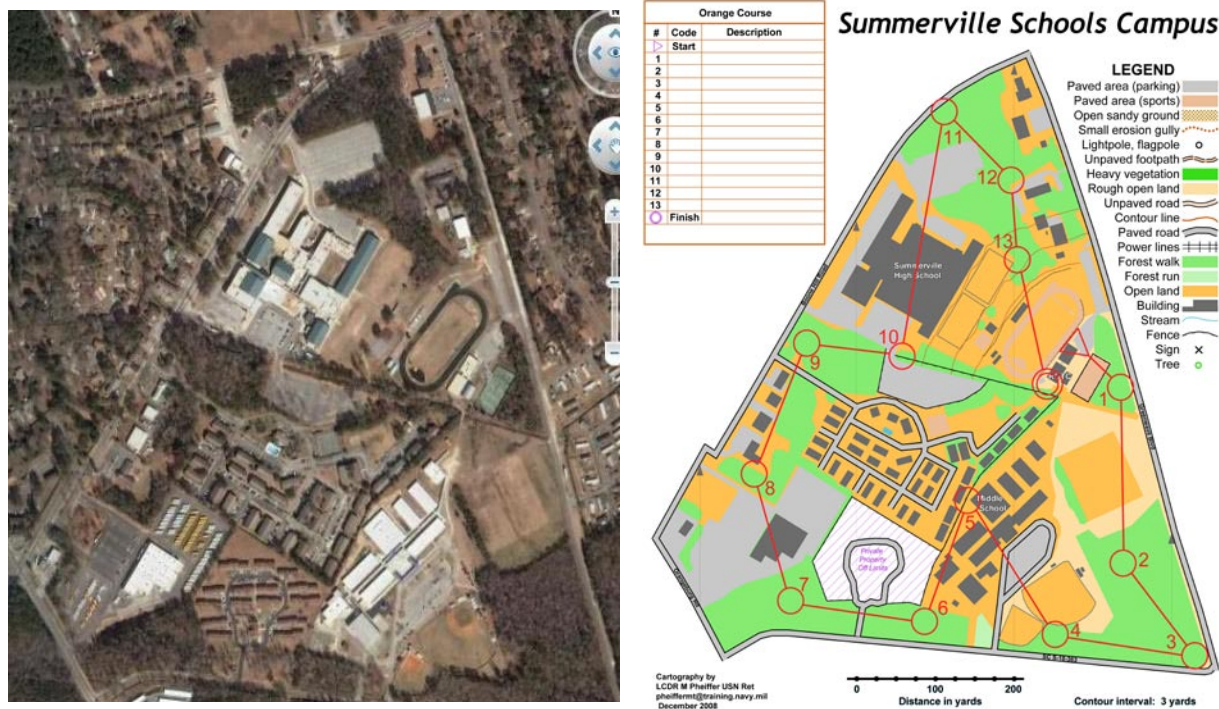
Now, go to www.ocad.com and download OCAD 6 (Orienteering Computer Aided Design Version 6). OCAD is the international standard CAD program for producing orienteering maps. The newest version is OCAD 10; it's got more features, but it's pretty pricey. Maybe you can persuade your instructor into using unit funds and getting a copy. If not, OCAD 6 will do just fine, and it's a free download.

Install OCAD 6, open it, go to File, then New. Select Orienteering Map 10,000. Now you're staring at the main screen in which you will build your map. Select Options, and then Open Template. Here's where you import the image of your campus. Now it's just a matter of slowly and carefully building your orienteering map on top of the image. OCAD's learning curve isn't really that bad. The draw tools are on the top and the orienteering symbols are on the right. Start playing with it and you'll be making a map in no time!
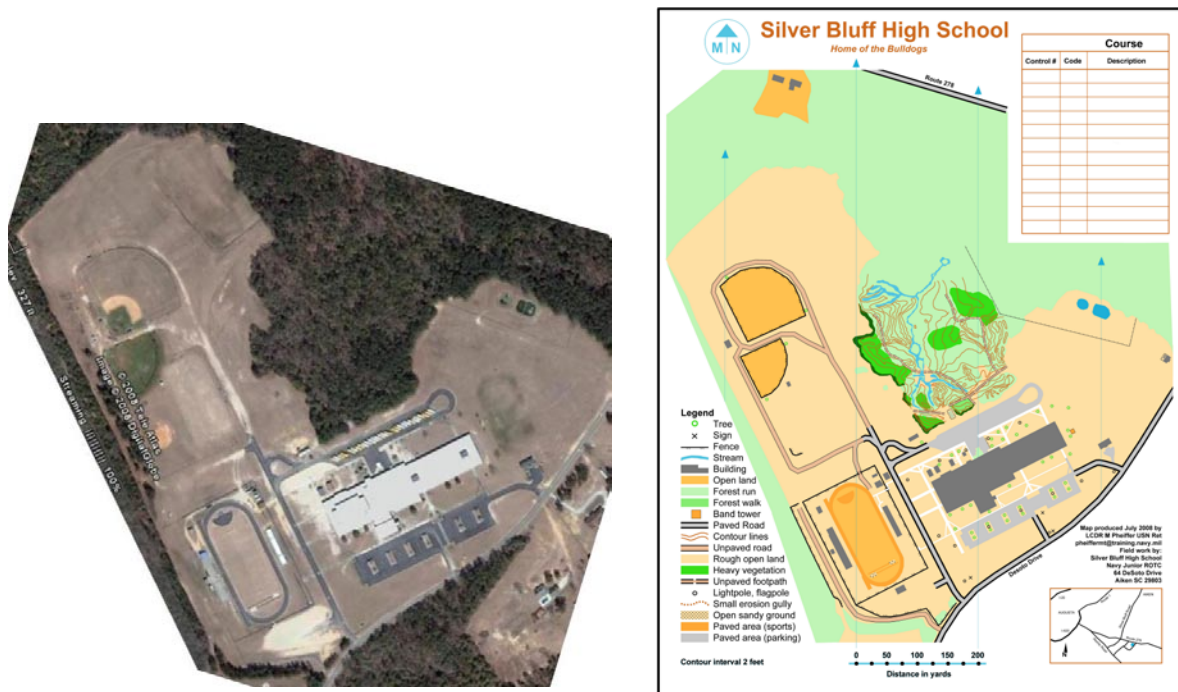
I have a simple method for creating my maps. First, I draw in the definite features such as roads, buildings, paved areas, and fences. These are usually easy to get right and are essential for an orienteering map. Second, I put in the less well defined features such as areas of heavy vegetation, or trails that I can't see clearly from the available aerial photo. Third, I add in margin information such the legend, the scale, the magnetic north lines, the title, and credits. I now have what resembles an orienteering map. But it still lacks sufficient accuracy and detail to be truly useful.

Aerial photos are wonderful, but they do have their limitations. Obviously, the resolution of the photo will definitely affect how much detail you can make out. And the time of year that the picture was taken will affect how much tree cover exists. Heavy forest can hide trails, water features, contours, manmade features, you name it. This means you'll have to walk the area and add all the features you want to use for precision navigation, as well as confirm the features already on the map. In other words, you're going to learn how to do some **field work**.

Use some of your more experienced orienteering cadets to help you with this. Using OCAD, print out your preliminary campus map in quadrants and send cadets out two to a quadrant. Arm them with a map, a clipboard, a few colored pencils, and a compass. Tell them to accomplish the following:

(1) Verify that features on the ground do indeed exist as they are represented on the map, (2) delete or change those which do not, and (3) add other details and features which will be helpful to a beginning orienteer.

You can make this into a real orienteering team project. The final product doesn't have to be a work of art; it just needs to have all the features on it that a beginner would encounter, in the right order, direction and distance.
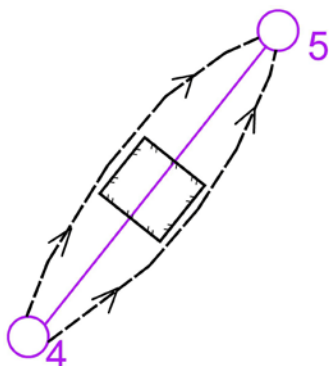
Make sure your map reflects what is actually on the ground. For example, if your map shows that running either way around the fenced area is basically equal, but actually there is a huge area of fight on one side that you didn't show, your course will be unfair and depend on luck.

Contours can be a sticky wicket. You're not a trained surveyor. How do you get contours on your map? Well, most school grounds are pretty flat, so you can probably dispense with contour lines anyway. But do plot land features which are distinct and which can be navigated to, like pits, gullies, and knolls. If your campus truly needs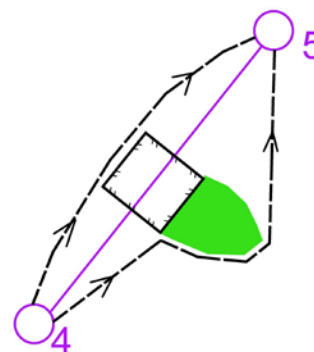 to show the contours, I recommend that you use a United States Geological Survey (USGS) map. Go to http://www.usgs.gov/ and download what you need.

I use TOPO 7.0 (Amazon $40) which allows you to download all sorts of maps of the same area – topographic, aerial, street maps -- pretty useful for mapmaking. I also use a hand-held GPS (Delorme PN-20). It came bundled with a copy of TOPO 7.0 for $150. You really don't need a GPS unless you start getting more ambitious and want to tackle something a lot bigger and more complex than your school grounds.

The artsy (graphic design) part of making an orienteering map is pretty straightforward. Look at some other orienteering maps as a guide on how to lay out the necessary margin information. Use a simple font, big for titles, small for legend. Use the standard colors for your legend (blue for water, brown for land features, etc.

Mapmaking for Orienteers by Robin Harvey is excellent if you get seriously into maps. One of the best mapmaking resources online is the "Junior Mapper's Guide" on the Georgia Orienteering Club's web site: http://www.gaorienteering.org/Education/MapGuide/introduction.htm

Based on the shape of your campus, you should have room in the margin areas for the essentials: a legend, a scale, and hopefully a control clue box. Design the control clues onto your map so your cadets only have to run around with two pieces of paper: your wonderful new map and a control card. Speaking of which . . .

I make my own control cards because I'm cheap and the ones you order from the orienteering supply companies are something like $8.00 for 50! I use heavy stock colored printer paper -- white paper for the White course, yellow paper for the Yellow course, and so on. One benefit is at the start table handing the cadet the colored card is an additional check for both the runner and the start table that the runner is going out on the correct course. At the finish and in the scoring area, it's easier to sort the control cards for each course. Brilliant, I know.
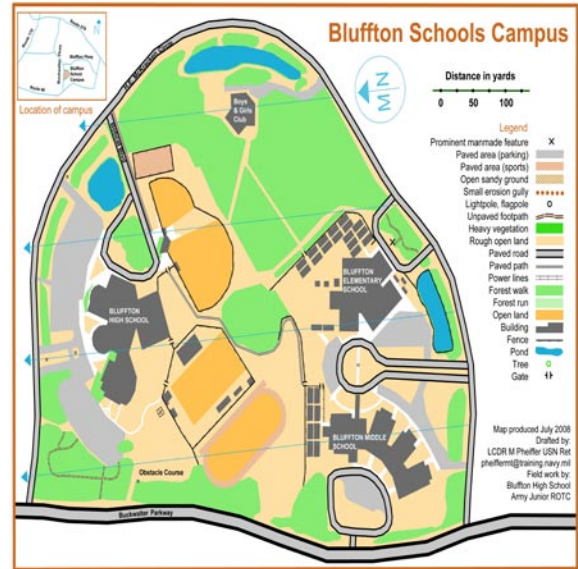
Once you're satisfied with your first orienteering map, design three different courses using OCAD. Make one easy, one medium, and one difficult (let's call them White, Yellow, and Orange). Save each under a different file name. Print out one copy of each course map. I strongly recommend you print out your map so it fits on an 8"x11" piece of paper. That way, you can make quick copies on any copier. Also, bigger maps require more folding as you run. Now, have everybody on the team fork over a buck, then go to Staples and make a dozen or so copies of each map. If you're lucky, your school library has a laminating machine. Get all your maps laminated and you can use them all season for practices. I recommend updating your map once a year ,right before you start practicing, because sometimes construction projects can change the campus enough to confuse new cadets if those changes are not shown on your map.

VI. DESIGN & SET A COURSE

The following information was taken from the USOF website. Look under "Club Resources/Competitive Expertise". Part 1 covers the basics. Read this before you set a course even for your own practices. Part 2 goes further into course design philosophy; read this before you set a course if you're hosting a meet.

PART 1: THE BASICS

Course Name	Distance	Difficulty	# Points
White	2-3 km	easy	4-12
Yellow	3-5 km	easy to medium	5-12
Orange	4-7 km	medium	8-12
Brown	3-5 km	hard	8-12
Green	4-7 km	hard	8-12
Red	6-10km	hard	8-15
Blue	8-14km	hard	10-18
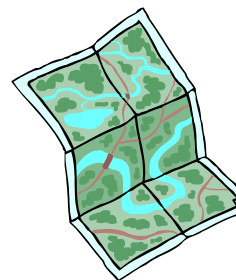
Easy Courses:
Points should be on two features with linear route between, for example, points might be a stream and road junction or a trail at vegetation boundary. Controls should be highly visible, usually hung 3-4 feet high.

Medium Courses:
 Points should be on a major terrain features with a close attack point, for example, on a boulder 100 meters from a trail junction. Controls should be visible when at the feature, usually hung 3-4 feet high.

Hard Courses:
Points on minor terrain features with no convenient attack point, for example, at the foot of a one meter cliff in a complicated re-entrant system. Controls should be visible when at the feature, usually hung 1-3 feet high.

Water stops are a necessity on all courses whatever the weather; on longer courses, water stops should be approximately every 2.5km.

COURSE SETTER TIMETABLE
o   Plan the courses 1-2 weeks before the event.
o   Hang vetting tape one week before event.
o   Have Vetter check courses and resolve problems together.
o   Make copies of map corrections for Registration area.
o   Make Master maps and control codes and descriptions.
o   Hang control markers the day before, double checking bag and punch codes; remove vetting tapes and put out water stops.
o   Send out an experienced cadet on event day to check for stolen markers; replace if necessary before event begins.
o   When event is over, collect all markers, punches, water stop items, etc.
o   Count all markers, find missing ones, repack neatly and return all items to your Instructor.

COURSE SETTING GUIDELINES
o   First, select the parking area, headquarters area, and facilities.
o   Next, select a Finish area near the parking area, then a Start area not too far away.
o   Then, select your general routes for the White and Yellow courses first. If there are no good routes for these courses, move the meet to another part of the map and start all over with #1.
o   The White course must be 100% on handrails or flagged when there are no handrails.

o The Yellow should be very close to actual handrails.
o Select general routes for the rest of the courses, starting with the lowest level and working up. Select tentative points for all courses after doing this.
o Field check your courses and move your points as needed.
o All points must be on correctly mapped features. No points may be hung on mapped corrections.
o Make a map of corrections for copying before starting the course.
o Pick water stop locations for all courses that are easily accessible.
o Place the controls where they are shown on the map.
o The codes must be as shown on the descriptions.
o Use appropriate difficulty but better too easy than too hard.
o Make the navigation more important than the physical difficulty.
o Test the skill of the competitor, not his luck.
o You can't make a White course too easy—remember the goal is to get cadets to *like* orienteering!
o Courses should be fun. White and Yellow should not get feet wet.
o The time it takes to complete courses is more important than the length.
o White, Yellow, and Orange courses should not share legs.
o Every leg on Orange, Brown, Green, Red, and Blue should have route choices.
o Direct line by compass should only rarely be the best way to go.
o Streamers should be used on White and Yellow whenever there can be confusion.
o Legs should get longer as the difficulty increases.
o In hot weather and dense vegetation, make everything a bit shorter and easier to find.

Course Design -- WHITE

o Stay on obvious handrails 100% of the time, preferably trails.
o Controls should be hanging on the near side of the feature.
o Controls should be very easy to find, especially the first few.
o The first control should be visible from the Start
o Later legs can have two route choices, both on handrails.
o Use positional controls to keep runners on the handrails.
o Don't hang the controls too high for young cadets to reach.
o Avoid putting controls from other courses where White course runners can see them.

Course Design -- YELLOW

o The Yellow should follow handrails but points are off handrails.
o Handrails may have short gaps or be subtle (fences, streams).
o Attack points should be on the handrail. The feature can be visible from the handrail but should be off the handrail to encourage map reading.
o Use a variety of control features.
o There should be some route choice alternatives.
o Have good catching features behind points to aid cadets who over-shoot the control.
o There should be very little contour reading necessary.

Course Design -- ORANGE

o Orange should bridge the gap between attack points on handrails and difficult-to-find attack points.
o Err on the side of too easy.
o Use features of medium difficulty.
o Use easy-to-find features less than 200m from attack point.
o Use very large re-entrants and ponds.
o Use more difficult points near easy to find attack points.
o Use easy to find points with many route choices.
o Some legs should be almost Yellow, others almost Red.
o Have some handrails but emphasize cross country.
o Always have catching features beyond the feature.
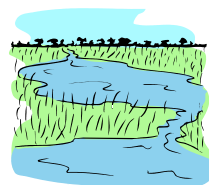
Course Design -- BROWN, GREEN, RED, and BLUE
o Test navigation and route choice skill, not compass ability.
o Use intricate areas of the map as much as possible.
o Make the competitor concentrate on navigation all the time.
o Offer difficult-to-decide-between route choices on every leg.
o There must be some variety in the features.
o The most difficult navigational route should be the fastest, easy routes should take longer.
o Avoid poorly mapped areas or make the legs easier in these areas.
o Controls should be easily found once at the feature.
o The map must be accurate in the control area or you must provide map corrections before the runners start.
o The best route choices should not be the most miserable physically -- avoid swamps and fight except as route choice problems.
o Trail running should be only about 10% of the total distance.

Guidelines on Course Time

Course	Winner's time	Majority time
White	30 minutes	30-45 minutes
Yellow	40 minutes	60-75 minutes
Orange	55 minutes	60-90 minutes
Brown	50 minutes	60-90 minutes
Green	55 minutes	60-90 minutes
Red	65 minutes	80-120 minutes
Blue	80 minutes	80-120 minutes

PART 2: BACKGROUND

Orienteering tests your physical and mental skills, that is, your ability to run and to navigate. These skills are put to the test by the course setter, by using the map and terrain. The physical test comes naturally, providing that the course is of the proper length; the challenge for the course setter is to *offer a mental test appropriate to the skill level* of those for whom the course is intended.

Skill, not Luck
You are setting the course for an orienteer, not a surveyor, so the feature you use must be distinct. You should avoid such control sites as "the middle of the marsh" (unless it is a very small marsh) or "the hillside" because they introduce too much of an element of luck into the competition. The competitor should be able to orienteer directly to the control if he is skillful, and *not have to count on finding it by using a systematic search* (he may end up doing that anyway, but he should not have to). Often a contour line will have a *gradual bend* in it that could be called a spur (or re-entrant). Avoid this also; it may be hard out in the woods to tell just where the spur or reentrant is. Your features for control sites can be small, but they *must be distinct*.

In general, avoid dense areas for controls, especially if the terrain is somewhat vague. Again, it is a matter of what is fair; are you requiring skill or luck? Finding a control point (for example, a pit) in the middle of a large, flat, dense area *places too great a premium on luck*, even if the point itself (the pit, say) is distinct. *Dense areas are okay if the terrain is well defined.*

Start-Finish Location
Good terrain for White and Yellow courses, with plenty of linear features, often dictates where the Start will be. Most competitors like to have the *Finish/Competition Center* as close to the parking as possible. Move the Start to a higher elevation to reduce climb. Almost without exception, the ideal location for the White course, because of

its length, dictates or constrains the Start area for all courses. Avoid having separate Start areas for one or more of the lower courses. Herding beginners to a separate competitive area is very detrimental to development, both the individual's and the sports, as a whole. The mix of competitors of widely different ages and skill levels epitomizes the fun and vitality of orienteering.

Avoidance of Doglegs
Leaving a control, there should not be a logical route that doubles back through the same area from which the control was approached. Why? Because competitor A may have competitor B just behind him, so that A reveals the location of the control as he is leaving it, thereby helping B. Since some competitors may be luckier than others it is at least potentially unfair, Doglegs may be obvious or not so obvious. For example, the best route to a control may be along the base of a hill to a reentrant and then continue along the base of the hill. You have a dogleg, even though the straight lines you use to connect the points on the map do not show this.
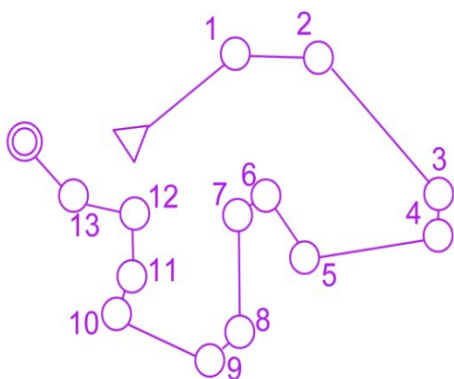
To avoid doglegs, you can put in a short leg -- 100 to 300 meters long -- to move the competitor away from the previous control to the start of another long leg.   **At left is an example of a course designer who knew what she was doing – no doglegs, legs of varying length, changes in direction – a well designed course.** *A similar problem can occur if you use the same control on more than one course, if runners on one course leave the control in the direction from which the people on the other course are arriving*. Avoid this as well. Under some conditions, it may be necessary to have a dogleg on a White course in order to have clarity. While not desirable, a dogleg on White is preferable to a course that is confusing or too difficult. Remember that the *USOF minimum for start time intervals is two minutes*.

Avoidance of Dangerous Areas
Avoid including dangerous areas such as cliffs with poor visibility, sink holes, large areas of poison ivy or poison oak, or deep swamps. Remember, a White or Yellow runner may go into these areas accidentally, while a Red or Blue runner may be tempted to try a dangerous short cut.

Controls on Similar Features
Have *no less than 100 meters distance between any two controls* on different courses if the features are similar enough to be confused at all and no less than *75 meters* between any two controls on different courses *regardless of the feature*.

Optimum Route
Determine the "optimum route" that an orienteer would take on all of your courses. Measure its length in meters with the edge of a piece of paper or a string. Then count how many contour lines this route crosses going uphill. Multiply this number of contour lines by the contour interval in meters. This "climb" *must not be over 4%* of the optimum route distance. The 4% is an IOF maximum; it is better that your design is well under it. For example, a 6.7km Red course with an optimum distance of 7.5km should never have over 300 meters of climb. If it is, change your course so that there is less climb. Try a design that offers contouring along hillsides as the optimal route. A longer walk to get to a higher Start area can also help.

Duplicate Courses

If for some reason you are having duplicate courses, try to make them very similar in length, climb and number of controls. *The first control must not be the same for any two courses.*

Course Purpose

For the design of the less difficult courses, keep in mind the following overriding considerations which distinguish these courses from the advanced courses, namely *Brown, Green, Red* and *Blue*:
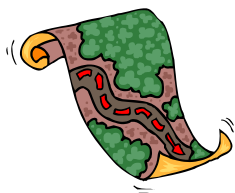
- The advanced courses should be designed to be as technically difficult as terrain and map permit (and of equal technical difficulty). Each of the lower courses -- White, Yellow and Orange -- must be designed to fit a distinct range of technical difficulty.
  - Because beginners and developing orienteers spend at least a season or two (usually longer) running the lower courses, it is especially *important to the development and success of the sport* that these courses be well designed.

White Course -- 2 to 3 kilometers   winning time 25-30 min.

The White course should be designed for cadets who may have no orienteering experience and have had perhaps *15 minutes of instruction* before setting out. A White course must be designed in a section of the map, which has an appropriate sequence of linear features, where the mapping is absolutely accurate and where, preferably, there are an interesting variety of topographic features. An ideal example would be a small lake, which can be circumnavigated without fear of losing one's way and with the expectation of a good trail system and interesting features. Usually the area of the map having the most trails is best for White course location.

- An Easy Start. Make the first two or three points particularly easy. This allows the cadet to get familiar with the map and keeps him/her from getting discouraged from the very beginning. The first control should be as simple as possible -- *it can even be visible from the starting point*.
- Linear Features. Generally, the terrain you use for a White course should be "friendly," with lots of good handrails, no excessively rugged features, etc. Keep every leg along well-marked trails or a similar linear feature such as a road, a stone wall, a field edge, or a stream (trails are much preferred, however).
- Short Legs. Generally the legs should be kept fairly short -- certainly *no more than 400 meters*. It is better to have six to eight short legs than three or four long ones. On the other hand, don't use twenty legs each 100 meters long.
- Large features for control points. Make the difficulty of the control fit the course. Use large, obvious features -- top of a big, distinct hill, rather than the backside of a three-meter knoll, a trail junction rather than a reentrant. **Rarely**, therefore, will a control be suitable for both the White course and the Orange course.
- Avoidance of vague and dense areas. As with any course, the features you choose for control sites must be distinct; even large features can be vague, as for example the top of a large flat-topped hill. Also, if you pick precise spots, you will get fewer comments about controls being a little bit off. **Never** put a White control in a **dense area**.
- Very simple route choices. It is not necessary to have a route choice on a White course, but sometimes it is nice to offer **a little toward the end**. The options should be rather simple. Remember, cadets on the White course may take routes that you would never dream of! A good example would be a leg having a long, safe route (e.g., along a trail) and a shortcut (through woods, along a stream, etc.), provided there is no danger of getting seriously lost. Such a design introduces some elementary navigation factors and adds challenge and variety. If necessary, a leg can be run through the woods guided by streamers, but this should be used only in exceptional circumstances where needed to optimize distance due to lack of linear features.
- No Use of Compass. Avoid directions or features that require the use of a compass. A White course should be able to be completed without having to use a compass.

Yellow Course -- 3 to 5 kilometers   **winning time 35-40 min.**

The Yellow course is designed for cadets who are relatively new to the sport. It offers the beginning orienteer an initial experience with the application of orienteering techniques, and the course designer should make an effort to involve as many fundamental skills as possible -- compass, map reading, measure and pace:

o   Basic Design. Just as with White, it is critical that the Yellow course be set in an area having well-mapped, clear features. The basic difference from White is that Yellow takes the runner from the trail into the woods. For instance, on White the course can be navigated entirely along trails and prominent linear features, while Yellow *should be navigated mainly off trails*. While trails can be used for a route on a Yellow leg, an off-trail route should also be available for the same leg. The simplest design technique is to draw a line on the map where you want the competitors to go and place the controls along that line.

o   Easy Start. Make the first two or three controls relatively easy so that the competitor may become familiar with the map.

o   Easy Course. Yellow should still be an easy course. These competing considerations confine the technical difficulty for Yellow to a rather narrow range. This objective is accomplished by the use of a handrail for much of each leg's length, with a catching feature near (25-50m) each control. The best Yellow legs are along handrails such as streams, ridges, and vegetation boundaries or stonewall.

o   Variety of lengths of legs. Vary the lengths of the legs, but tend toward keeping them short. *The maximum length should be 600 meters*. Legs should be longer than White; usually 200-400 meters is good for Yellow.

o   Large features for control points. Use large features within visual distance and rather obvious features, such as a large boulder near a trail junction, on top of a hill, north side of pond. When a point feature is used, it should be within visual distance of a large feature.

o   Route Choice. As with White, again some challenge can be used by shortcuts through open woods, but only if the distance is relatively short (up to 200m, at most), and provided that a catching feature exists. And even in such cases, a longer "safe" route should also exist.

o   Control placement. Put each control on or just after an obvious collecting feature. If the control is not on a collecting feature, put it within 100 meters of one, preferably just after it.

o   Catching Features. If a control is not on a collecting feature, a catching feature must be within 100 meters after the control.

o   Avoidance of Dense Areas. Never put a Yellow control inside of a dense area.

o   Limited Use of Compass. A Yellow course should be able to be completed with minimal the use of precision compass. A leg where use of a compass could result in a faster route is appropriate; however, that leg should have a reasonable route where a compass is not required.

o   Shared Controls. The practice of sharing a leg or control with White or Orange *should be avoided*, especially if a large turnout is expected. Because each of the three lower courses has a *discrete range of technical difficulty*, overlaps invariably cause compromise with correct standards.

Orange Course -- 4.5 to 7 Kilometers   **winning time 50-55 min.**

o   Moderately but not extremely difficult navigation. The controls and best routes should invite the intermediate orienteer away from strong collecting features (roads, trails) that the beginners must rely on. However, the *penalty for navigational errors should not be extreme*. An Orange control may be placed in an area of intricate small features, but only if there is at least one good attack point nearby (preferably several) to help the competitors find it, and also a catching feature nearby to which they can "bail out" if they become confused.

o   Route Choice. Set a course that *forces the orienteer to make decisions constantly*. Make sure that the competitor must continue to pay attention and think in order to execute his choice properly -- it should not be, for example, just a matter of choosing which one of two main roads to follow for one kilometer. The best Orange legs require, and reward, constant navigation. Handrails should be more suitable than for Yellow -- e.g., a long, broad reentrant. Rather, the runner should pick off point markers (cliffs, boulders, knolls,

marshes, etc.) as he proceeds along his chosen route. A trail -- or a road -- run should seldom be the best choice.

o Variety. For variety, easy legs near Yellow in difficulty should be mixed with challenging legs near Red; in addition, a mix of short (200-300m) and longer (500-600m) legs is desirable. It is important that the whole course contains as much variety as feasible. This variety should also cover *control features, direction, route choice and navigational problems*.

o Control Features. The control feature should be fairly prominent, unless a good attack point and catching features are nearby.   Make sure the likely attack points are of <u>Yellow</u> difficulty. And make sure the catching features are <u>after</u> the control, not before it. The Orange runner should be forced to *use all of his orienteering skills* in the overall course.

o <u>The fastest time about 50 minutes</u>. Keep in mind that some very skillful -15-16A runners will be on Orange: so the course must not be too easy. A typical mistake is failure to reduce length due to climb, difficult footing (rocks) and slow run (fight).

o Precision Compass Measure and Pace. Legs requiring nothing but precision compass and measure and pace should be limited to one or two.

o <u>Difficult Controls</u>. Difficult controls may be used, but a good attack point should be *within 50 to 200 meters*.

Brown, Green, Red and Blue Courses   winning times 45 to 50 minutes for Brown, 50 to 55 minutes for Green, 60 to 65 minutes for Red, and 75 to 80 minutes for Blue

The advanced courses should be set so that the very experienced orienteer is well challenged. The element of luck should be eliminated if possible. The Brown, Green, Red and Blue courses all should be of the same technical level -- difficult. General requirements are the same however, special consideration, noted at the end of this section is required for Brown and Green.

o Start. Choose the Start for Brown, Green, Red and Blue courses with regard to proximity to a good White/Yellow course area with lots of trails and linear features. In hilly areas, place the Start at a high elevation to help minimize unnecessary climb.

o Course Length. Try to keep your course length reasonable, especially on hilly courses or in thick vegetation, to meet these times. Use the USOF standard lengths as basic guidelines but always consider your anticipated competitor skills and condition. Try not to over set courses. Use previous course results and talk to previous competitors who have used this terrain to gage length and climb.

o Control Feature Size. If you put the control on too large a feature, it is usually very easy to find; therefore, the competitor does not need to use precision skills. *Too big a feature might be the top of a large hill*, the edge of a large clearing, a point along a trail or stream (if there are any confusing trails or streams, this could be okay), etc. In fact, having a control *within 50-75 meters of a big feature* is probably too easy as well. Use small features -- boulders, cliffs, small reentrants, spurs and knolls, small marshes, depressions, etc.

o <u>Controls too close to attack points</u>. Placing a control soon after a collecting feature, for example, 100 meters after a road, will usually make it too easy to find even if the feature is small. Furthermore, the competitor will probably be able to run to the road without thinking, making the leg too easy. Instead, place the control some *200 meters before the road*. That way the less skilled orienteer will have to cover the extra 400 meters if he must use the road to find his bearings. Collecting features are long features lying across the competitor's directing of travel, such as roads, large trails, streams, ridges, clearings, large marshes, etc. Concentrate on this: if the competitor uses them to make his route or his navigation easier, make him travel farther out of his way. *Don't make the direct route the easier route*.

o Lost Kilometers. This means any parts of a course that requires little or no thinking, merely physical effort. They are to be avoided as much as possible, as the preceding paragraphs have already indicated by implication. If a control is on top of a large hill, the leg becomes a hill-climb event instead of an orienteering event. If the control is placed right after a big collecting feature, the competitor can turn off his mind until he reaches the feature. If the best route is along a trail for several hundred meters, again the leg becomes a racing event requiring little or no thinking.

- Handrails. Try to avoid having the routes parallel to obvious linear features such as roads, trails, streams, fences or power lines. To prevent a parallel route from simplifying the leg significantly keep such features more nearly perpendicular to your route unless the linear feature network is complex.
- Catching Features. Advanced courses should not have controls placed too close to catching features. Controls should not be located beyond a catching feature; rather, any catching feature should be at least *200 meters beyond a control*.
- Climb. Climb should not exceed 4%. See "Optimum Route" on the second page for computation method.
- Long Legs. *Include at least one* leg in excess of 800 meters on each course.
- Route Choice. Maximize route choice and navigation difficulties while minimizing the luck element and the lost/dead kilometers. The navigationally most difficult route should be faster for those with good woods running skills than the "easy way around."
- Variety. A good course offers variety in both controls and routes. The larger the number and the greater variety of O-tests built into a course, the greater the chance that luck is eliminated and the orienteer with the best ability wins.
- Brown and Green Courses. Some orienteers on these courses may have some vision problems and only limited leg strength. The climb should be closer to 3%, at most 4%. Tough and dangerous areas must be avoided. While it must be less demanding physically, the Brown and Green courses should require the maximum in orienteering skills. Vision is a major problem for the older orienteer. Try to keep controls out of areas that have *much fine detail* on the map. This tends to become a large blur and therefore promotes luck instead of skill.
- Ultra Long - O. When setting Ultra Long-O courses, the emphasis should be on long legs with lots of good route choices. Legs of one to two kilometers are appropriate if they can avoid lost distance. The estimated winning times of Ultra Long Courses should not exceed 60 minutes for Brown, 75 minutes for Green, 100 minutes for Red and 145 minutes for Blue.
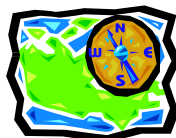
COURSE SETTING GUIDELINES

Control Placement
It is fair, and often desirable, to block the view of the control by a mapped feature, especially where it is the control feature, such as a cliff, boulder, etc. But, be sure the feature is appropriately visible. It is hard to improve upon a control on the far side of a knoll, seen first as the runner reaches the crest or comes around the side. On the other hand, nothing is worse than a control hidden behind a log, bush or other unmapped obstruction, which punishes all but the lucky few who stumble upon it.
Place controls from different courses at least 75 meters apart regardless of the control feature.

Hidden Controls
The only reason we hang a bag is to help competitors find the find the punch or marking device. A non-mapped feature for any course should never hide controls. It is extremely frustrating for the orienteer to navigate a leg properly only to lose time searching for a hidden control. Likewise it is just as frustrating to reach for a marker or punch and find that it is attached to something near the control bag not to the bag or stand on which the bag rests. We call that hidden in plain sight. Remember, unless the clue information clearly implies otherwise, every control should be equally visible from all directions. Despite the consideration that the feature, not the bag, should be seen first, do not hide bags, especially in pits. Do not place the control against the side of the pit in the bottom because it may be hidden from the approach. If you use a pit place the control in the middle so that it is visible from all approaches.

White and Yellow
Controls should usually be visible from the trail or road used to navigate. If not locate the control at such a feature, but be sure it (the feature or even the control) can be seen from the trail. Make sure that there are no similar features nearby to confuse the competitor. White Controls should be hung chest high. Yellow controls

should be hung waist high.   For White Courses, check the other courses to ensure that there are no nearby controls from them to confuse the White course runners.

Orange
Orange controls should be hung just above the knee.

**Brown, Green, Red and Blue**
For all of these courses, the *control feature should be seen first and then the control*. Bags should be hung just below the knee. *Make the competitor orienteer to the feature before he can see the control.* If he is coming from the South, for example, place the control on the North side of the knoll or boulder.

The bag should always be fully open when hung, not folded on the ground. In no case should the control be hung with any part of the bag resting on the ground. Err on the side of visibility. If you have to build something to gain the placement you desire (such as laying a stick across a pit to hang the control on) do not hesitate to make a small construction out of available materials. It pays to have a good imagination.

Field Check (Vetting)

You *must* check the planned control locations out in the field. Many controls are unsuitable due to map problems. You will find that even on a good map: up to 10% of the controls selected "on paper" (by yourself or your instructor) will have to be rejected (and alternates chosen) after checking them in the field *due to unsuitability of the map, vegetation, etc*. An alternate control can usually be found only a short distance away, so that the leg can remain intact.
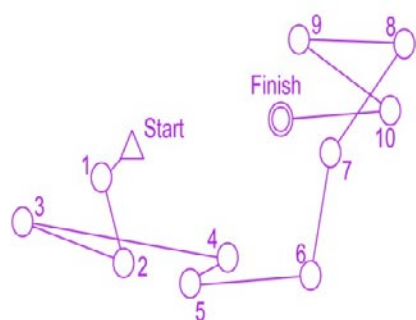
True Story: At left was an actual course at an NJROTC meet.   A course designed with doglegs and crossovers is just unacceptable. At best you have an unfair meet because of all the doglegs. At worst, you have highly competitive cadets taking the shortest route between points in order to win, as shown to the right:

The control points weren't manned, so there was no way to tell if cadets were taking points out of order. Most were not, but some probably were. The meet results were therefore highly suspect. Don't tempt cadets into attempting to gain an unfair advantage because of a poorly designed course.
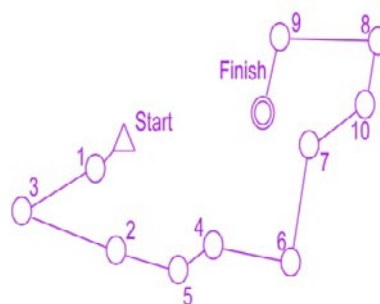
VII. Run a Practice

What follows here are my somewhat random thoughts and lessons-learned that may help you avoid some practice pitfalls and make your practices more productive and fun.

I strongly urge you to get a copy of the USOF Coaching Orienteering manual. Between that and Ms Robin Shannonhouse's awesome lesson plan found at http://www.us.orienteering.org/, you'll have everything you need to build a team from scratch and have them running Orange courses before you know it. There are tons of great drills in the Coaching Orienteering manual that you can work in to your practices. I also highly recommend Beyond Armchair Orienteering by Winifred Scott. Use a different drill every practice, and then follow it up by either a conditioning run or a practice course.

Your first practice is very important! This could very well determine whether or not you keep those 25 eager young 1st year cadets who showed up all excited and ready to learn.

Include a little orienteering theory in every practice but keep it short.   Your team has been sitting in class all day and wants to run in the woods.

Every practice should have a specific purpose.   The whole point of practices is to prepare your team for competitions. And you should tailor your practices to the next meet. If your next meet is at a park that has lots of hills, then studying contours and running hills is the order of the day. If you're getting ready for a "bearings only meet" (ugh), then set some bearings only courses and have your team practice pace counting   Long courses with an extensive trail system and plenty of handrails call for an emphasis on long runs and conditioning.

Review chapter six in the Cadet Field Manual: Physical Fitness and Exercise, especially section 6-4, Principles of a Sound Exercise Program, and section 6-5, Preventing Heat Stress and Dehydration. **Remember to warm up, cool down, and drink plenty of water!** If you're practicing somewhere other than your school, make sure you bring a water container and paper cups.

Keep an orienteering practice muster. I designed a simple one with Excel, and update it regularly so I know which cadets are attending practices and meets. I got a lot more scientific a couple years ago. I assign each cadet both **attendance** and **performance** grades for practices and meets, and rank them. I use that data to make course assignments for upcoming meets. If you want to use what I made, email me and I'll send you the file.

Set courses around campus which are unlikely to be tampered with by students wandering nearby. That means no points should be in sight or on any shortcuts through the woods that teenagers like to use (you probably know the ones I mean).

If you can, keep a course set for two consecutive practices. For the second practice, challenge everybody to beat their own time. Better yet, allow them one minute to study the map and then run the entire course without the map. This is a great way to practice map memory skills. Even around the campus this will plenty challenging.

One efficient method I've used for years is to have two experienced orienteers go around together and set a course during 1st or 2nd block. One carries the map and compass and the other carries the control markers. They back each other up on proper control placement. Have them wear unit t-shirts so school officials remain calm. I then go and out and walk the course during 3rd or 4th block and make any necessary adjustments. That way, I'm confident that practice will go smoothly.

It's OK to use black and white maps in a pinch, especially if you just dreamed up something different to try using your campus map. But it's better to design about three good courses, make color copies, then laminate them and use them throughout the season. You can also tell your team to run the courses in reverse order, to get a little more mileage out of your maps.

Personally, I love running practices in the rain. It teaches mental toughness and concentration. I'd also prefer my team to figure out how important it is to keep their map and control card dry <u>before</u> an actual competition. Just be sensible; if it's pouring rain with thunder, cancel practice. But a light rain is good for team morale.

Hold three or four practices each week if you want to really improve your team. My team practices Monday through Thursday, 2:45 to 4:30, longer if somebody gets lost (yes, on the campus). If you're like most units, the same 25 cadets do everything. That means if you have drill and orienteering team practices at the same time, something's got to give. If your unit is big into drill, you'll have to fight for practice time.

Our unit has tried to have distinct seasons for each team, but that doesn't always work out perfectly because there are both drill and orienteering competitions from September through April. So we work it like this (sort of): Drill has priority from the start of the school year until the end of October. Orienteering has priority November through the end of February. Then both teams fight over practice time and cadets in March and April. An imperfect solution at best. If you have a better system please let me know.

<u>Permanent Course</u>: I bought a set of twenty permanent course markers for fifty bucks from an orienteering vendor listed on the USOF web site. These are just square white and orange plastic markers. I placed these on prominent trees around the campus, attached with three-inch wood screws at each corner (bring a power screwdriver). Now all you do is go slap labels with a code, number or letter on each one. Tell the cadets that they have to bring a pen and write the code word in each box. You can have them go find the even numbers, or one through ten, whatever. You can probably get a lot of use out of a permanent course. Trust me; your cadets will forget where the controls are so you can use these for years. Just be sure you put all of them where no passers-by will stumble across them.

<u>Pedometers</u>: I bought thirty pedometers for my team a few years ago. Every so often, I'll have the cadets conduct a conditioning run by accumulating 5000 steps (for example). They will go off in twos and threes and run all over campus. **These are a good way for the cadets to learn to equate distance travelled with paces taken**. Another activity is to tell them to be back in exactly one hour, and the team with the most steps taken wins whatever (free bottled water, etc).

<u>Catching Features</u>: (http://www.catchingfeatures.com/) This orienteering simulation can be a useful tool for classroom demonstrations of standard orienteering techniques like contour following, thumbing the map, attack points, etc. Up on the big screen with one cadet running the course and the rest of the team being helpful (hah) is very entertaining and actually quite instructional. You can download a free demo, but the full program offers a wide variety of courses and only costs about fifty bucks. As an added benefit, you can import any OCAD map you have into Catching Features, where it'll be rendered into 3D. Virtually train on your school campus!

Here are a couple of activities I invented that your team might like. I recommend that you save these for <u>after</u> your team has mastered all the orienteering basics, or as a reward after a solid performance at a meet.

Runner and Chaser O

Runners versus Chasers: This is a team competition that pits four fast runners against a much larger chaser team. The runners wear flag football belts and two flags. The runners must punch four control points scattered around the campus without getting their flags taken by chasers. Chasers get most of their points from catching runners and taking their flags, but also earn some points by punching those same four controls. Anybody not back within 60 minutes is disqualified. A map is posted and must be studied before players depart. Each runner and chaser carries their own control card.

1. Chasers

Cadets can collect control points in any order. Control points 1 through 4 are shown on the map.

Scoring for the Chaser Team is as follows: There are four control points, each worth 5 points. Assuming ten chasers, that's 200 points earned just from punching the controls.

Now here's the hard part. Runners are quite challenging to catch. Each runner is designated with a flag-football belt with two flags. Runners can be anywhere on the map that a normal control point might be, and runners, naturally, may move around as much as they want. A chaser may only grab one of the flags from any runner. Each flag is worth 25 points, so four runners with eight flags equals 200 points.

Total possible points: 400

In other words, half your score is earned from regular control points; the other half is earned from grabbing flags.

2. Runners

Runners have two goals. Goal #1: Don't get caught. Goal #2: Punch the four control points (yes, the same ones everybody else is going after). Runners have a 45 second head start. Runners may go anywhere on the map that a control point could be (for example, runners may not go inside buildings). Runners will wear the flag football belt and flags so that the flags are visible and correctly attached.

Scoring for the Runner Team is as follows: Each flag is worth 10 points, for a total of 80 points. Each control point is worth 20 points, for a total of 320 points.

Total possible points: 400

Playing it safe by hiding in the woods for an hour is an option, but only by taking risks and trying to get the control points will the Runner Team win.

3. Other rules

Cadets and runners must turn in their control cards within 60 minutes or they are disqualified.

Safe zones are indicated on the map and are roughly 100 foot diameter circles centered on each control point and the start point.

Control point safe zones may only be entered by chasers to punch the control point or to pursue a runner who enters. Control point safe zones are established to prevent the chasers from camping at each control point.

A **Start point safe zone** differs in that Runners within the start point safe zone are immune from capture. The purpose of the start point safe zone is to prevent chasers from camping near the start point and capturing runners as they return. Once runners reenter the start point safe zone, they are done participating and must turn in their control card.

Cadets may not share control cards. You must personally punch your own control card.

Cadets and runners must remain on the area shown on the map.

Cadets and runners must stay out of the wetlands shown on the map.

This is not tackle orienteering. Go for the flag, not the runner.

As in flag football, runners may not hide their flags or attach their flags in any way that prevents their normal removal.

A few words about Runner and Chaser Orienteering: I don't recommend you pick the fastest four kids as runners, unless the rest of the team is pretty fast, too, and there are a lot of them. And make very sure you're clear on the mandatory return time or the runners will stay out there hiding all night.

I typically put the four controls at the four corners of the campus. Runners can stay together or split up. The runners' goal is to punch all four controls and make it back with all their flags attached.
So that the chasers don't camp at the finish area and pick off the runners as they try to make it back with their flags intact, I declare a safe zone about 50 yards in diameter centered around the finish. If runners make it into the safe zone, they're good to go.

TREASURE HUNT

Each team will search for a buried treasure chest using only a map, clues, and each team member's intellect and speed. Once found, the chest and its contents are the team's to enjoy. Each team consists of 2 or 3 cadets. Five clues, map and control cards are in a sealed manila envelope, opened on my command. Teams may use any source to solve the clues. Teams may solve the clues in any order. Teams may choose to solve all clues before beginning or may start running immediately and solve clues out in the field. The solution to each clue is the control point number to which the team must travel. Each control point has a word that must be written in the corresponding block on the control card. Solving all five clues will reveal directions to the buried treasure.

If a team cannot solve a clue, the team can return to ROTC and request an emergency assist. The team must surrender its map, clues, and clue card and sit in the "penalty box" for 5 minutes, after which the clue solution will be revealed and the team may resume the hunt.

The team that finds the buried treasure will be declared the Treasure Hunt Champions. They get to keep the chest and its contents. They also get to participate in the next treasure hunt for free. Future treasure hunts will cost $3 per team to cover the cost of the treasure.

The runner up team will receive a "consolation prize" treasure chest. This means that the team solved all five clues, traveled to all five control points, figured out where the treasure was, but another team beat them to it. ☹

Your team must travel together at all times team's mutual safety and support.   Splitting up is considered grounds for disqualification from the hunt.
Time limit is 75 minutes. All teams start at 3pm and must be back by 4:15pm.

Teams may not obstruct, interfere, follow, or steal solutions from other teams. Teams may not tamper with the control points. Violations are considered grounds for disqualification from the hunt. Play nice! If a team is digging for the treasure, that team has squatters' rights at that site and can't be interfered with. The five clues must be returned to the Orienteering Team Commander at the end of the hunt. GOOD LUCK AND HAPPY HUNTING!!

A few words about Treasure Hunt: This is an activity with great teamwork and map reading value. And yes, I actually bury a small "treasure chest" filled with candy, coins, whatever. Put everything in a large Ziploc bag, then in the chest. And I spray paint a large white X on the ground to "mark the spot".

This activity pretty much demands that you create a separate map just for it, but it's worth it. Draw twenty control circles onto your campus map.   You only need to place actual control markers (with a clue word dangling from them in place of a punch) at five locations that correspond to the five answers of the clues you dreamed up. The other fifteen circles are basically "dummy" controls. If your cadets run to those locations they won't find anything.

Your clues can be anything from orienteering facts, to cadet field manual trivia, as long as the answers are whole numbers from 1 to 20. The explanation below is what I read to the cadets at the beginning of the practice. I then say ready set go and I get out of the way. The cadets get insanely competitive with this activity.
Treasure Hunt does require a good bit of preparation ahead of time, so I only get around to doing it about once or twice a semester.

VIII. Prepare for a Meet

Before meet day

Study the LOI! Back up your instructor! Sometimes the LOI hides an important detail that can make all the difference in your team strategy. For example, it might require that you put at least three runners on each course to qualify for overall trophies. It might have all the Score controls worth the same, regardless of how far or how hard to find. It might radically change the usual value of first place for each of the courses. (All of these are actual examples).

Get a copy of the map and review it as a group. This is OK to do unless it's a brand new map that nobody has seen. Presumably, the hosting unit will design different courses every year. But you may be able to predict the general layout of the course if the start and finish are always in a certain spot (like a cabin or a clearing). You also can make good use of the map if the hosting unit always has a Score O event. Divide up the map into sections ahead of time, and decide who will take which section.

Tailor your practices to the meet. As stated in the previous section, try to train in woods as closely matching that of the meet site as possible, or find ways to compensate. For example, if your next meet is at a hilly park, but your training area lacks any hills, the best solution may be to have your team run plenty of bleachers and conduct some armchair orienteering drills to make sure everybody has a handle on contour lines.

Review results from the last meet. In an ideal world, the hosting unit always sends out the complete results to all participating units. If you weren't there last year, get the results from a unit that was. You need to carefully check over the winning times for each course. **This will help you set team goals when you set courses of comparable distance and difficulty at your training site.** Obviously, look over how your cadets did and use this data to make adjustments to which cadet runs which course.

Consider training at the meet location if possible and within the rules! Many LOIs specify when they want all units to steer clear of the meet site in the interest of fairness. Make sure you follow the guidelines. As a practical matter, it's probably not possible to do this very often unless you happen to be pretty close to the meet site in question.

Select which cadets will run which courses. When you make up the lineup for an upcoming meet, prepare to have it second-guessed by everybody on the team, not to mention your instructor. Make sure you put the right cadets on the right courses, for the right reasons.   Do you put the talented cadet who misses most practices on a tough course; or do you put the less talented, reliable, deserving cadet in that spot? Are you going for overalls, or are you just trying to get everybody a little experience on the white and yellow courses? Let's assume you have a really amazing team with four elite runners. Do you put all four on a four-cadet Score event where they can earn at most a first place finish of 150 points? Or do you put all four on the green course, where 1st place earns 100 points, 2nd place earns 90, etc? Potentially, this strategy could earn your team a lot more points if your four best all finish high on the green. These are the types of decisions you need to make.

Prior to start

Mental alertness – get some sleep!! Emphasize to your teammates how important it is that they try to get a good night's sleep before the event. Orienteering requires you to mentally focus when you're tired. Don't compound the problem by being tired before you start.

Breakfast of champions Eat something halfway healthy and easily digested before you run, like a piece of fruit or an energy bar. Avoid a huge breakfast with a lot of proteins and fats, as these will be hard to digest. I have a bowl of cereal, a glass of orange juice, and a cup of strong coffee.

Bring a watch! Everybody on your team should have a sports watch with stopwatch functions, splits, countdown timer, etc. If not, buy a few cheap ones and check them out on race day just like compasses. Everybody needs to know exactly when they need to be back to the finish. This is especially critical for the Score O

team if they're trying to coordinate their return times. Also, the split function can be a great training aid. Just tap the split button as you leave each control marker, and after you finish the course you'll have a complete record of how long each leg took.

Do whatever necessary to not lose control card. This has happened way too many times with my cadets. Even one unnecessary DQ because of a lost card can kill your chances at a meet. Bring safety pins and have your team pin their cards to their sleeves. Or use Duct Tape. Or buy fancy control card holders (yes there are such things). Just make sure they understand the importance of not losing their card. If they *do* lose it, tell them to retrace their steps to the last control and they're bound to find it.

Proper clothing: You **really** need to wear clothing that covers your legs and arms. **Thorns, ticks, and chiggers** (worst insect ever) are no laughing matter. Jeans offer excellent protection but are heavy. Those nylon track suits offer decent protection, are light, and many have zippered pockets. You can buy fancy orienteer clothes or gators (thorn kicks) at the supply companies listed on the USOF website. Orienteering shoes have cleats and are great for running on muddy slopes and wet pine needles. However, I do just fine with an old pair of running shoes or low top hiking boots.

Double tie & tape your shoes. At a minimum, have everybody double knot their shoes. Don't lose precious seconds retying a shoe, or worse, retrieving a shoe you lost in the mud. If you *know* you'll be going through a lot of mud (when wouldn't you be on an orienteering course), I recommend you double tie your shoes, then slap some good ol' Duct Tape around those puppies.

Don't wear camouflage if you plan to get lost. On the other hand, if you never get lost, then you're probably a great orienteer and you don't want others following you;) I know one instructor who has each cadet carry one of those orange mesh crossing guard vests with them. If they get lost, they have to put it on and start blowing their whistle. I'm not joking (and no, it's not me).

What time is the first start? Make sure you time your bus departure so you get to meet with enough time to get "oriented", get checked in, find the start, etc, etc. Don't cut it close. Look at the LOI or call and verify the meet start time, or better yet, ask if the hosting unit can tell you your team start times.

When is my start time? Telling your teammates their start time and writing it on their control card may not be enough. If any of your teammates have ever been late for their start time, you might want them to write their time on the back of their hand and set their watch alarm (they brought a watch, right?) for fifteen minutes prior. When their alarm goes off, they immediately go to the start area, no exceptions.

What course am I running? You, the team commander, should be with your instructor at check in. Double and triple check all your course assignments. Tell your teammates (again) what course they are running as you hand them their control card. Make sure their card has their name, course, and start time clearly written on it.

Have I had enough fluid? Hydrate before you start. Bring a water bottle or even better, one of those cool Camelbak water carriers, especially if you're running anything longer than a 3K course that has no water stations.

Do I need to go potty? Don't miss your start time because you waited until the last second to take care of business and there was only one port-a-potty. Plan ahead. Enough said.

Where's my control card? When you hand the control cards out to your teammates, emphasize that they are not to set the control card down on their bus seat, then leave the bus, and then watch the bus driver take off to find a McDonalds, then wait until their start time to let you know that they have no control card and that it's the bus driver's fault. Yes, this happened.

Where's the start line? This is always covered in the instructor brief. It's also usually pretty obvious and pretty close. But sometimes the start might be a five or ten minute walk. Make sure your teammates know to allow time to get to the start.

Does my compass work? Sometimes compasses break. When you arrive, have each cadet check out their compass, get off the bus, and shoot a couple rough bearings.

IX. Use Course Strategy

For more complete explanations of all these orienteering strategies, I recommend either Orienteering: Skills and Strategies by Ron Lowry, or the USOF Coaching Manual. I include a few of my thoughts and experiences here.

To begin, and I know this is pretty obvious, but I always stress to my cadets that the **direct route is not always the quickest**. Some of them insist on blasting their way through the nastiest fight, confident that they'll get to the control before other runners. I suspect part of the reason they prefer this method is that it requires less thinking: just shoot the bearing and go. Well, it's certainly true that the straight shot method requires less thinking, but the whole point of orienteering is to use the map to choose a route that will get you there the fastest. Orienteering is the thinking sport! And we all know that going through fight is a whole lot slower than going around it.

And oh by the way, in the Low Country (as opposed to Upstate South Carolina or most North Carolina), if it's not a mowed open field or a trail, it's pretty much fight. The different colors of green really don't apply. And white on an orienteering map? You must be kidding. Therefore, much of my course strategy is to tell my cadets to stay out of the woods as much as possible and only enter the woods when they get as near as they can to the control using trails and open land.

Pace counting: This is thoroughly explained in the Cadet Field Manual. Make sure your team knows their running and walking pace count for 100 meters. I really use pace counting at some meets that have extensive trail networks. I've found when I don't count paces, I always overestimate how far I've gone and slow down way too soon to look for the control feature. Runners will tend to do this, especially when they're not in great shape.

Compass Use: First, loop the strap around your wrist, not your neck; you waste time trying to pull it out of your shirt if you wear it around your neck. That *is* a wrist strap, not a necklace. Keep your compass in your hand where you can refer to it quickly and often for rough bearings.
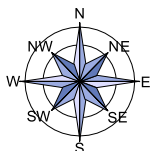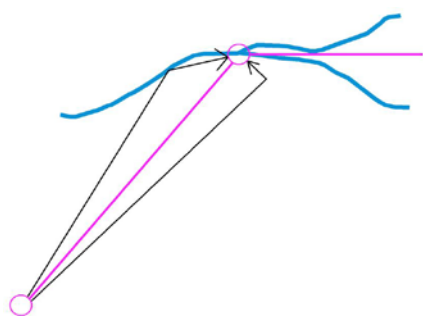
I use the compass for rough bearing checks as I leave each control and as I go through trail intersections. I use it for precision bearings when I reach my attack point. As for using it with the map, most of the time I can get a rough bearing just using my eyes (they're Navy calibrated). I don't lay the compass onto the map and take precise bearings except at the attack point or unless I'm lost.

Catching Features: I don't even think of using catching features as a strategy, exactly. It's just what I do when I'm following along on my map as I run. Going from four to five, I can clearly see that once I cross the stream I probably need to slow down, and if I reach the fence I've gone too far. These two linear features are called "catching features", presumably because they "catch" your attention as you come upon them and focus you towards the control. Just to muddy the waters a bit, sometimes you see the feature *before* the control called a collecting feature and the one *after* called a catching feature, but in either case, they serve to rein you in and help you get to the control.
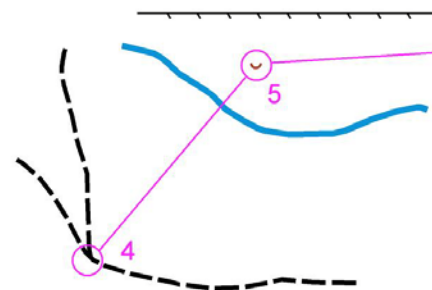
Aiming Off: This strategy involves intentionally "aiming off" the bearing to the control because it is conveniently located on a line feature like a trail or a stream. Then, when you arrive at the line feature, you simply turn towards the control and follow the line feature to it. Firstly, make sure you take a precise bearing on the map and then ahead of you. Next, decide how *much* you want to aim off. How many degrees -- five, ten, twenty? Well, for you geometry majors, the longer the leg, the smaller the angular difference you need in order to end up well to the left or right of the control. **This assumes you can accurately shoot an azimuth and run in a straight line.** I know I can't; so when I employ this strategy, I always aim off about **twenty degrees**.

 If the control is on a line feature such as the stream shown here, all you need to do is "aim off" to the left or right, run full steam until you hit the stream, and then turn in the appropriate direction until you find the control.   This situation arises more often on a correctly designed white or yellow course. On an orange or harder course, controls are rarely if ever placed so conveniently. They should be placed before the line feature, forcing you to use more careful navigation and not just blindly run to the stream and turn. One small point is that if you're aiming off, you might want to aim off in the direction of the next leg. As shown here, if you aimed off to the right, you might see runners leaving the control *before* you get to the stream and thus save yourself a little time.

Attack Points: An attack point is a feature in the terrain which you can easily recognize. It is located **close** to your control. You orienteer **quickly** to the attack point and from there you **slow down** to approach your control. The E end of the earth bank, the W end of the cliff face, and the manmade object are all likely attack points to point six.
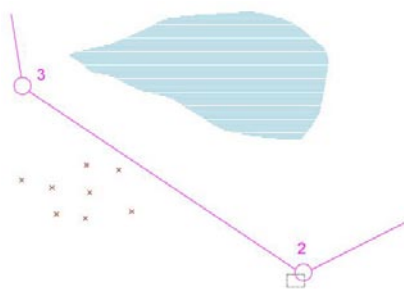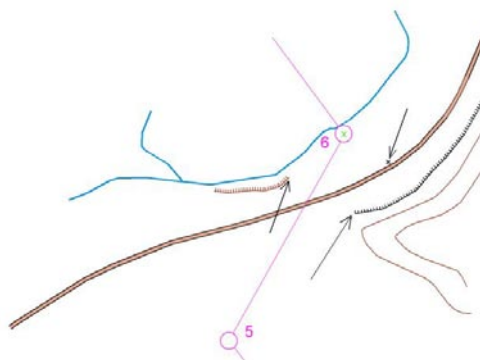
Pick an attack point that you <u>know</u> you can navigate to.   **Don't pick an attack point that's as small as or smaller than the control.** As a result, you'd essentially be looking for two controls on one leg! The W end of the marsh is a good attack point. The root stock S of the control is spread over a large area and is probably not as good.

C.A.R. This is a good way to think about each leg of your course.   I first came across it in <u>Armchair Orienteering</u> by Winifred Scott. It stands for **C**ontrol feature, **A**ttack point, **R**oute. If you think about it, you basically plan your leg backwards. Let's say you're at control 3. Look at the control feature that control point 4 is located on. Then figure out a sure-fire attack point for control 4. Now figure out your route to the attack point. I'm not ashamed to admit that I talk aloud to myself as I use this method. I find that if I speak my plan (quietly), I'll notice whether or not it makes sense. Weird, I know, but it works for me.

Contours: This is a somewhat advanced technique that I admit I'm not that good at. Instead of going up then down a big hill, you simply follow a contour around the hill, being careful to stay on that contour, running neither up nor down, as you curve around the terrain. **If done precisely, contour following can save you a ton of climb**. I tend to drift (usually down slope) as I curve around a hill trying to stay on a constant elevation. You'll need to practice this, I think, and not try it for the first time during a meet.

Approaching and Leaving the Control: Two common mistakes that cadets make are remaining too long at the control marker, and leaving the control in the wrong direction. Use a consistent method to avoid these mistakes.

o   On your way to the control, you should know the **control code** and **exact control placement** *before* you enter the control circle.

o   When you enter the control circle, look for the **control feature**, not the flag. Reduce speed when you see the flag. Have your card in hand ready to be punched *before you reach the marker*.

o   Decide the direction out of the control *before you reach the marker*.

o   At the control, **check the code**, and punch the correct box on your card.

o   **Take a rough compass bearing and move quickly away in the direction of the next control**. Don't loiter at the control marker and give away its location!

Relocating: When I get lost (gasp), the first thing I do is **stop**. Then I do a three-sixty scan of my surroundings and try to match what I'm seeing to my map. I then use my compass for a precise bearing to a definite terrain feature that I can use to get to my attack point. In other words, I make my way to an attack point *for* my attack point.

Sometimes I'm more lost than usual. If it's a relatively short leg, I might swallow my pride and make my way back to my previous control, sort out what mistake I made, and try again. If I'm truly desperate, I'll shoot my **safety bearing** and make my way to a major trail or paved road, at which point I'm usually able to quickly figure out where the heck I am and get back in the game.

Following and Being Followed: **First of all, do your own orienteering.** Don't follow other runners. You don't know where they're going, how good they are, or if they're even running the same course. It's a bad idea. Plus it's against the rules and you can be disqualified for doing it. **And perhaps most importantly, you won't improve if you habitually rely on other orienteers to do your navigating.**

Realistically, however, at many JROTC meets with a lot of runners put onto three or four courses in a short period of time, you will occasionally find yourself running behind, alongside, or ahead of another runner that you strongly suspect is going for the same point. It can sometimes get crowded out there!

It's unrealistic not to be <u>aware</u> of other runners. You can't help but notice which way they are coming or going. But there are ways that you can use them to your advantage without violating orienteering rules.

For example, you may be able to use the design of the course to anticipate where you will see runners leaving a control point, and thereby be able to shorten your search for the control. And of course, it's not cheating to notice cadets loitering at the control marker.

If you and another runner are running towards the same point (sometimes it'll be very obvious without even asking), you may be able to run a little bit parallel to the other runner as you come at the control and thus widen your "search pattern".

If another cadet is following you, you want to break away from the other runner as quickly as possible. You may be able to manage this if you feel you're as fast as or faster than the other cadet. As you're both approaching the same control, make sure to glance at your map and mentally plan out your exit direction and attack point for the next leg. And have your control card in hand ready to be punched. Put on a burst of speed once you see the control, punch in and exit quickly. With luck you can lose the other runner in this way.

X. Analyze Your Performance

Any coach will tell you that to improve yourself and your team, you need to critically analyze your performance. It's hard for an orienteering coach to do this since you usually can't watch your team in action. A typical post-mortem: "How'd you do? Okay, I found them all except point seven. What happened? I couldn't find it." You'll have better results if you use a more structured approach. I recommend you have each team member accomplish these four steps after each orienteering meet. And don't leave the meet without a copy of each course!

STEP ONE: **Immediately after completing the course, retrace your path using a highlighter**. Make sure you include missteps and wrong turns. Be as accurate as you can.
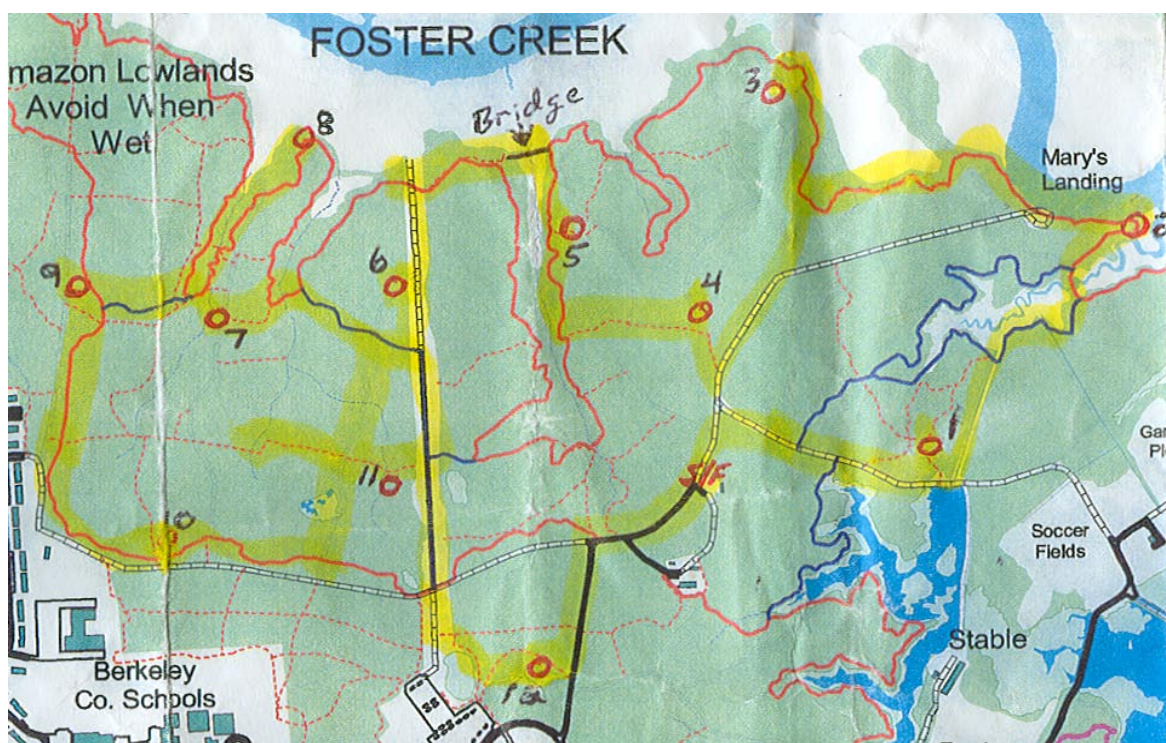
Marrington Plantation, North Charleston SC

STEP TWO: On the bus ride home, have all runners **fill out the meet analysis form**. Bring enough blank forms for everybody. Make sure they take it seriously, and have them turn these in to you right then. I've seen a couple different versions of this form. There's one in the back of the USOF Coaching Manual, but I personally feel it's a little too detailed for my cadets. I've made my own version, using a little from a couple different versions I've seen around. The idea is to make you think about what you did on each leg, what orienteering techniques you used,

and how well you used them. If you can figure out where you lost time and why, you can practice and improve that weakness and do better next meet.

Meet Analysis: For each leg, grade how well you executed orienteering techniques: Good (G), Fair (F), Poor (P). Good if you made no mistakes, Poor if you lost significant time, or missed the control.

LEG	1	2	3	4	5	6	7	8	9	10	11	12	Comments
TECHNIQUES													
route planning													
following route													
pace work													
rough compass													
aiming off													
attack point													
precision compass													
contour following													
precision map reading													
map memory													
control entry & exit													
REASONS													
too anxious													
too nervous													
too relaxed													
careless													
overconfident													
underestimated difficulty													
took a chance													
tired													
ran too slow													
ran too fast													
no "attack point"													
didn't read descriptions													
followed someone													
someone followed me													
saw another orienteer													
misread the map													
unusual terrain													
poor map quality													

STEP THREE: Before you return to school on Monday, **write your orienteering journal**. Describe each leg as specifically as possible.   Discuss your route choices. Especially discuss any mistakes you made and how you recovered.   The write-up that follows refers to the map on page 37.

North Charleston NJROTC Orienteering Meet at Marrington Plantation February 2008
Since so much depended on the performance of my cadets on the Green course, I decided to run it myself. I was confident that they had the physical fitness and endurance necessary; did they have the technical skills? Success on the Green course would depend on four things: physical fitness, map reading, compass use, and route selection.
Physical fitness: The Green course was all about trails. All of the control points were located just a few feet away and visible from trails. Because of that, 90% of this course was flat-out running. The other 10% was stepping off the path into the forest to punch the point. The ability to keep a steady or fast pace (with little walking) was crucial.   Slowing to a walk on a well-defined path at North Charleston means you are losing time for no good reason. That's why we were doing so much conditioning the last month.
Map reading: I had never run a course here, but just casual walks the last few trips had shown me what a maze of paths Marrington Plantation is. Nature trails, mountain bike trails, firebreaks, paved roads, gravel roads, unimproved roads -- all marked on the map more or less accurately (but sometimes very faintly). Oh, and plenty of other lesser trails that apparently didn't deserve inclusion on the map, but certainly added to the challenge. The Green course would require careful attention-to-detail. Knowing exactly where I was on the map at all times was the key to success.
Compass use: Having studied the map used last year, I felt that I would be pretty oriented as to which way was north. Nevertheless, I found myself using my compass frequently for heading checks. Not to shoot precise bearings, just to make sure which way I was headed. There were so many trail intersections that it was very easy to become turned around. This happened to me on several occasions, but I was able to correct myself within seconds because I did a quick compass check.
Route selection: There were definitely plenty of route choices on this course. But they all pretty much involved which path to take. No figuring out the best attack point, or which route had the fewest hills. Just pick the best

paths and get going. The paved and gravel roads were the best, of course, straight, flat, good footing. Next best were the unimproved roads (which were very faint on the map). The mountain bike trails were very twisty-turny, but had the plus of being well marked with red or blue splotches painted on trees. The trickiest trails were the firebreaks. These were pretty well defined, but were frequently flooded. There were also numerous paths not shown on the map that would split off from the firebreaks. You really had to know where you were on the map or you would be thrown off by these.

One option I *never* used was bee-lining it from one control to the next. That choice always involved making my way through dense forest including fight. Experienced orienteers know that you cover much greater distances on trails than you do through forest.

Leg by leg analysis

Start to 1: 500 yards 6 minutes I rode out to the start cabin with Lieutenant Melancon, North Charleston's SNSI. I told him that I wanted to run the green course right away because I had my whole team running it and I wanted to know if I had messed up. He told me that the course was fine a few days ago but I probably needed hip waders today. Terrific. At the start, he handed me a map, a separate piece of paper with control point codes, and the all-important control card. Great, three pieces of paper to lose. He told me point one was "back the way we came on the left". By this he meant it was 600 yards away through a mud bog. OK, I looked at my watch: 0900. I had half an hour before cadets started. Goal number one: don't get passed by a cadet, man that would be bad. I took a deep breath, started my watch, and got moving. I passed one, two trails on the left. The map showed the control down the third trail on the left, a firebreak. Here it is, but wait, it should be directly opposite an inlet of water. I'll keep going. Ah there it is. Down the (fourth) path through the mud bog. Both shoes were soaked by the time I got to the control point. Delightful. But it wasn't hard to find, directly opposite a major water feature. Lesson one: the map doesn't show every trail. I checked the code, punched my card and looked at point 2. So far, so good.

1 to 2: 625 yards 7 minutes I made my first route choice: I backtracked slightly in order to get on the unimproved road that paralleled the muddy firebreak on which point one was located. I jogged north until I reached the junction with the blue mountain bike trail. I followed it northeast until it intersected with the red bike trail. I ran along about 100 yards and saw a control. I ran off the trail and checked the code written on the control: 4A. Nope. Rats. I continued down the trail another 50 yards and saw what I knew must be control 2. 10C, yep. I glanced at my map and kept moving.

2 to 3: 750 yards 8 minutes Point three was pretty much a no-brainer. Just run west about 800 yards then north a couple hundred yards and start looking to my left. If I started running to the south I had gone too far. Yep, there it was. Checked the code, punched in, looked at the map, off I went. I was feeling pretty good about the course. My cadets could handle this.

3 to 4: 500 yards 8 minutes My next route choice: I decided to run back down the red bike trail until it turned back to the east. At that point, I jumped the trail and went due south through open forest until I hit a gravel road. I followed the road southwest until I spotted a firebreak on my right which angled back to the northwest. Ah, there it is. I ran up the firebreak (more mud) and soon saw the control. I checked the control number, 8A, yes, punched in, and that's when time stopped.

4 to 5: 300 yards 8 minutes Here's where I first experienced orienteering brain lock. On the map, going to point 5 looks simple: continue down the firebreak to the junction with the red bike trail, go north to the first (and only) firebreak on the right; point 5 would be on the left shortly. The problem was, there were several unimproved roads on the map between 4 and 5 that were so faint I didn't even notice them. So as I came across them, I became unsure exactly where I was (boy I hate that feeling). This slowed me to a walk as I decided to trust my compass and continue west, hoping I would hit the red trail. I actually ended up taking one of these mystery roads north, and as luck would have it, blundered into point 5 despite myself. Checked the control number, punched in.

5 to 6: 400 yards 8 minutes My route choices were run south, and then west then north to point 6, run north, then west then south to point six, or cut straight through marsh and low bottom to point six. Johnny, I'll take door number two. I ran straight north on the red trail until I saw a bridge to the west. I crossed the bridge, then continued west on the red trail until it intersected with the main north-south gravel road. Here I turned south and pace counted a couple hundred yards, looking for an unimproved road on my right. This is when I started seeing a lot of very lost looking cadets. Fun. Oh look, an unimproved road, and there's point six, right where it's supposed to be. Checked the control, 2C, punched in, moved back onto the gravel road, and looked at map.

6 to 7: 400 yards 8 minutes   Route choice looked like a no-brainer. Go south on gravel road, turn west on blue trail, go left on red trail, cross a creek, turn left on a firebreak, follow it to the junction with an unimproved road, then look for the control point between the junction and a creek. Well, what do you know, there it is. I think I see one of my cadets back up the road a bit. This is where I started getting pretty tired. Checked the control, punched in, trudged slowly back to the unimproved road. I looked at the map.

7 to 8: 450 yards 7 minutes   This is a straight shot north, up the unimproved road, then onto the red trail. I continued north on the trail until it turned sharply south. The map showed point 8 being just off the trail to the left. Ah, there it was.

8 to 9: 600 yards 8 minutes   This is turning into a road race. Straight back down the red trail the way I came. Follow the blue trail west, and then turn north when it hits another red trail. Point nine was on the left about fifty yards up the trail. Not hard, just far. Check the code: 7D, punch in, off I go.

9 to 10: 600 yards 10 minutes   I just followed the red trail south as quickly as I could. When it turned east with the gravel road within sight to my right, I started paying attention. I was looking for a firebreak on my left, with point 10 just beyond. I never saw the firebreak, but happily, point 10 was near enough to the trail that I saw it just the same. About this time, Josh went speeding by me; he punched point 10 and kept zooming right along as he ran the Score O course. Go, Josh, go! I punched in, and glanced at the map.

10 to 11: 500 yards 12 minutes   This doesn't look hard on the map: run east until I hit the gravel road, go north a couple hundred yards, turn left on a firebreak until it intersects with a creek, and look for point 11 to the south. Sadly, I was pretty fatigued by now and I was overdue for a screw up. Here was my big chance. I mistook one of those very faintly outlined unimproved roads for the gravel roads and took it north. There are so many firebreaks and small creeks in this place that it was just my luck that I came across a firebreak (the right one), turned left and followed it until it intersected with a creek (wrong one), then I started looking for point 11. Nowhere in sight. Rats. Turns out I was west of where I thought I was. I went back to the unimproved road, went north looking for another firebreak. It finally intersected with a blue trail, and that's when the light bulb went on and I realized where I was and how I had messed up. I went east and hit the main north-south gravel road. I jogged south on the gravel road, found the firebreak, followed it west to the creek, and found point 11 exactly where the map showed to be. Checked the code just to make sure, punched in, and looked for point 12 on the map.
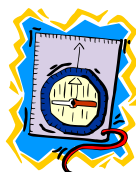
11 to 12: 500 yards 6 minutes   I ran due south on the gravel road. Once it intersected with the main east-west gravel road, I slowed down, continued south and started looking for a firebreak to my left. I needed to be careful here, as the map indicated a bunch of firebreaks close together and I was pretty tired. Happily, there had been a recent controlled burn, and visibility was excellent for a couple hundred yards. I saw point 12 when I was still 100 yards away and bee lined right to it.

12 to Finish: 500 yards 6 minutes   I followed the firebreak east to a paved road, then north and east to the finish. I collapsed in a heap. I felt confident that my cadets had the stamina and technical skills to complete this course successfully. Plus, they had better eyesight so were bound to spot those faint markings on the map representing unimproved roads. Also, my cadets are smarter than me, so won't make any mistakes that I made. What could possibly go wrong? I'm sure they'll all easily beat my time.   **Elapsed time: 1:42:18**

STEP FOUR: At the very next practice (preferably Monday afternoon), **analyze the meet as a team**. In a perfect world, you'll also have the complete meet results. Most units will have their results in Excel format, emailed to all participating units on Monday after the meet. Scan the course maps and put them up on the screen using your Navy projector. Discuss with your team your route selections, attack points, mistakes. Have somebody read their journal with the appropriate map displayed.

XI. Host a Meet

It's not that hard to host an orienteering meet but it *does* take a lot of preparation. If your unit has an orienteering team but it doesn't host a meet, it's time to step up to the plate! As our Area Manager has said, "Good units host meets". Here are my thoughts on hosting a meet, followed by a checklist adapted from one I found on the USOF site, as well as a sample Letter of Instruction.

Decide where you will host the meet. If this is your first meet, you may want to host it close to home, on a large school campus with wooded areas, or at a small park near your school, but you'll probably have to limit yourself to White and Yellow courses, maybe an Orange. If you've hosted lots of meets, try a large park or nature preserve with some room to run – a thousand or more acres will work fine. Hopefully you'll have varied terrain with a trail system and some natural and manmade features to navigate off of. Contours are easier to come by some places in Area Six (upstate SC and most of NC).

Decide when you will host the meet. The sooner you let other units know when your meet is, the better. At latest, you need to have a date before your instructor goes to the Area 6 in-service training in the summer. That's when all the units try to put out a comprehensive calendar of meets for the upcoming school year. Try not to have it the same week as other big events that you know the other units near you are probably going to. A lot of units have their drill and orienteering meets the same time every year (e.g. the first Saturday in November). It might not hurt to call or email a bunch of units and propose a couple of dates that look promising.

Does an orienteering map exist? Contact your local orienteering club; they can probably assist you with that if they've used the park before. If not, see part V of this manual. You **really** need to use an orienteering map to host a quality meet. With the availability of Google Earth and OCAD, there's really no excuse not to have a map.

I understand that some units host "bearings only" meets because they lack a map and they figure it's better than nothing.   Well, it is, but just barely. A bearings only meet is to an actual meet as a "pass and kick" competition is to a football game. It tests the ability to shoot a bearing and pace count, and that's about it. There's no map reading or route choice (the heart and soul of orienteering). You shoot a bearing and plunge straight ahead. Therefore, luck will play a major role. For example: two cadets shoot the same bearing, one drifts left and encounters an impassable swamp and has to backtrack. The other drifts right and stumbles upon a convenient path and runs straight to the control. Plus, it's inherently unfair because cadets who've competed in your bearings only meet the year before will have a huge advantage over first-timers. The veterans will remember where that impassable swamp is and take the convenient path. So please, host a meet, but make it a map meet.

What type of meet will you offer?   If you're hosting a meet in the fall, you really need to include a White course for all the NS1s who want to give orienteering a try. Remember, you can have a huge positive impact on other units' orienteering programs by offering a well designed beginner's course that all the NS1s can actually complete. Conversely, your meet can turn off lots of potentially great orienteers if their first exposure to the sport is one of complete frustration. You'll also need an intermediate and an advanced course in order to provide enough challenge for most teams. So, White, Yellow and Orange courses are probably the proper course offerings for your first meet.
If you're hosting a spring meet, you may be able to eliminate the White course, since presumably all the units have already got a couple meets under their belts. This may be a bad assumption though, if the units coming to your meet have schedules that bring large numbers of 1st years into their unit in January. Call around and check.

If this is the first time you're hosting a meet, I don't recommend offering more demanding courses like brown, green, red, blue, or Score **unless you're sure** **(a) you've got a decent map, (b) you know how to set a solid course, (c) your team knows how to run the start and finish, and (d) you have a** <u>reliable scoring program</u>**.**

How big do you want your meet to be? More units competing means more entry fees, right? Let's invite 40 schools! Whoa, tiger, let's do the math for a hypothetical meet. You need to allow a fairly generous number of cadet runners per unit or it won't be worth their time and money to drive 2 hours on a Saturday morning. Most units seem to like the numbers 12 or 14 per unit, for some reason.

Let's say you decide each unit can bring 12 cadets. And you invite 10 units. That's 120 runners. If you have three courses (W/Y/O), you <u>might</u> have level course loading (40 on each), but experience suggests otherwise. Especially for a fall meet, you'll probably have 60 White, 40 Yellow, and 20 Orange. So the White course is the long pole in the tent. Sixty runners at 2 minute intervals mean that the last runner on White goes out 2 hours after the first one.

Assuming a 0900 start time (seems to be the norm in the NJROTC world), the last White runner goes out at 1100, and comes back at 1300 (you know he will). Allow another hour of flailing with the score calculations and the award ceremony. If you're <u>lucky</u>, you'll have everybody on the road by 1400. From experience, this is near the limit of most instructors' patience. If you double the number of units in our hypothetical meet, you can easily end up with more than a hundred runners on the White course, and start times as late as 1230 or 1300. That spells long day. My point in this little example is that you should do the math, know how many units you want to invite, how many courses you want to offer, and know when your meet will end. <u>You want them to come back next year</u>.

You need to write an LOI. Writing your Letter of Instruction can be a great way to gather your thoughts on the what, where, when, and how aspects of your meet. It forces you to think everything through <u>before</u> you advertise to other units. Take a look at the sample provided (an amazing model of clarity and brevity).

Think through how you determine course and overall winners. Almost every meet I've ever run in tells you the maximum number of cadets who can compete, usually between 10 and 15. And <u>usually</u> there is no requirement to put cadets on every course in order to qualify for overall trophies. I believe that's how it should be.
In the world of drill meets, often the LOI will state that you must compete in every event in order to qualify for overalls. That's great, because the drill team that wins overall *should* be able to field competitors in every event. But there's no limit to how many cadets you can bring on your drill team.
Since the meet organizer limits the number of runners that you can enter, a key part of coaching strategy is putting the right number of cadets on each course in order to maximize your point totals. Theoretically, if your cadets are all capable of running the green or score, that's where you should be able to put them.
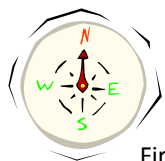If you really want to require that teams put runners on every course in order to qualify for overalls, make sure you put that prominently in your LOI and emphasize it at the coaching meeting the morning of your meet.

You need to advertise. The traditional methods work fine – email all the local units, put it on the portal, call all the units within a 4 hour drive. Don't forget other service JROTCs! You may have to do a little online digging to find Army, Air Force, and Marine JROTC unit locations in your area. Many will be delighted to be invited.

You need to have plenty of meet supplies. Especially controls, punches, and control cards. Calculate how many total control points you'll set. Don't share control points between courses. Though, I admit that I use all the controls from yellow, orange, and green to comprise the Score O course. Make sure you have half a dozen spare

controls & punches in case any go missing during the meet. Refer to the checklist below for the myriad other items you need to remember.

You need volunteers with concessions. Ask a few booster club parents or use some reliable cadets who are <u>not</u> on the orienteering team.

You need to order trophies and medals. First, second, and third place trophies and medals for each course, plus overall trophies are the norm. I recommend using a local place because turn-around is typically fast and they can correct any broken or incorrect trophies immediately.

Design your courses; check your courses well in advance. Read and re-read part VI of this manual. Design your courses on your map, then go set the courses with colored tape. Have a few cadets try your courses out as a team practice; modify as needed. If you're setting courses around your school campus, make sure none of the points are on trails or shortcuts through the woods used by students. They <u>will</u> take your control points as souvenirs.

Make plenty of map copies. Clubs tend to make a master map of each course and tape it in the start area. They then make lots of map copies (with no course overprinted) upon which you have to quickly and accurately copy the course and the control codes. You can do that if you want to.   I recommend you keep things simple and make sufficient copies of each course.

Set your courses; check your courses the morning of the meet. For campus courses, put out the markers as late as possible in order to avoid points being swiped. That might mean early morning on the day of the meet. Send out two cadets to a course – one to hang and one to verify. For a park meet with points all way back in the woods, it's fine to set the courses the day before, but you still want each course vetted the morning of the meet <u>just in case</u>.

Designate jobs to orienteering team members. <u>You</u> pick where your orienteering team members assist, not them. Assigning team members where they'll help the most is a vital leadership function. Your most experienced members may prefer to breeze around as safety observers, but you probably need them at the start and finish tables. Use a cadet with a <u>loud</u> command voice to call start times.   Put your two most steady, careful cadets in the score area. And so on.

Safety observers – These cadets serve two functions: safety of the competitors and deterrence of cheaters. Therefore, they need to be both visible to the runners but not close enough to controls to give away control locations. I have my cadets divide the map into thirds, put two safety monitors per "zone", and have them roam their designated area, discreetly checking on controls when no runners are nearby. They carry a couple spare control markers and punches and communicate with their instructor via cell phones. Trust me, you don't want safety monitors with walkie talkies, you just don't.

Have a Search and Rescue Plan - Cadets frequently get lost during orienteering meets. You need an action plan <u>ahead of time</u>. The following guidelines were provided by Ms Robin Shannonhouse of the USOF.
The first rule of being a rescuer is to be sure you do <u>not</u> need to be rescued. Make sure all plans you make are doubly safe for the searchers and there is a high level and frequency of communication between every searcher and the search director.
<u>Step one is preventing the need for a search party.</u> Advise all participants of the 3-hour time limit and the close closing time. The course closing time should be at least 3 hours before dusk. Orienteers should only be permitted

to try more difficult courses after success on lower courses. Stress before the competition starts that, if lost, a person should stay on any trail that they come across and attempt to relocate themselves.

Search procedures must be organized and prepared for quick implementation prior to the meet. A search party equipment kit should be assembled and placed at the disposal of the Meet Director at the Finish area before the start of the competition. This kit should contain at least the following:

a. Emergency First Aid equipment
b. Flashlights with spare batteries for each searcher
c. Map showing local roads
d. Walkie-talkies or other communication

Initial suggestions to determine if a search is necessary:

a. Check control card stubs or Start list to see who has not checked in at the Finish.
b. Check with the unit's instructor to see if the cadet has completed the course, or dropped out of the event.

The NSI in charge of the meet should specifically designate an SAR person in charge who will be responsible for the conduct of a search. If a cadet is definitely missing:

a. Check with the competitors on the same course to see if, when, and where the person was last seen in order to reduce the size of the area to be searched.
b. Only good orienteers shall be assigned as searchers.
c. The SAR in charge issues firm, positive orders, e.g. assigning search teams to search well-defined areas. Maps of surrounding areas should be available.
d. Establish searcher time limits for control and accountability of all search personnel.
e. Make a name list of all searchers dispatched.
f. Make sure searchers have walkie talkies with good batteries, and charged cell phones. Make sure they have your cell phone number and vice versa.

Keep in mind: *Experienced orienteers* who become disoriented or injured can be expected to make *rational decisions*, e.g. rough compass to road and follow road in direction of Finish; or, if injured, remain at a control marker. *Inexperienced orienteers* are more likely to keep wandering if lost and then pay little attention to the map.

If someone has failed to check in because he is lost or has had an accident:

a. Check all roads and trails the cadet is likely to cross or follow on that particular course.
b. Two good orienteers follow the course upon which the missing person started. One person follow numerical order of points, the other go in reverse order. They should agree where to meet.
c. Check the areas where it is possible that the person could have strayed from the course.
d. Check all control locations on other courses, especially near the person's assumed route.
e. Several searchers executed a planned sweep procedure of the area mapped.

If a night search is required, the park authorities or landowners should be notified prior to nightfall. Follow their guidelines and provide any needed maps to any searches the park authorities bring in

Start and Finish tables are critical. Put your first-stringers here. If anything can go wrong, it's at the start or finish tables. Screwed up start or finish times basically invalidate the entire meet. I actually run a practice meet the week before. I put cadets at the start and finish tables, and *everybody else runs one or two really simple short courses. I'm really exercising the start and finish tables so everyone knows their job.*
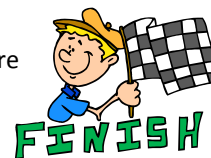
You need a scoring program. Some units have developed their own, typically using MS Excel. Some programs are spiffier than others and do a few extra steps at the end like sorting and ranking the winners. This will save you time at the end of your meet when the instructors and cadets are waiting for the awards ceremony.

If you need a scoring program, shoot me an email and I'll send you mine.

You need a two dedicated score room cadets. Use two calm, careful, intelligent cadets. A cadet from the finish table brings Cadet One the control cards. Cadet One calmly informs Cadet Two which course, cadet, school, and start time they're about to enter data for. Once Cadet Two has found the right Excel worksheet and line, Cadet One calmly tells Cadet Two the finish time to enter and any penalty minutes to apply. Then (calmly) Cadet One sorts the cards by course and ascending start time. Cadet Two saves the data frequently. Your instructor can act as the over-the-shoulder Quality Control and Dispute Solver. Keep your instructor as calm as possible.

This is important, pay attention. A couple days before your meet, once you've got all the courses, units, and cadet names entered into your scoring program, save it as "Test Data", then enter dummy data for all the units and verify that your program <u>does</u> what you <u>think</u> it's going to do on meet day. Overheard at an Area 12 orienteering meet last spring, "I don't know what it's doing – the program worked great last year", while the instructor figured out the winners with a paper and pencil, and we all sat around for an extra hour.

Orienteering Meet Planning Checklist

As far ahead as possible (6 months minimum recommended)
- ☐ Decide on a suitable site
- ☐ Get the landowner's permission
- ☐ Get or create an accurate map
- ☐ Write your LOI
- ☐ Advertise your meet via the portal, email, or word-of-mouth
- ☐ Arrange for beginner instruction and/or a training area
- ☐ Inventory your meet equipment and order necessary supplies

3 weeks prior to your meet
- ☐ Prepare your computer scoring program (MS Excel recommended)
- ☐ Determine how much your meet will cost
- ☐ Order needed meet supplies (extra controls or punches, control cards, etc)
- ☐ Order trophies
- ☐ Design accurate courses and clue descriptions – print clue box on map if possible
- ☐ Make map copies
- ☐ Laminate or bag maps
- ☐ Create directional signs leading to the meet site
- ☐ Check your first aid kit for basic supplies

3 days before your meet
- ☐ Host a practice meet with your team
- ☐ Set your courses with tape
- ☐ make master punch cards to check participants cards
- ☐ Email or phone all participants to double check they're coming and finalize lineups
- ☐ Print out sheets from your score program for the start table to check in cadets as they go out and the finish table to check off cadets as they return
- ☐ Figure out how you're going to set up your laptop in the woods

The morning of your meet

- ☐ have your cadets go in pairs and set and vet the courses
- ☐ Post directional signs and/or post cadets to point the way
- ☐ make sure you have your first aid kit at the finish
- ☐ put out the water stops along the course (every 3km recommended)
- ☐ Instructor Brief

After your meet

- ☐ Police the area before you depart
- ☐ Consider leaving your courses up for a couple days. Have your own meet and challenge your team to beat the winning times.
- ☐ Or, retrieve all control markers and punches
- ☐ Thank the land owner/park manager for allowing use
- ☐ The scoring program should be emailed to all participating units by the following Monday.

Equipment

- ☐ Cord -- to tie up the markers and to attach the punches.
- ☐ First Aid Kit -- just in case.
- ☐ Scissors -- to cut cord and other uses.
- ☐ Trash Bags -- for post-event cleanup of the area.
- ☐ Tables and chairs for start, finish, score area
- ☐ Loaner compasses
- ☐ Timing clocks (digital to .01 seconds preferable)
- ☐ Calculator
- ☐ A results posting system. I always liked **South Aiken's** method of clipping control cards to clothes lines in order of elapsed time, one clothes line per course – very cool. For a small meet, you can probably use a flip chart and some markers. Posting results as your meet unfolds is a great way to keep everybody interested while waiting for the last runners. Actually, most meets I've attended don't post any results <u>during</u> the meet, they just announce winners all at once during the awards ceremony. That's fine, too.
- ☐ Map cases. Either laminate your maps or provide baggies.
- ☐ Starting cash for the concession stand.
- ☐ Water jugs and paper cups
- ☐ Don't forget to bring the trophies!
- ☐ Clipboards
- ☐ Anything else I forgot to mention

The following is a sample Letter of Instruction. Feel free to substitute your meet's information and take full credit. You're welcome.

Hilton Head Island High School NJROTC
Seahawk Classic Orienteering Meet
February 6th, 2010
Letter of Instruction

Encl: (1) Entry form
　　　　(2) Indemnity Form
　　　　(3) Pre-mishap plan
　　　　(4) Operational Risk Management Analysis

I. SUMMARY:

- Hilton Head's annual orienteering meet will be Saturday 6 February 2009. The meet will be held at the Victoria Bluff Heritage Preserve in Bluffton SC on Route 278.
- The Heritage Preserve is 1100 acres of heavily wooded terrain with numerous trails and water features. The Preserve is bounded on three sides by paved roads and one side by the Colleton River.
- **Yellow, Orange**, **Brown,** and **Green** courses are offered.
- An orienteering map, with control points marked, will be issued at the start point. A solid understanding of map and compass is essential.
- Our concession stand will be open for the convenience of your cadets. Instructors eat free.
- **Entry fee $75** check payable to HHIHS NJROTC. Please register by **14 January.**
- **Maximum number of cadets to compete is 15. Additional cadets are welcome to run the training course.**
- **A training course** will be available for the benefit of all cadets. A Yellow course and will be set in an adjacent part of the Preserve separated from the meet by a paved road. Cadets pay $2.00 for a map and receive a start time in the order they arrive. Cadets may use the training course with their instructor's permission before or after they've run their competition course, but they should be cautioned not to miss their competition start time.
- Please email me which course each of your cadets will compete on by **20 January**.
- Registration 0730-0830. Instructor meeting at 0830. **First run time at 0900**; cadets go out at 2 minute increments.
- **Instructors are welcome to run any course for their own training and enjoyment, but please refrain from coaching your cadets while you're out there.**
- **Questions? pheiffermt@training.navy.mil   W 843 689-4902   C 843 816-1650**

II. PRELIMINARIES:

- Your runners must be enrolled in your JROTC program to be eligible to compete.
- Your cadets should be familiar with the USOF Rules for Orienteering (http://www.us.orienteering.org), especially section 35 (Fairness), section 36 (Equipment and aids), and section 37 (Conduct during the events).
- Each of your cadets should have a **compass**, a **watch,** a **safety whistle** and shoes/clothing suitable for safe orienteering and weather conditions.
- Your cadets should know how to shoot a bearing, read an orienteering map, and interpret control point codes.
- Please share the contents of this LOI with your orienteering team.

III. RULES & PROCEDURES:

o When you arrive, turn in your indemnity forms.

o I'll give you a package containing individual control cards with pre-assigned starting times. Write your cadets' names on the cards as appropriate. Your cadets get their maps at the start for each course.

o Make sure your cadets know their start times. They should be in the call up area 3 minutes before their start time. When they hear their school and start time, they should go up to the appropriate course table and check in. They'll get their map and go to the start point, then wait until the whistle signals their start.

o Runners must visit the control points in numerical order as indicated on their map. The courses have been carefully designed so that there are no cutbacks or crossovers, so there's no advantage in taking points out of order anyway.

o All control points are clearly labeled on the map and on the control itself. Your cadets must punch the correct block corresponding with the control. Failure to mark a control in the correct block will result in a 15 minute penalty.

o After the runner has punched the last numbered control point for the course, the runner should go directly to the finish area (double circle on the map) and turn in the control card and map. There is no final punch at the finish.

o Make sure your runners inform the finish table officials of any issues that could affect their time, such as double punching blocks, punching blocks out of order, arriving at a control point with a missing punch, etc. This might save them from being penalized.

o **Make sure your cadets know that they must report in at the finish whether or not they complete their course. All runners that exceed the 120 minute limit are disqualified and must report to the finish line as soon as possible.** Runners going over their time limit will not earn points toward their team's score.

IV. COURSES: A **Yellow** (Advanced Beginners), **Orange** (Intermediate), **Brown** (Short Expert), and **Green** (Short Expert) course will be set. Cadets may compete on only one of these courses. Cadets must run individually.

(1) **YELLOW:** Course length is 3 km. There are **9 controls.** Time limit is **120 minutes**. Last year, 1st place finished in 51:42 for a course of similar length and difficulty. Your cadets get the map, with the course overlaid, at check-in. Cadets will report to the start area 3 minutes prior to their designated time. Cadets should know how to shoot an azimuth and read an orienteering map. Control point locations will have written descriptions.

(2) **ORANGE:** Course length is 4 km. There are **12 controls.** Time limit is **120 minutes**. Last year, 1st place finished in 41:32 and 10th place finished in 67:26 for a course of similar length and difficulty. Your cadets get the map, with the course overlaid, at check-in. Cadets will report to the start area 3 minutes prior to their start time. The Orange course differs from the Yellow course in length and difficulty of controls. Control point locations are indicated by standard IOF control point symbols.

(3) **BROWN:** Course length is 6 km. There are **15 controls.** Time limit is **120 minutes.** Last year, 1st place finished in 45:58 and 10th place finished in 70:46 for a course of similar length and difficulty. Your cadets get the map, with the course overlaid, at check-in. Cadets will report to the start area 3 minutes prior to their start time. The Brown course differs from the Orange course in length and difficulty of controls. Control point locations are indicated by standard IOF control point symbols.

(4) **GREEN:** Course length is 8 km. There are **18 controls**. Time limit is **120 minutes.** Use caution in assigning cadets to this course. I anticipate a 1st place finish time of about 60 minutes. A pre-marked map will be provided at check-in. Cadets will report to the start area 3 minutes prior to their start time. The Green course differs from the Brown course only in number of controls. Control point locations will be indicated by standard IOF control point symbols.

V. PENALTIES: Runners are not disqualified for missing a control. However, **fifteen minutes** is added to the runner's time for each incorrect punch or no punch at all.

   Runners will be disqualified for the following:

   o **Exceeding the 120 minute time limit.**
   o Receiving from or giving assistance to other cadets.
   o Using a cell phone, GPS, or other comm or nav gadget on the course.
   o Moving or altering any control.
   o Running more than one course.
   o Arguing with or trying to influence an official's decision.
   o Conduct that is prejudicial to good order and discipline.
   o Being in possession of drugs, alcohol, tobacco products or knives.
   o Entering the scoring or timing areas unless required to do so.
   o Using a whistle other than as allowed by this instruction.
   o Moving about the course in any manner other than by foot.
   o Participating in any form of walking, orienteering training or competition in the Victoria Bluff Heritage Preserve in September 2009.

VI. SCORING:

We enter the start and finish time for your cadet, then apply penalty minutes if necessary. We calculate your cadet's total time, then rank all the times for that course from fastest to slowest. The cadets with the fastest 10 times on each course earn points for their teams, as per the table below.

The units achieving the highest totals on each course will be awarded **1st through 4th place course trophies.**
The units achieving the highest overall totals will be awarded **1st through 4th place overall trophies.** Since units are limited to 15 competitors, determining how many cadets to place on each course is a key strategy. Therefore, there is no requirement to compete on all courses to be eligible for the overall trophies. Please keep in mind the course difficulties and expected winning times; don't place your cadets on courses beyond their skill level.

Course and overall results are computed from the following table of values.

	1st place	2nd place	3rd place	4th place	5th place	6th place	7th place	8th place	9th place	10th place
YELLOW	90	81	72	63	54	45	36	27	18	9
ORANGE	120	108	96	84	72	60	48	36	24	12
BROWN	150	135	120	105	90	75	60	45	30	15
GREEN	180	162	144	126	108	90	72	54	36	18

Protests: The senior instructor of the unit concerned must make protests to the meet coordinator, LCDR Pheiffer. He will investigate the alleged discrepancy as necessary to uncover the facts. After a thorough examination of the details, he will render a final decision.

VII. SAFETY: Refer to the Pre-Mishap Plan and the ORM Analysis (Enclosures 2 &3). **Safety is paramount!**

- o Competitors must be aware of the hazards involved in orienteering and be especially careful to negotiate difficult terrain within their abilities.
- o Competitors should realize that severe fatigue reduces one's ability to think clearly. Any competitor that is disoriented (lost) and is overdue from the allotted time for their course, should make their way to nearest paved road and make their way towards the finish.
- o Remain on the road for pick-up by instructors or meet officials. If unable to locate a paved road and more than one hour overdue, use the whistle to summon assistance.
- o Avoid **ALL** wildlife. Do not approach or attempt to touch, feed or disturb any wildlife.
- o **DO NOT** attempt to transit water areas that are not easily crossed by foot. Be especially alert for rocks, stumps and **STUMP HOLES** that are covered with leaves.
- o If you become injured or unable to return to the Finish, summon help by repeatedly blowing your whistle.
- o All participants **MUST IMMEDIATELY REPORT TO THE TIMER AT THE FINISH LINE** upon completion of, or if quitting a course for any reason.
- o **DO NOT** leave the boundaries of the Victoria Bluff Heritage Preserve. Heritage Preserve boundaries are marked by signs and double blue horizontal lines painted on trees. If cadets can read a map and compass they will not get lost.
- o I **strongly** advise your cadets to wear long pants and long-sleeved shirts. Water will be located at the Finish.
- o **USE OF WHISTLES FOR OTHER THAN EMERGENCY SITUATIONS MAY RESULT IN DISQUALIFICATION OF YOUR TEAM.**

8. **COMMUNICATIONS:** All stations have radio communications. Notify **ANY** meet official in emergency situations. Officials **WILL** be posted on courses to prevent tampering with controls and at certain points for safety.

9. **FIRST AID:** A first aid kit will be located at the Finish. Contact any meet official in event of an injury. An emergency walk-in clinic is 5 minutes away. Hilton Head Hospital is 15 minutes away.

VIII. ADMINISTRATION AND LOGISTICS:

a. **START & FINISH**: Due to layout of the park, the start and finish will be located at the Wildlife Viewing Area, about halfway down Sawmill Creek Road on the right. Busses will need to park at the boat landing parking area at the very end of Sawmill Creek Road. I recommend busses drop off the team at the Wildlife Viewing Area and then continue to the boat landing parking area. It's about 1.75 miles away so a little coordination between the instructor, cadets, and the bus driver is required. I apologize for any inconvenience but there's simply not enough room for school busses to park at the Wildlife Viewing Area.

b. **FOOD:** A concession stand will be open throughout the day at the Finish area. Instructors, chaperones, and bus drivers eat free.

c. **INSTRUCTOR MEETING:** A short instructor meeting will be held at the Finish area (the Wildlife Viewing Area about halfway down Sawmill Creek Road on the right) at 0830.   Meet starts at 0900.

d. **PERSONAL PROPERTY:** No area is available to store personal gear or clothing. Security of each school's personal gear is their own responsibility.

e. **REST ROOMS:** Rest rooms at the Finish (Wildlife Viewing Area). Additional rest rooms are available just across Sawmill Creek Road in the Tanger Outlet Mall.

f. **INCLEMENT WEATHER PLANS:** The meet will be postponed only for hail, severe thunderstorms or tornado activity. Rain is considered a mere nuisance. Postponement date will be addressed at the time of expected severe weather. Units will be notified by 1600 on the Thursday before the meet if the meet is to be postponed. Earlier notification will be given if the weather forecast warrants.

We look forward to a very competitive meet, enjoying the great outdoors and having an outstanding time. If you have any questions please call LCDR Pheiffer at Hilton Head Island High School: 843 689-4902, fax: 843 689-4966, or contact me via Navy email (pheiffermt@training.navy.mil).

Entry Form (Enclosure 1)

Hilton Head Island High School NJROTC Orienteering Meet February 6th 2010.

Please return entry form by **14 January**.

Unit _____ phone _____

Point of contact _____

 Please indicate the number of participants (maximum 15 cadets) so I can order sufficient quantities of the maps.

    Yellow course   ___

    Orange course   ___

     Brown course   ___

    Green course   ___

Instructor running? _____ Course: _____

Please make checks payable to Hilton Head Island High School NJROTC (**$75**)

Call or email me with any questions. LCDR Matt Pheiffer W (843) 689-4902 C 843 816-1650 pheiffermt@training.navy.mil

Send this form and the check to the address below:

Hilton Head Island High School NJROTC
70 Wilborn Road
Hilton Head, SC 29926

AGREEMENT OF INDEMNITY FORM   (Enclosure 2)

Whereas the Hilton Head Island High School NJROTC Unit, Hilton Head Island High School and their employees, volunteers, and assigns, hereinafter called indemnities, have agreed to sponsor the Seahawk Classic Orienteering Meet to be held on February 6th, 2010 at the Victoria Bluff Heritage Preserve and to permit (PRINT CADETS' NAME) _____ to participate in said Orienteering Meet and to use various facilities at designated meet site.

(PARENT OR GUARDIAN – PLEASE PRINT)_____ is desirous of holding indemnities free from any and all claims whatsoever arising out of the use of the above facilities or any other facility related to Hilton Head Island High School.
NOW THEREFORE, in consideration of the aforementioned action by indemnities, the above named parent or guardian indemnifies indemnities and hold them, their agents and instrumentalities, employees and successors harmless from any and all torts, claims or liability arising in connection with said facilities from any loss, damage, injury or other casualty whatsoever to the above named cadet or to any other party, person or property, caused or occasioned by the use of any such facilities or equipment or in transporting any persons to, from, in or around said facilities, whether due to imperfection in facilities or equipment, negligence of indemnities or other person or property, or for any other cause.
The action of the indemnities in allowing the above named cadet to participate in the Hilton Head Island High School NJROTC Orienteering event and to use the facilities shall signify acceptance of this offer of indemnity.
 It is also certified that the above named cadet is fully covered by a valid school or other insurance program for any and all injuries which could result from the activities and events of this orienteering meet.

PARENT/GUARDIAN SIGNATURE: _____ DATE: _____

SNSI CERTIFICATION OR WITNESS: _____

PRE-MISHAP PLAN   (Enclosure 3)

Below is a list of emergency medical facilities, fire departments, and police/security that may be needed in an emergency.

I. Hilton Head
     Police emergencies: 911
    Sheriff/non-emergency dispatch: 785-3618
    Fire: 911
    Forest Fire reporting: 1-800-688-2641
II. Local Emergency Resources
    a. A first aid kit will be provided at the meet.
    b. Follow standard procedures for fire, tornado, and other emergency situations
III. Location of nearest medical facility: (15 minutes away)
    Hilton Head Regional Medical Center
    25 Hospital Center Boulevard, Hilton Head, SC 29926
    Main Number: 681-6122

Emergency Department: 689-8281

IV.   In case of injury to a cadet immediately notify the meet coordinator and others as required by your school district.

      A. Meet Coordinator: LCDR Matthew Pheiffer (843) 816-1650

      B. NJROTC Area Six Manager: CDR Gart Jones (843) 764-2081

      C. Navy units that are unable to contact Area Six notify the NETC Duty Desk at (850) 452-4000

V.   Make safety reports as required by your service.

OPERATIONAL RISK MANAGEMENT ANALYSIS   (Enclosure 4)

1.   EVENT: ORIENTEERING MEET SPONSORED BY HILTON HEAD ISLAND HIGH SCHOOL NJROTC

2.   DATE: SATURDAY February 6th, 2010

3.   PLACE: Victoria Bluff Heritage Preserve, Bluffton SC

4.   RISK ASSESSMENT:

a. Orienteering Meet Site Selection: **LOW**

The terrain used for this event consists of mostly level ground with woods and wetlands. Adjacent roads will be encountered. The course is free of steep inclines or declines. Some low hanging branches exist which could cause injury.   The area is about 1100 acres bounded on three sides by paved roads and one side by the Colleton River. Tripping hazards and risk of scratches and cuts normally associated with wooded areas exist.

b. Weather Conditions: **LOW**

Weather is expected to be clear and seasonable, temp in the 70s.

c. Emergency communications and transportation: **LOW**

Land lines, walkie-talkies and cell phones will be available at the orienteering site.   The orienteering site is easily accessible to emergency vehicles. The nearest medical facility is 5 minutes away.

d. Warm-up & Cool Down: **LOW**

Instructors should advise their cadets to stretch and drink plenty of fluids before and after completing their course.

e. Proper Attire: **LOW**

As long as cadets wear sturdy footwear with good traction and long sleeve shirts and pants, there should be low risk due to inappropriate clothing.

XII. Keep Learning

The Orienteering portion of Leadership Academy is intended to get you kick-started.   Use the resources below to make your team the best in Area Six!

Clubs:
Georgia
Georgia Orienteering Club: http://www.gaorienteering.org/
North Carolina
Backwoods Orienteering Klub: http://backwoodsok.org/
Carolina Orienteering Klubb: http://www.carolina-ok.org/

Online:
The United States Orienteering Federation has a terrific web site with tons of useful information and links.
http://www.us.orienteering.org/

Attack Point has some serious training resources for serious orienteering athletes.
http://www.attackpoint.org/

You Tube has orienteering videos. What a shock. Many are entertaining; some have actual training value.
http://www.youtube.com

Catching Features   Getting lost on the big screen feels just like the real thing!
http://www.catchingfeatures.com/

Maprunner You can download nice color control description and map symbol guides.
http://www.maprunner.co.uk/

Fortnet A good online quiz of control codes.
http://www.fortnet.org/icd/.

Books: The books listed below are all terrific sources and ought to be in every orienteering team's library. Get them at either Amazon or one of the orienteering supply links listed on the USOF web site.

Orienteering: Skills and Strategies	Ron Lowry and Ken Sidney
Coaching Orienteering	The official USOF coaching manual – a must have!
Be Expert With Map & Compass	Bjorn Hjellstrom
Teaching Orienteering	Carol McNeill
Armchair Orienteering I & II	Winifred Scott
Beyond Armchair Orienteering	Winifred Scott
Mapmaking for Orienteers	Robin Harvey
Course Planning	Elof Jagarstrom

Magazine:
Orienteering North America   http://www.us.orienteering.org/ONA.html

Directions: This exam is open book. <u>Pay attention</u> during the orienteering presentation and <u>read</u> the Orienteering Training Manual and you will find all the answers. **Do not mark on this exam. Record all your answers on the ANSWER SHEET**. Carefully remove the **ANSWER SHEET** and the **CADET SURVEY** from the back of this manual. **Both your ANSWER SHEET and the completed CADET SURVEY are due to your Platoon Advisor by 2100 Thursday.**

II. KNOW THE RULES

1. Which areas are off limits to competitors without specific permission of the meet director:

      a. yards and gardens
      b. land with growing or standing crops
      c. fenced railways
      d. areas marked "Out of Bounds"
      e. all of the above

2. True or False: You are only required to report in at the finish area if you complete the course.

3. What should a competitor do if he/she arrives at a control point and discovers a missing or broken punch?

4. If you're hosting a meet, you should have water stops every __ _ km along the course.

5. You can avoid needless fumbling with your map if you know that the numbers of each control point are printed with their tops oriented exactly toward _____ (what direction?)

6. By the rules, it is forbidden to obtain outside help or collaborate in running or navigation. Name an exception to this rule.

7. In general, the differences between White, Yellow, Orange, and Brown courses are _____ and _____.

III. UNDERSTAND THE MAP

      PICK THE CORRECT HILL: Look at the map then circle the correct side view of the hill

8.

a.   b.   c.

9.

a.   b.   c.

10.
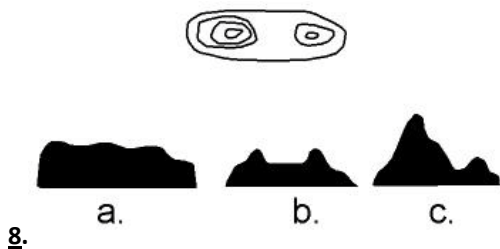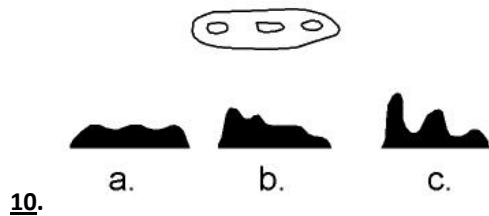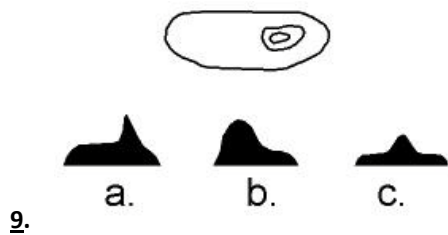
IDENTIFY MAP SYMBOLS: Circle the symbol that matches the description. NOTE: the top of the page is NORTH.

11. A depression in the south-east

a.   b.   c.
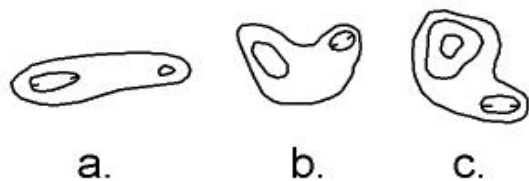
12. A hill north-west of the path junction

a.   b.   c.
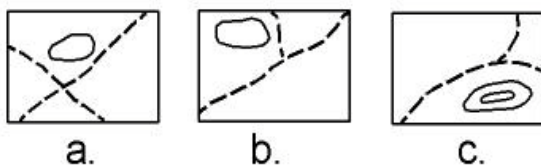
**13.** The re-entrant starts halfway up the slope

a.   b.   c.
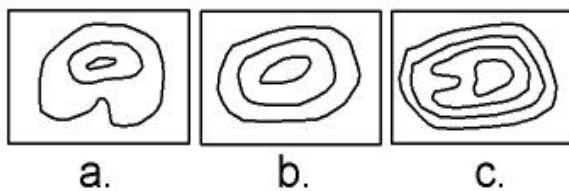
14. The powerline is north of the building

a. b. c.
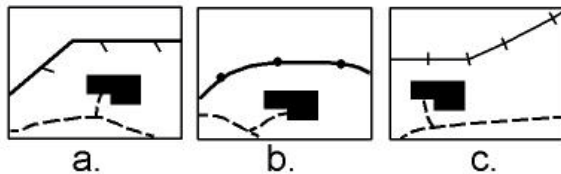
15. A cliff face on the southeast side of the hill

a. b. c.
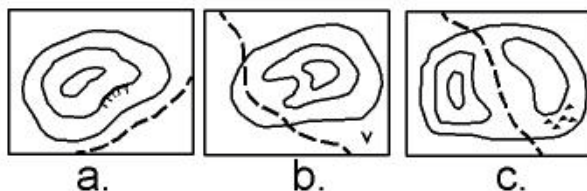
CALCULATE TOTAL CLIMB: Knowing how much climb you'll experience can help you figure out how tired you'll be.   Calculate how much climb you'll encounter following the trail from **A** to **B**. Count all the contours that require you to go up, and ignore the ones that have you going down. Contour interval is **5 meters**.

16.____

17.____

18.____

19.____
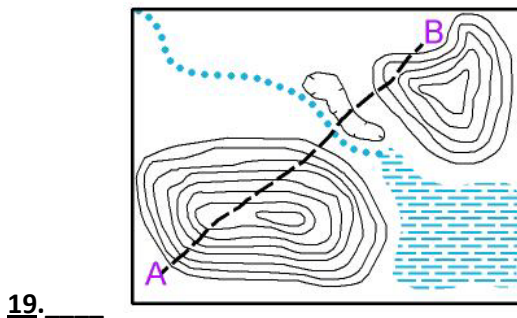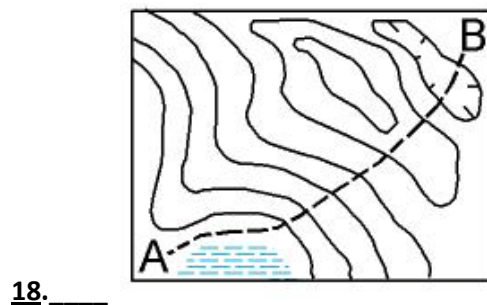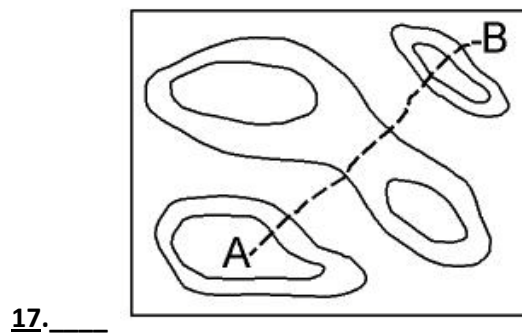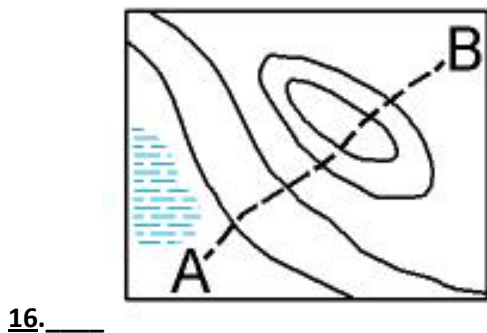
ORIENT THE MAP: To orient your map to your terrain, hold the map so that what's in front of you in the forest is also in front of you on the map. Hold the paper so the arrow points away from you, then answer the questions.

20. You are traveling in a straight line from 3 to 4. How many re-entrants are on your <u>right</u>?
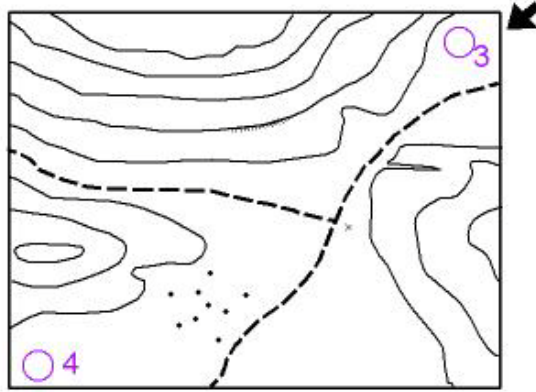
21. Follow the trails from 5 to 6. How many boulders are on your <u>left</u>?
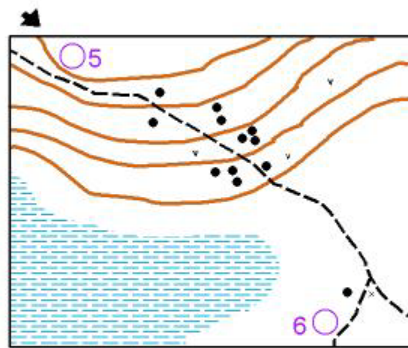
22. Follow the trails from 1 to 2. List everything you see on your <u>right</u>.
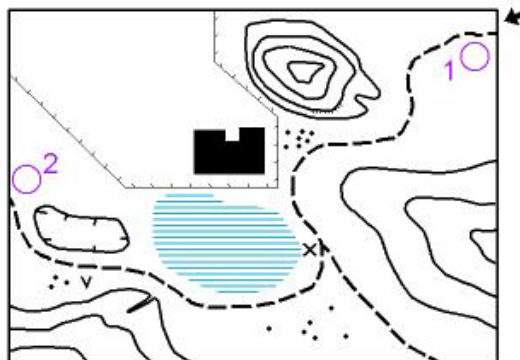
MEASURE LEG DISTANCE

Accurately determining the distance between controls on a map helps you pace count and make route choices.   Using the map scale, determine the distance between controls (measured from center of each control circle). Record your answer in meters.

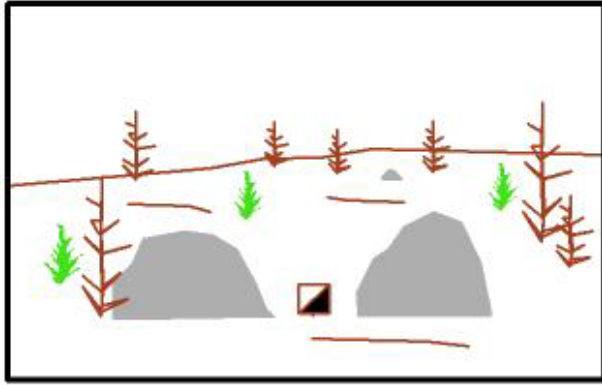**23.** 6 to 7 _____   **24.** 7 to 8 _____   **25.** 8 to 9 _____   **26.** 9 to 10 _____

Contours 3m

400 meters
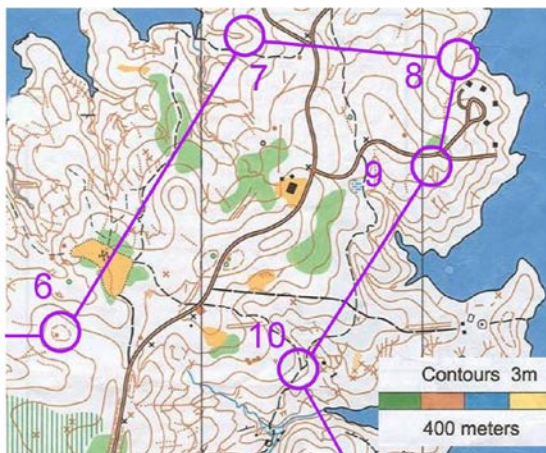
MATCH THE TERRAIN TO THE MAP: Look at the terrain sketch then match it to the correct map

27.

A   B   C

28.

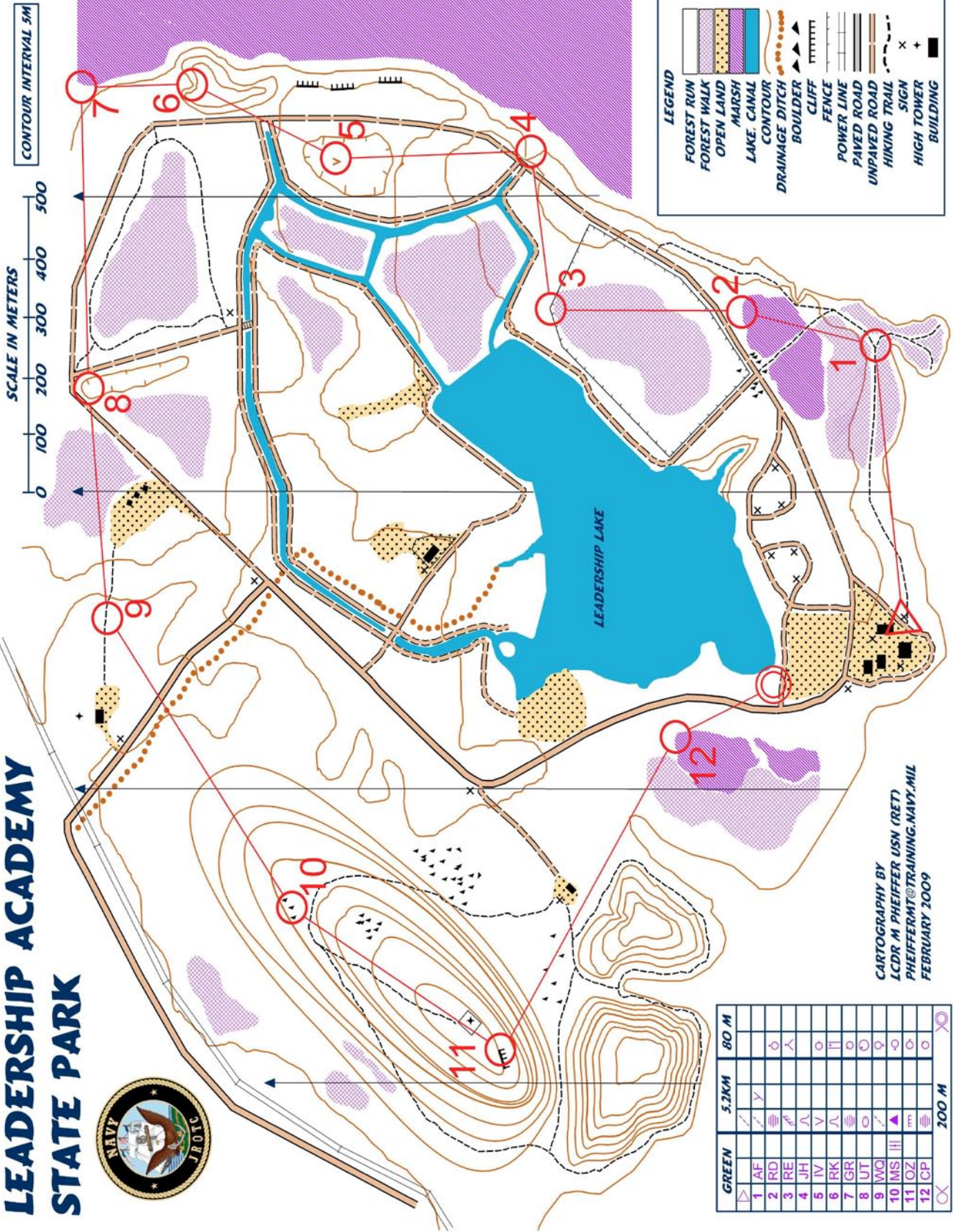A   B   C

29.

A   B   C

62

IV. MASTER THE CONTROL CODES
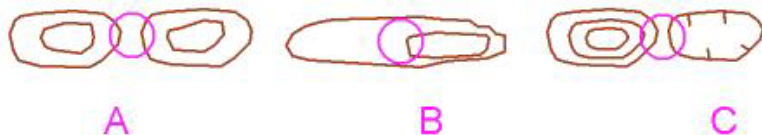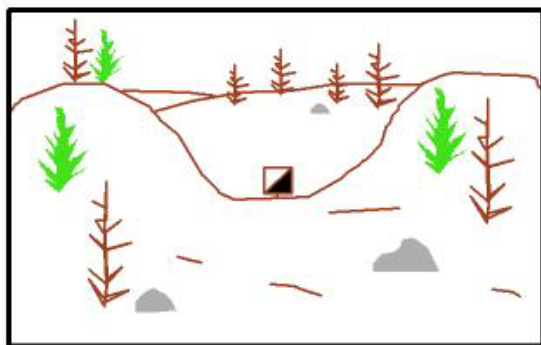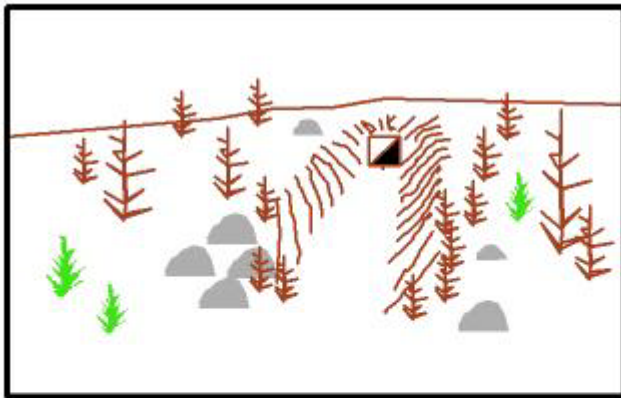
The following ten questions refer to the Leadership Academy State Park map.

30. How long is the Green Course?

31. How many meters of climb will you experience if you follow the optimum route as determined by the course designer?

32. Travel from the Start to Control 1. At what feature is control 1 is located?

33. Follow the trail northeast. At the trail junction, take the trail that goes northwest through the marsh. The trail ends at the unpaved road junction. What manmade feature is directly north of you?

34. You are now at control 2. How far away is control 3?

35. You are at control 5. How much climb will you encounter as you travel to control 6?

36. You are at control 7. In what general direction will you travel to control 8?

37. You are at control 9. Follow the trail west until you get to the building. What manmade objects are to the (a) north, (b) northwest, and (c) southwest?

38. Describe precisely where control 10 is located.

39. Describe precisely where control 11 is located.

V. MAKE A MAP

40. What software program is the standard for making an orienteering map?

41. What are two limitations of using an aerial photo as your background map?

42. What direction should the top of your map be?

43. What size should you print out your map?

44. What is the purpose of field work?

VI. SET A COURSE

45. The White course should be ___% on handrails.

46. On a White course, the first control should be visible from _____.

47. Place controls from different courses at least ___ meters apart regardless of the control feature.

VII. RUN A PRACTICE

48. Remember to warm up, cool down, and _____.

49. Assign cadets both _____ and _____ grades for practices and meets.

50. Why should you keep a course set for two consecutive practices?

51. Using pedometers can be a good way for your cadets to learn to equate distance travelled with _____.

VIII. PREPARE FOR A MEET

52. Why should you review results from last year's meet?

53. Name two reasons to wear a watch for a meet.

54. Name three reasons you really need to cover your legs and arms.

IX. USE COURSE STRATEGY

55. Use pace counting so you don't _____ how far you've gone and slow down too soon.

56. Wear your compass around your _____.

57, Aiming off assumes you can _____ and _____.

58. Don't pick an attack point that is _____.

59, If done precisely, contour following can save you a lot of _____.

60. What is the most important reason not to follow others when you orienteer?

X. ANALYZE YOUR PERFORMANCE

List the four steps you and your team should accomplish after each meet in order to improve your performance.
61. Step 1:
62. Step 2:
63. Step 3:
64. Step4:

XI. HOST A MEET

65. Don't attempt to offer more challenging courses like Green, Brown, Red, Blue, or Score unless you're sure
(a)_____, (b)_____,(c)_____, and (d)_____.

ORIENTEERING EXAM ANSWER SHEET   **CADET NAME_____ PLATOON ___**

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

20. _____

21. _____

22. _____

23. _____

24. _____

25. _____

26. _____

27. _____

28. _____

29. _____

30. _____

31. _____

32. _____

33. _____

34. _____

35. _____

36. _____

37. _____

38. _____

39. _____

40. _____

41. _____

42. _____

43. _____

44. _____

45. _____

46. _____

47. _____

48. _____

49. _____

50. _____

51. _____

52. _____

53. _____

54. _____

55. _____

56. _____

57. _____

58. _____

59. _____

60. _____

61. _____

62. _____

63. _____

64. _____

65. _____

LEADERSHIP ACADEMY ORIENTEERING TRAINING
CADET SURVEY

My goal is to provide the best possible orienteering training to Leadership Academy cadets. Circle your responses. Zero is a complete waste of time and ten is outstanding training.

Get Ready	0 1 2 3 4 5 6 7 8 9 10
Know the Rules	0 1 2 3 4 5 6 7 8 9 10
Understand the Map	0 1 2 3 4 5 6 7 8 9 10
Master the Control Codes	0 1 2 3 4 5 6 7 8 9 10
Make a Map	0 1 2 3 4 5 6 7 8 9 10
Set a Course	0 1 2 3 4 5 6 7 8 9 10
Run a Practice	0 1 2 3 4 5 6 7 8 9 10
Prepare for a Meet	0 1 2 3 4 5 6 7 8 9 10
Use Course Strategy	0 1 2 3 4 5 6 7 8 9 10
Analyze Your Performance	0 1 2 3 4 5 6 7 8 9 10
Host a Meet	0 1 2 3 4 5 6 7 8 9 10
Keep Learning	0 1 2 3 4 5 6 7 8 9 10
Final Exam	0 1 2 3 4 5 6 7 8 9 10
Coastal Carolina Map	0 1 2 3 4 5 6 7 8 9 10
Coastal Carolina Course	0 1 2 3 4 5 6 7 8 9 10

Your suggestions to improve the orienteering training will help future Leadership Academy cadets. Please provide any comments you have regarding the **most** or **least** effective parts of the training, areas for improvement, etc.

Also please give me any ideas or activities that you use at your unit that you'd like in next year's manual. Feel free to email me if you think of something later. **I'll give you full credit (by name and unit) if you contribute any ideas included in next year's manual!**

Comments:

(Optional) Cadet name _____ Unit _____