

Performance Objective 3: Field Skills

Enabling Objectives:

1. **Discuss survival psychology and strategy.**
 2. **Predict a change in weather.**
 3. **Judge a distance.**
 4. **Construct an improvised shelter.**
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Review

1. Remember “**COLD**” if you do not want to be cold:
 - C** - clean clothes breathe and insulate better;
 - O** - avoid overheating by ventilating;
 - L** - dress in loose layers; and,
 - D** - stay dry
2. Items you would ordinarily carry in your pockets are:
 - a. Whistle (plastic);
 - b. Folding pocket;
 - c. Personal identification and medical insurance card;
 - d. Map and compass;
 - e. Survival kit with matches;
 - f. Lip balm;
 - g. Notepad and pencil; and,
 - h. Small flashlight.
3. Emergency Situations. In an emergency situation, remember STOP.
 - a. **Stop** where you are! Do not panic. Many lost people waste valuable energy, and risk injury by panicking—running aimlessly, continuing to travel after dark, walking in circles, etc.
 - b. **Think** about immediate and future dangers and the factors involved in your situation. Consider the time of day, your physical condition, and the last time you had a drink or something to eat. Try to list the options that are open to you.
 - c. **Observe** your immediate environment, weather, terrain, and resources available, and how each of these affects your options. Look for a location for a shelter, for fresh drinking water, and for clues to your location or the route you took to get where you

are now (e.g. 'I followed a stream until it went into a swamp, then I walked over this hill behind me...')

d. **Plan** your best course of action. Include in your plan the methods you will use to signal rescuers.

4. Finding Drinking Water. To finding safe drinking water, collect rainwater or clean water from a spring or a fast moving stream. No matter where you have collected your water in the wilderness, **bring water to a rolling boil, and then cool before drinking.**

5. Lantern and Stove Safety.

a. Safety procedures for the field lantern:

- 1) Fill, light, and use the lantern
- 2) Only fill or pack up a lantern that is cool to your touch;
- 3) Always fill the lantern in a different place than where you plan to use it - stay downhill and downwind from sources of fire;
- 4) Set the lantern on a stable, level and clean surface when you use and fill it;
- 5) Always fill using a funnel; and,
- 6) Ensure that the heat shield is in place.

b. Safety procedures for the field stove:

- 1) Fill, light, and use the stove outside of tents, buildings and confined shelters;
- 2) Ensure no pots or objects are placed on the stove when filling or lighting;
- 3) Never open a pressurized fuel tank when the stove is lit;
- 4) Only fill or pack up a stove that is cool to your touch;
- 5) Always fill the fuel tank in a different place than where you plan to use the stove - stay downhill and downwind from other sources of fire;
- 6) Set the stove on a stable, level and clean surface when you use and fill it; and,
- 7) Always fill using a funnel.

6. Fire Safety. Some safety guidelines to follow are:

a. Ensure you have fire safety equipment available to you before starting a fire. This equipment could be a shovel, rake, pail with sand or water, or a fire extinguisher. This equipment stays by the fire all the time. Never light a fire beside a lantern, stove or fuel container;

- b. Never leave your fire unattended and always ensure the fire is fully extinguished before leaving it;
 - c. Choose a site that is already established as a fire ring/pit/mound, or select a site that is free from combustible ground cover, has no overhanging branches, and is away from buildings (3m). Think about where sparks might fly and pick a site that is appropriate—do not start a fire on a windy day;
 - d. Ensure that you know the regulations concerning fires for the area that you are in. Some parks, conservation areas, and training areas do not allow fires at any time, or may restrict fires when the weather has been hot and dry; and,
 - e. A small hot fire is more efficient and useful than a large bonfire. Always keep the size of your fire under control, and do not use more wood than necessary to keep it burning.
7. Unit Equipment Maintenance. Routine maintenance can be carried out before use and/or each day by:
- a. Cleaning equipment—stoves, lanterns, tools, etc;
 - b. Checking ropes for dirt and damages;
 - c. Check first aid kit, and refill as required;
 - d. Only using the approved fuel in stoves and lanterns, and cleaning spilled fuel immediately;
 - e. Checking sleeping bags and shelters for damage and dirt—clean and repair immediately; and,
 - f. Checking proper operation of stoves and lanterns.
8. Maintenance before Storage. Before storing equipment for a length of time:
- a. Ensure all equipment is clean, dry and in good repair;
 - b. Ensure first aid kit is full;
 - c. Ensure all metal tools are sharp and oiled;
 - d. Remove batteries from the radios, flashlights, etc; and,
 - e. Repair, clean, and refill team storage boxes as required.
9. Stove Maintenance and Repair. Coleman two-burner stoves require regular maintenance to ensure proper operation. Remember not to work on a stove until it is cool to your touch. The most common problems/repairs are:

Problem	Repair
Will not pump—dried out pump seal	Remove pump assembly and apply oil or lip balm to leather seal until pliable.
Will not light—no fuel at burner	Either the generator is blocked, or there is insufficient pressure in the fuel tank. Check fuel level in tank, pump up the tank and try again.
Light, but flame is low and yellow	Low pressure in tank, or generator is damaged or blocked. Pump up the tank and see if the flame improves.
Large yellow flame, singled eyebrows	Move your head back, turn the fuel off and wait for the flame to burn down. You may have turned on the fuel and let too much fuel pool in the burner before lighting (“flooding” the stove), or the generator may not be properly seated in the gooseneck. Ensure the generator is pushed fully into the gooseneck and follow proper lighting procedure.
Generator blocked	Remove generator for replacement or repair.

10. Lantern Maintenance and Repair. Common problems occurring with the Coleman lantern including damage or missing mantles, insufficient pressure in the fuel tank and generator malfunctions as in the stove. To replace a damaged mantle:

- a. Remove the ventilator and globe;
- b. Clean pieces of the old mantle from the burner cap and tie a new mantle in place securely;
- c. Just before using the lantern, light the mantle and let it burn to ash (it will remain in place over the burner cap as long as you do not touch it, or shake the lantern; then,
- d. Replace the globe and ventilator, and follow correct lighting procedure.

11. Bowline. (figure 1) The bowline is often called the rescue knot as it makes a simple loop that does not slip. It can be used to tie around you or throw to someone who needs a lifeline (or to tie to the bow of a ship).

- a. Make a simple overhand loop (looks like the #6);
- b. Pass the short end through the hole from the bottom;
- c. Bend the end around the length, and pass it through the small loop just formed and alongside its own continuation; and,
- d. Tighten the bowline by holding onto the bight formed by the end and pulling hard on the standing part.



Figure 1

12. Fisherman's knot. (figure 2) The fisherman's knot is used to join fishing line and ropes together:

- a. Tie an overhand knot in one of the ropes, do not tighten it;
- b. Pass the other rope end through the loop, and tie an overhand knot.

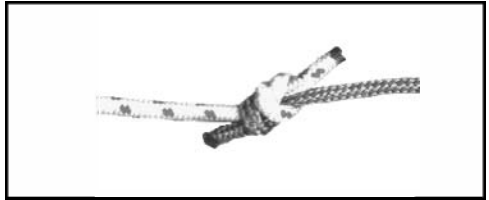


Figure 2

13. Square lashing. (figure 3) A square lashing is used to lash spars that cross at a right angle, touching where they cross.

- a. Start with a clove hitch;
- b. Do three or four wrappings;
- c. Frap twice; and,
- d. End with a clove hitch.

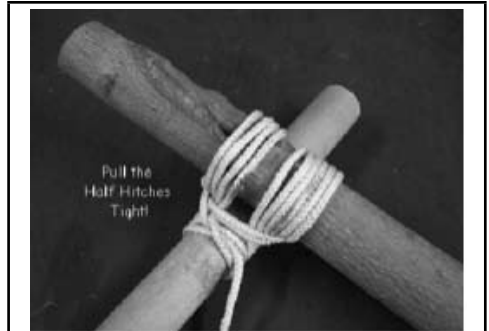


Figure 3

14. Components of a Campsite. A campsite in a pristine wilderness location looks different than an established campground. Each component of the site is spread out, both to make the impact less severe on one area, as well as to protect your team from unwanted visits from local animals. Note that the prevailing wind blows cooking, latrine and garbage smells away from your sleeping area.

- a. Sleeping Area
- b. Campsite Kitchen
- c. Food hang
- d. Petroleum, Oil, and Lubricant (POL) point
- e. Garbage Point (Animal Proof)
- f. Head facility

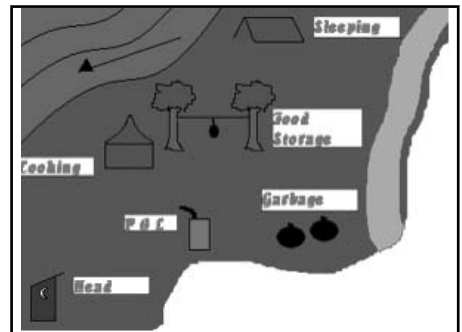


Figure 3-4

g. In an established campsite, the locations for head, wash-up areas, shelters and kitchen may already be set for you. Be sure your team members use these established facilities.

h. Remember to avoid areas that show little use or damage—choose another location to allow that site to fully recover.

15. Tips for Finding a Good Campsite. The key to a good campsite is planning:
- a. Select places where the ground cover is very durable—grass, sand, rock, clear forest floor or snow;
 - b. Avoid wetlands, ferns, new or delicate foliage;
 - c. In the winter, or cold weather, choose a site that is protected from the wind. A location half-way up a hillside, with a south exposure, is a good place;
 - d. Heavy vegetation, wetland and dense brush are havens for insects in warm weather. Look for a site that has some open areas for wind to blow through;
 - e. Always check for danger; and,
 - f. Choose a site that is visually pleasing.
16. Food Hang. All animals are attracted to food. This is why it is very important that when you are out on an expedition that you “animal proof” your food. This could include locking it up in your vehicle, putting it into animal-proof food containers or barrels provided by some parks and wilderness areas, or hanging food packs from a tree.
- a. Before you select a site to hang your food you should be looking around for animal indicators. These could include tracks in the snow, sand, and dirt or on a path. Look for signs on the trees like claw marks, missing bark, and look for animal droppings on the ground. Avoid areas with berry patches, acorns or nut crops on the ground, and orchards— these attract not only humans but also animals.
 - b. When you hang up your food pack, remember that you are to include all of your food, snacks, Gum, candy, any beverage, plus toiletries. In another pack you should put all of your cooking utensils, pots, pans, and all clothing that you cook in. You should never go into your tent with the clothing that you cooked in—change right after cooking and wash your face and hands after meals.
 - c. To hang your food and equipment:
 - 1) Make sure the tree is at least 100 yards from your camp site and cooking area.
 - 2) Find a tree with a strong branch at least 6 yards from the ground. If one is not available use a rope attached to two trees.
 - 3) Make sure the pack is at least 5 yards off the ground and 2 yards from the tree trunk.
 - 4) If available, you can hang food over a rock face or cliff for the night.
 - 5) If the above is not available, hide your food in air sealed containers under bushes and rocks away from any path or trail. You can place pots on top to act as a warning device and deterrent

17. Crossing Obstacles.

- a. When crossing boulders and land obstacles plan your route before starting to cross. Always choose safety over convenience. If you wear your pack across, keep all your straps tight to keep the pack close to your body. You can always take your pack off for difficult obstacles and hand it over to a teammate—on long obstacles makes a chain of people to ferry packs. On difficult obstacles one person can act as a spotter for the next. Keep your hands free for balance—do not try to carry something while crossing. Ensure that the obstacle does not become too crowded and keep extra distance between each person.
 - b. Do not try to wade through a water obstacle where the water is above your knee, or if the water is fast flowing. Always be sure you can see the bottom clearly. If the water is murky and you cannot see the bottom, find another way across. Examine the consequences of falling in before considering crossing a makeshift or suspicious bridge. Do not risk falling into deep, cold or dangerous water because you are too lazy to look for another route. With the appropriate safety equipment, your leader may choose to cross or make a bridge. Only cross a deep or unknown water obstacle with the direct supervision of an adult leader.
 - c. When you cross, remove your pack and ferry it across (ensure it is waterproofed!), or carry it on your back with the waist belt and sternum strap undone, and be ready to remove your pack if you fall. Do not cross a water obstacle alone. You can use a walking stick as an aid for balance and cross in pairs or groups. If the bottom is smooth, you may want to remove your boots and wear running shoes or sandals across. If the bottom is rocky, wear your boots—if the water is not too cold you may want to remove your socks to keep them dry. Always dry your feet after crossing.
18. Bears. Bears pose a distinct threat to you and themselves. They will often visit areas inhabited by humans, usually to their own detriment. Inform yourself as to signs of bear activity, and avoid areas where you suspect bear activity or where bear warnings are posted (e.g. garbage dumps, in some areas of national parks). There are several breeds of bears you may encounter in the United States. The most common are Black bears and Grizzly bears.
- a. Do not surprise a bear. Never startle, crowd, corner, pursue or approach a bear for any reason. The space a bear needs to feel unthreatened varies from a few feet to several hundred meters.
 - b. Control bear attractants. Bears have a strong sense of smell and, as omnivores; they are attracted to just about any food source. Minimized foods with strong odor (e.g. bacon, fish), perfumes, and scented toiletries (sunscreen, shampoos, etc.).
 - c. Properly dispose of all garbage or seal in an airtight container. Wash all equipment (packs, sleeping bags, stoves, etc.) before bringing to the wilderness and again if they get food spilled or cooked onto them. Clean pots, dishes and utensils immediately after use. Dispose of wastewater at least 100m away from cooking and campsites.
 - d. Do not feed bears. Keep as clean as possible. Do not sleep in the same clothes you ate or cooked in. Choose unscented personal hygiene items and secure them over night in the same manner as food—away from the campsite. Used feminine hygiene

products should be sealed in a plastic bag and packed out as garbage - do not try to burn or bury them.

- e. Inform yourself on the appropriate action to take if confronted or attacked by a bear. Read research material, always travel in a group of four or more, and take precautions to protect you and the bear. Carry bear repellent spray (or other deterrent) for use only as a last resort. Report bear encounters to the appropriate authorities as soon as possible. Some people choose to wear bells attached to their packs to alert bears that may not be within sight.
 - f. In the case of confrontation or attack, stick together and keep your pack on. Face the animal and back away slowly. You cannot outrun or out-climb a bear so do not try.
19. Wildcats and other Dangerous Animals. Bears are not the only dangerous animals in the wilderness. Wildcats, wolverines, wild dogs, and even moose can be dangerous when provoked, or while hunting. It is your responsibility to protect yourself, as well as them, from harm. Follow the steps for bear-proofing yourself, your kit, and your campsite.
- a. Cougars, mountain lions, and pumas are all the same species of large wildcat. They are rare, however their population is increasing, and the expansion of human development is encroaching on their natural habitat. Take the same precautions as for bears. When a wildcat attacks it is usually hunting and will target what it thinks is easy prey. By staying in a group and keeping your pack on you will likely not look much like lunch.
 - b. Never provoke a big animal. Moose, caribou, elk, musk, ox, and even domestic cattle will protect their territory and their young. Give them a polite amount of space. If confronted, stay in a group and back away slowly. Think of the headlines, "Young Marines trampled by Bessie the cow."
20. Poisonous Snakes. Poisonous snakes are common in the United States. Rattlesnakes are found in all parts of the United States. Bites are painful but not usually fatal. These snakes will likely be found on warm rocks, or curled up in crevices and under rocks, in dry and warm climates during the summer months (May to September). Give them their space. They will only attack in self-defense.
- a. Any bite victim must seek medical attention immediately. Move the victim away from the snake to avoid a second bite. Treat victims by rinsing the bite area with clean water, applying a cold compress, immobilizing and elevating the bite area, keeping them calm and transporting them with the victim at rest. Be prepared for the victim to develop respiratory problems. Do not apply a tourniquet.
 - b. Report a bite or sighting to local wildlife authorities.

E.O. 1. Discuss Survival Psychology and Strategy.

1. Survival Psychology and Strategy. Not too many people plan to get lost and have to survive outdoors. In fact, what makes a situation one of survival are the circumstances of emergency or sudden departure from the plan. Getting lost and having to

sleep out overnight, in a tent, with all your equipment is not survival—it's camping.

- a. So, a survival situation is the absence of all, or most, of the equipment and conditions you expect in a routine outdoor experience. Injuries, accidents, severe weather, human error, or quite often, a combination of several factors lead people into survival situations. It is when you are left outside with only the contents of your pockets that you are faced with the real life or death struggle of survival.
- b. Recent search and rescue statistics tell us that 92% of people that die when lost die within the first 4 days (with 50% of mortalities occurring within the first 24 hours). This puts a new perspective on survival strategy. Before you need to learn how to hunt or trap animals, or select edible plants, you simply need to be able to live through the first few days—with heat, shelter, water, and the ability to assist searchers in finding you.

2. The Survival Priority List.

- a. First Aid—for yourself and others. Treat all injuries to the best of your ability. Any health problems left untreated can severely affect your ability to carry out all the other actions required for survival. Complete first aid also includes observing and analyzing current or future dangers.
- b. Fire—is a lifesaver! It will provide an important source of heat, assist in providing safe drinking water, and will be a primary tool for signaling your location to rescuers. Even under wet conditions you can start a fire. Gather what you think is enough fire wood, and then times that by four, that should be enough. Start collecting wood far from your site, and then as you grow weaker, collect from closer in.
- c. Shelter—is what is going to keep you alive for any extended period of time. You need your shelter to be waterproof, windproof and as insulated as possible. Select a safe location, protected from the elements, but close to a clearing for your signal, and as close as you can to fresh water.
- d. Signals—a clearing is the best place to make a signal; anything can be used to make your signal. Toilet paper, rocks, fire and smoke, a mirror, piles of branches, patterns in the snow, etc. Place objects in the form of a triangle as this is a universal distress signal. Bright fire during the night and smoky fire during the day are your best signals.
- e. Water—you can only survive for three days without water. Heating the water to drink will increase your body core temperature in poor conditions. Always melt snow before ingesting as it uses more fluid for your mouth to melt snow than a mouthful of snow provides. Remember the rules for safe drinking water—do not make yourself sick by drinking water from a suspicious source.
- f. Food—you can go a long time without food if you are conserving your energy and body heat. You cannot rely on the availability of large game, or your ability to catch it to provide food. In some locations plants with nutritional value may be sparse.

Choose food that will give you more food energy than the energy you will expend trying to get it. In most cases the simple things to eat are:

- 1) Snails (lakeshores, forests and fields - boil them);
- 2) Bugs, ants, grubs, grasshoppers and maggots under rocks, logs, near fields - wash them before boiling, or roasting); and,
- 3) Plants: in the north, rosehips are good - eat the flesh and get rid of the seeds and bristles, cattails - eat the roots of them).

There are many other edible things in the wilderness. You can enhance your awareness through proper research, preparation and cooking.

3. The Psychology of Survival. Fear is a normal reaction for people faced with an emergency that threatens any of their important needs. Fear influences your behavior, and thus your chances for survival. Acceptance of fear as a natural reaction to a threatening situation will lead to purposeful rather than random behavior, and in this way will greatly increase your chances for survival. Fear and confidence are not opposites - a reasonable person can acknowledge fear and still remain confident in their ability to overcome it.







Fear. How people react to fear depends more on them than on the situation. Physical strength may not be as effective a tool against fear as a sense of humor, or a cool head under pressure. Some fears can lead directly to a sense of helplessness and hopelessness. Fear must be recognized, lived with, and if possible, used to your advantage by channeling your excess energy created by adrenaline towards the tasks at hand. You can fight this by identifying each fear, understanding it, and coping with it.

- a. **Fear of the unknown** - "What is out there? What's going to happen to me? Where is it safe?" By accepting this fear as normal you can remain calm and begin to answer each question. Do not criticize yourself for having critical or negative thoughts, just concentrate on, and resolve each new question or problem calmly and confidently.
- b. **Fear of your own weakness** - this leads to a pessimistic attitude and then giving up. Compare the current problem with successful solutions you have used (or learned about) in the past to get through something similar.
- c. **Fear of discomfort** - is what causes people to continue into bad storm to get back to the warmth and security of base camp, instead of stopping and making a safe, albeit uncomfortable, emergency shelter for the night before they are soaked, exhausted and hypothermic.
- d. **Fear of being alone** - even the most independent people can feel the effects of loneliness unless steps are taken to adapt to, and deal with the isolation.
- e. **Phobias** - about the dark, or animal, etc. - people with phobias can easily imagine their worst nightmares coming true, especially in the stressful survival situation. Again approach each fear with an action plan and an understanding of this fear in context with the whole situation.

- f. **Fear of suffering or death**—actually might be your strongest ally in survival. If you always keep it in your mind that unless you act you can die, you can use this energy to focus yourself in tough times. By accepting this fear, and not dwelling on it, you can rate your plans on whether a specific action is going to keep you alive or not. Have confidence in your teammates', your leader(s) and rescuer's abilities to get you out.
4. Seven Enemies of Survival. Pain, cold, thirst, hunger, fatigue, boredom and loneliness - everyone have experienced these, but few have known them where they have threatened their survival. With these feelings, as with fear, the more; you know about them and their effects on you, the better you will be able to control them, before they control you.
- a. **Pain**. Pain is your body's way of making you pay attention to something that is wrong with you. Carry out appropriate first aid to the best of your ability. Pain that is ongoing will seriously impact your ability to remain positive and get required work done. Keep your mind occupied with the important work, and allow enough time for rest and recuperation.
- b. **Cold**. Cold is a much greater threat to survival than it sounds. It not only lowers your ability to think, but it also tends to lower your will to do anything but get warm again. Even a few degrees drop in your body temperature can affect your ability to make reasonable decisions. Fire and shelter are your primary methods of keeping warm, in any season—you will not have the energy to work to stay warm for any real length of time.
- c. **Thirst**. Thirst even when thirst is not extreme, it can dull your mind. As with pain and cold, lack of water will slowly degrade your ability to survive. Make a point of drinking regularly.
- d. **Hunger**. Hunger is dangerous because of the effects it can have on the mind, primarily in lessening the person's ability for rational thought. Both thirst and hunger increase a person's susceptibility to the weakening effects of cold, pain and fear. Solid food is not a real necessity until a week or more has passed—this is not to say that you would not eat given the chance. It is usually the fear of starving to death—a fear that manifests itself long before the risk of starvation is real—that leads people to making poor decisions about safe or appropriate food.
- e. **Fatigue**. Fatigue, even a very moderate amount of fatigue can reduce mental ability. Fatigue can make you careless—it becomes increasingly easy to adopt the feeling of just not caring. Fatigue may represent an escape from a situation that becomes too difficult. If you recognize the dangers of a situation you can often summon the strength to go on.
- f. **Boredom and Loneliness**. Boredom and loneliness are two of the toughest enemies of survival. They are dangerous mainly because they are unexpected. When nothing happens, when something is expected and does not come off, when; you must stay still, quiet, expected and does not come off, when you must stay still, quiet, and alone, these feelings creep up on you. Keep your self busy, even if it means creating

luxuries around your shelter, fishing or setting traps, etc.

5. Attitudes for Survival. “[Human] capacities have never been measured: nor are we to judge what we can do by any precedents, so little has been tried. What people say you cannot do, you try and find you can.” --H. D. Thoreau
- a. “I can handle this.” The willingness to approach the situation in control, and the confidence, will go a long way towards getting you out alive.
 - b. “I know what to do.” Research has shown that survival knowledge and skills, when employed, are key elements in successful survival stories. The ability to react to a new successful survival stories. The ability to react to a new situation will create a sense of confidence and security.
 - c. “I am a survivor!” Curiosity, humor, imagination, willpower and common sense are the attributes of a survivor.
 - d. “I can take care of myself.” Knowing what to do, how to do it and having the confidence to act on these strengths will keep you from being a burden on other team members, as well as allowing you to be an active leader. Positive acts and attitudes are contagious.
 - e. “I will get out of this.” Remember that people are likely looking for you—even if you fear that no one will find you.
6. Emergency Signals. You can use anything to form a triangle (make three points) to use as a distress signal. Use rocks, a big pile of logs and brush, or anything as long as it is in an open area that can be seen from above. Fire is another form of communicating. During the day, use a smoky fire burning green brush; at night use a bright fire using dry softwood branches. Triangles and signals in sets of three are international distress signals.
7. Ground to Air Signals Letters should be at least 30 feet long and visible from the air (open river banks, clearings, frozen lake, etc.). If making a signal in winter you must make sure that you stomp down the snow so a shadow appears to form the signals.

		
Require Doctor	Require Medical Supplies	Require Food and Water
		
Unable to proceed, require help	Going this direction	Need map and compass
Figure 3-4		

E.O. 2. Predict a Change in Weather.

1. Weather. Knowing the weather influences your choice in clothing, routes, plans, etc. One thing to remember is that weather is a combination of systems, and as such, it gives warnings of change in advance of a new system. Your ability to notice and interpret these warnings will give you an advantage in making decisions for your team's safety and well being.
2. United States Weather Systems. Over the United States, warm air (tropical) masses usually move north from the Caribbean and cold air (polar) masses move south from the arctic through Canada. Air masses can form over both the land and the ocean. Air masses generally move from west to east. Weather associated with a polar air mass is apt to change abruptly as the cool air warms rapidly over land, while weather associated with tropical air masses will likely remain constant for a while, as the air is already warm.
3. Air pressure. The force air exerts on an object—is affected by air temperature. Cold air is heavier, and therefore creates areas of high pressure as more air is close to the ground. Warm air creates low pressure because warm air rises and reduces the pressure on the ground. These areas are called pressure systems. The line where two air masses meet is called a front. There are three types of fronts: warm, cold, and occluded.
 - a. Warm fronts—are more stable than cold that makes the weather less severe, but longer lasting. As warm air meets cold, it raises over the cold. And the moisture in the air condenses creating clouds and possibly precipitation. Warm fronts move between 15-30km/h, and the air is moist with low ceilings and poor visibility, but there may be no appreciable precipitation. Warm fronts can be forecast up to two days in advance by as consistent sequence of cloud formations—cirrus, cirrostratus, altostratus, and then nimbostratus.
 - b. Cold fronts—are unstable compared to warm fronts. They are consequently very active. As cold air comes in contact with a warm air mass, it forces itself underneath, pushing the warm air up where the moisture condenses into clouds and possibly precipitation. Weather conditions are commonly more severe, although shorter in duration than those associated with a warm front. Cold fronts move between 30 and 50 mph, and from the north or west. Cold fronts can arrive with little warning, altostratus clouds usually proceeding nimbostratus and cumulonimbus.
 - c. Occluded fronts—occurs when one air mass is caught between two others. In most cases, the weather will include precipitation, often heavy—altostratus clouds preceding cumulonimbus.

4. Types of Cloud Formations.

- a. Cirrus—are detached clouds in the form of white, delicate filaments or white (mostly white) patches or narrow bands. These clouds have a fibrous (hair-like) appearance, or a silky sheen, or both. Cirrus clouds leave milky white swirls and curls etched across the sky.



Figure 3-5

- b. Cumulus—Often referred to as heap clouds, cumulus clouds are typified by heaped or fluffy formations.



Figure 3-6

- c. Cirrocumulus—High-level heap clouds. Very often seen combined with cirrus clouds. Cirrocumulus clouds indicate a condition of unstable air and may lead to precipitation before long.



Figure 3-7

- d. Fair-weather cumulus—Low-level cumulus clouds that often form in the late morning or early afternoon. Clouds are not very dense, are white in color, and are well separated from one another. These clouds form when the air mass is stable and being warmed.



Figure 3-8

- e. Cumulus congestus— High-level cumulus cloud formed by massive uplifting of heated air within a very unstable air mass. Its top is still bumpy and forming. If clouds form in the west there is a likelihood of gusty winds and showers in 5 to 10 hours.



Figure 3-9

- f. Altopcumulus—medium-level, fleecy or puffy clouds, similar to dense cirrostratus, but without any telltale halo. When viewed in the morning expect precipitation within twenty-four hours (often that afternoon).



Figure 3-10

g. Cumulonimbus—Often massive cumulus with a broad base ranging from 3,000 feet upward to 16,000 feet, even 65,000 feet is not unusual. Top is fuzzy or anvil shaped. Heavy downpours, coupled with hail, lightning, and thunder, are common.



Figure 3-11

h. Stratus—means layered, essentially formless with no real defining base or top. Fog is a type of stratus cloud that lies close to the ground and is caused when the earth's surface cools. This cooling effectively lowers the air temperature, resulting in condensation.



Figure 3-12

i. Cirrostratus—High-level veil-like cloud formations composed of ice crystals and often spreading out over a very large surface area. Halos around the sun are very often observed in cirrostratus clouds. When observed decreasing in size, it indicates a lowering of the cloud ceiling and possible precipitation within forty-eight hours.



Figure 3-13

- j. Altostratus—Medium-level clouds that are flat, and dark grey in color. A darkening of the cloud cover indicates possible precipitation within forty-eight hours.



Figure 3-14

- k. Nimbostratus—Low-level, dark and thick clouds, often without any real defining shape. Their ragged edges, known as scud, produce steady precipitation.



Figure 3-15

5. Forecasting from Clouds.

- a. When the weather is going to change for the worse you will notice several general cloud activities. Clouds, regardless of their formation, will thicken (darken), increase in numbers and join together, form layers or stacks, and/or lower in elevation. Clouds that form banks in the west, with winds from the south forecast storms. Other signs of change for the worse are:

- 1) Clouds that are moving in all directions, contrary to the ground wind;
- 2) Altostratus clouds that darken and lower mean precipitation over the next 24 hours;
- 3) A halo around the moon;
- 4) Altocumulus clouds moving quickly across the sky, or forming with turrets in the morning are signs of storms within 12 hours; and,
- 5) Cumulus clouds forming in the morning and stacking in the afternoon, or moving from the south or southwest, expect rain or storms that day.

- b. When the weather is going to change for the better you will notice the cloud cover lifting, becoming lighter and small patches of blue sky developing. If cumulus clouds form in the afternoon or float alone without stacking, expect fair weather for 24 hours. Stratocumulus clouds drifting with the prevailing wind remaining scattered indicates 24 hours of the current weather.
6. Forecasting from Winds.
- a. Changing for the worse:
- 1) Winds from the east increasing in speed;
 - 2) Winds from the south increasing in speed; or,
 - 3) Winds shift in a counter-clockwise direction.
- b. Changing for the better:
- 1) Winds from the north-west usually indicate clearing, or continued clear weather for 24 hours;
 - 2) Winds from the south or north decrease; and,
 - 3) Winds change in a clockwise direction.

E.O. 3. Judge a Distance.

1. Unit of Measure Method. This method relies on you observing and remembering a measured distance and then estimating other distances using your “unit of measure.” The most common unit of measure is 100yds. Your local soccer or football field is 100yds long. Stand at one end and familiarize yourself with the distance. This distance then becomes your imaginary measuring stick as you place it between yourself and the object you are judging a distance to. By saying to yourself. “That object is 3 football fields away”—you have judged it to be 300yds. This method can only be used when there is nothing obstructing your field of vision.
 2. The Appearance Method. Another way to judge the distance to an object is to study what it looks like compared to its surroundings; this is called the appearance method. It takes a lot of practice to become good at it. One way of practicing is to again go back to the place where you have accurately measured a 100yd-mark so you can memorize what they look like at that distance. Do the same with the targets at 200yds, 300yds, 400yds or more. You can learn to judge distance from the appearance of the object, i.e. from its size and the amount of detail you can distinguish.
- a. The following may be used as a guide to judge the distance between you and another person:
- 1) 200yds—all parts of the body are distinct;
 - 2) 300yds—outline of the face becomes blurred;

- 3) 400yds—outline of the body remains clear but the face is difficult to distinguish; and,
- 4) 500yds—the body appears to taper from the shoulders and movement of limbs cannot be observed.

b. An object will appear closer than it is when:

- 1) The object is in bright light or the sun is shining from behind you;
- 2) The color of the object contrasts sharply with the color of the background;
- 3) You are looking over water, snow or a uniform surface;
- 4) There is terrain between you and the object that you cannot observe because of an obstruction; and,
- 5) It is larger than other things around it.

c. An object will appear further away than it really is when:

- 1) There is poor light or fog or the sun is in your eyes;
- 2) Only a small part of the object can be seen;
- 3) You are looking down a street or tree-lined road;
- 4) The object tends to blend with the background;
- 5) The object is smaller than other things around it; and,
- 6) You are lying down.

3. The Halving Method. The first two methods are great from distances under 500yds, but when the distance is greater, they become more difficult. By breaking the total distance in half (and even breaking that half into quarters) you may be able to employ the unit of measure, or appearance methods to judge the smaller distance. Once you have judged the fraction of the total distance (1/2, etc.) just do the math.
4. The Bracketing Method. This method is a very rough estimating tool. Say to yourself, "That object is a least X yards away, but it is not Y yards." Take the average of the two estimates, for example if "X is 600yds and "Y" is 1000yds, your distance is 800yds. This is definitely the fastest method to use.
5. The Unit Average Method. When you are uncertain of the distance to an object, get several of your teammates to judge the distance using their choice of the previous methods. Calculate the average of all estimates. This method takes the longest, but quite often a group of skilled Young Marines will be very accurate.

E.O. 4. Construct an Improvised Shelter.

1. Improvised Shelters. Types of improvised shelters: a. Lean-to;

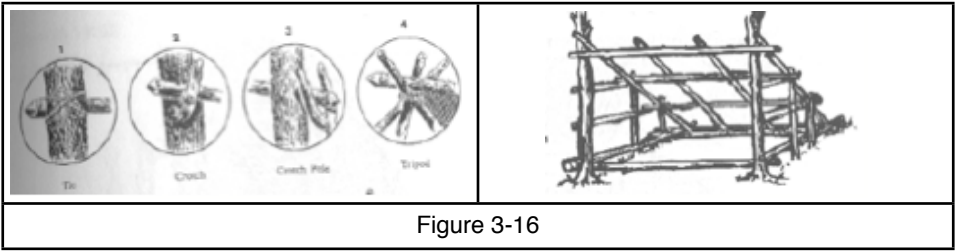


Figure 3-16

b. Lopped tree shelter;

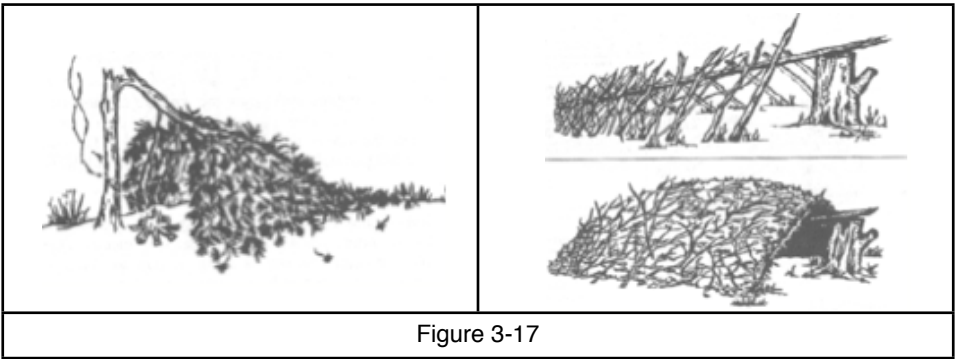


Figure 3-17

c. Snow shelter

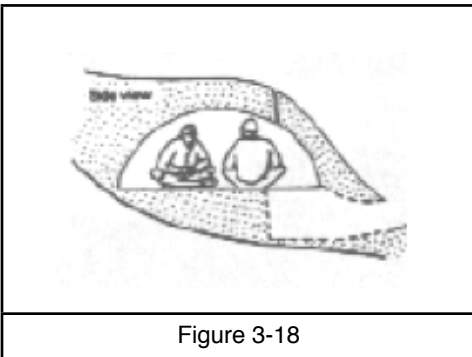


Figure 3-18

PERFORMANCE QUALIFICATION REVIEW
Performance Objective 3: Field Skills

E.O. No.	Enabling Objective Description and Performance Requirement	Authorized Evaluators Signature
1	Discuss survival psychology and strategy.	
a.	Knows what a survival situation is	
b.	Knows what the recent search and rescue statistics are for people who get lost	
c.	Knows the 6 priorities of survival in order	
d.	Understands that fear is a normal reaction to surviving	
e.	Knows the 7 enemies of survival	
f.	Knows the 6 ground to air signals	
2	Predict a change in weather.	
a.	Understands United States weather systems	
b.	Knows the 3 types of fronts	
c.	Can name 3 types of cloud formations	
d.	Knows how to forecast good and bad weather using the clouds	
3	Judge a distance.	
a.	Knows how to use the 100 yard method	
b.	Knows how to use the appearance method	
c.	Understands the halving, bracketing, and unit average method	
4	Construct an improvised shelter.	
a.	Can name 3 types of shelters	
b.	Can successfully construct a lean to shelter	