

RED STAR FAST TRACK GUIDE



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INTRODUCTION

This guide was created in order to give you the basic knowledge that you require as a Cadet while you start in the Silver Star Program. The information contained has been deemed necessary information for you to be able to succeed as a Cadet. You will receive knowledge about Drill, Fundamentals, as well as Bushcraft. These skills will be enhanced as you progress through the Cadet program and will be evaluated as they are conducted. It is your responsibility to read through this guide, ask questions, and once you are done you will be tested on the information you have learned.

MISSION

The mission of the Cadet Program is to contribute to the development and preparation of youth for the transition to adulthood, enabling them to meet the challenges of modern society, through a dynamic, community-based program.

VISION

The vision of the Cadet Program is a relevant, credible, and proactive youth development organization, offering the program of choice for Canada's youth, preparing them to become the leaders of tomorrow through a set of fun, challenging, well organized and safe activities.

AIMS

The aims of the Cadet Program are to:

- Develop in youth the attributes of good citizenship and leadership;
- Promote physical fitness; and
- Stimulate an interest of youth in the sea, land and air activities of the Canadian Forces (CF).

MOTTO

The motto of the Army Cadet Program is "Acer Acerpori". Acer Acerpori is a Latin term which means "as the maple, so the sapling".

M203.01 – LEADERSHIP IN PEER SETTING

There are some responsibilities common to every Red Star cadet in the corps. They are:

Following the Chain of Command. Following the chain of command ensures that all information that must be passed up and down the chain is delivered. Following the chain of command prevents gaps in the information flow.

Setting the Example. A Red Star cadet must set a personal example in dress and deportment. A good leader will never ask more of their followers and teammates than they are willing to give themselves.

Being Firm, Fair and Friendly with Everyone, Especially New Recruits. No one is impressed with a Red Star cadet who yells, least of all new cadets. A highly influential and respected Red Star cadet is one who is consistent in their approach to people and each situation. Being approachable at all times should enable the cadet to fulfill all duties and responsibilities in an effective manner.

Being Respectful to Superiors and Subordinates. Using a proper tone of voice, looking people in the eyes when they speak and standing up straight is a physical way to show respect. If the Red Star cadet wishes to be treated with respect, they must display respect toward others.

Being Aware of Safety Hazards.

Displaying Initiative. Undertaking small matters, like cleaning up, before being told to do so is an example of using initiative. Superiors notice when small tasks are completed without any request to do so.

Setting Goals. Every leader needs to set goals. Goals allow people the opportunity to turn ideas into results. A goal is a glimpse of the future. Setting goals like improving their drill, dress and deportment, gives Red Star cadets something to strive for. By setting goals, and working towards them, a Red Star cadet will show commitment.

M203.02 – PRINCIPLES OF LEADERSHIP

Leadership is a demonstrable skill. This means it can be displayed and observed. Leadership can be learned and the skills involved can be improved with practice. Within leadership there are a set of principles that may be used to improve leadership ability.

PRINCIPLES OF LEADERSHIP

Leadership is influence

The ability to influence others is fundamental within the leadership process. Everyone influences someone. People are influenced by those around them on a daily basis: friends, family, teachers, newsmakers, athletes, etc. all influence others. In turn, those same people are influenced.

Influence can be positive or negative

There are many people who use their influence in a positive manner and while doing so help their community, their school, their family, and the world around them. There are some people who use their influence in a negative manner and while doing so do not help anyone including themselves.

Leadership can create opportunities in life

Qualities of leadership are learned and practiced, therefore improving your ability to lead may create opportunities in life. Throughout the Cadet Program, cadets may be given many occasions to lead. Success in a leadership role may lead to greater leadership opportunities with bigger challenges, more responsibility, rewards, etc.

ACTIVITY

1. Why is leadership a demonstrable skill?
2. Name the three principles of leadership.
3. Success in a leadership role may lead to what?

M203.03 – EFFECTIVE COMMUNICATION

Effective communication is a critical skill for leaders in a peer setting. Communication is the exchange of thoughts, messages and information. It is the process of sharing knowledge, interests, attitudes, opinions, feelings and ideas with others. Through communication one person can influence others. Effective communication may also be used to resolve and/or reduce problems and conflict.

COMMUNICATION IS A SKILL

Like any skill, the ability to communicate with competence must be learned and developed over a lifetime. Communication skills permit the flow of ideas from one individual to another or to a group, and vice versa. The process of communication can include both verbal and non-verbal messages.

NON-VERBAL COMMUNICATION

Non-verbal communication uses many channels for sending and receiving information. Information is received through all our senses (taste, sight, smell, touch and sound). Some aspects of non-verbal communication include:

- **Eye Contact.** Looking directly at another person when speaking is an effective way of indicating sincerity and getting someone's attention.
- **Body Posture.** The weight of the message being sent will be increased when facing the person being spoken to, standing or sitting closer to them and leaning forward. Using correct body posture when listening is also an effective way of indicating interest in the conversation.
- **Gestures.** A message that has a body gesture attached to it takes on added emphasis.
- **Facial Expressions.** When making a statement, make sure facial expressions agree with the message.
- **Voice Tone, Volume Changes.** Shouting may cause people to become defensive, just a whispering may cause people to tune out the message. Make sure voice levels are correct for the space and that statements are convincing without being intimidating. Being able to read non-verbal responses to communication, while leading in a peer setting, may help cadets understand how they are being perceived.

SENDING, RECEIVING AND RESPONDING TO A MESSAGE

Communication consists of three things: sending, receiving and responding to a message. The sender must deliver a clear message, taking into consideration the characteristics of the individual(s) receiving the message. Is the person a child or an adult? Is there one person, or are there 20? These and similar factors all determine how the message should be sent. Next, the message is received. It is important to remember that receivers translate what they have heard based on their own set of definitions, which may differ greatly for those of the sender. The final component of communication is response. A response lets the sender know the message has been received. All three parts are necessary for effective communication.

THREE STYLES OF COMMUNICATION

Aggressive Communication. A person who is an aggressive communicator puts their own wants and needs ahead of everyone else and they often ignore or belittle other people's concerns.

Aggressive communicators often:

- talk over people and interrupt;
- make sarcastic, demeaning or threatening remarks;
- consider only their own point of view; or
- stand too close, lean over you or in some other way make you feel physically uncomfortable.

Aggressive communication usually leads to hostility, anger and resentment.

Passive Communication. A person who is a passive communicator puts other people's wants and needs ahead of their own and often denies what they want or need. Passive communicators often:

- hardly ever say what they want or need;
- let others make decisions for them;
- avoid conflict and disagreement at all costs; and
- drop hints rather than directly request that something gets done.

Passive communication usually leads to bad feelings and damages relationships.

Assertive Communication. A person who is an assertive communicator uses skills based on mutual respect. Assertive communicators can say how they see things and hear how others see things. They work towards outcomes that satisfy everyone. Assertive communicators often:

- are open and honest about what they are thinking and feeling;
- make direct requests if they want something done, leaving the option to say "no";
- respect themselves and show respect to others; and
- are able to disagree without creating bad feelings.

Assertive communication usually results in clear and open communication.

ACTIVITY – ANSWER THE QUESTIONS

Q1. Why are communication skills a fundamental part of leadership?

Q2. List some aspects of non-verbal communication.

Q3. Communication consists of three things, name them.

Q4. Name the three styles of communication.

Q5. What are some characteristics of assertive communicators?

M203.04 POSITIVE GROUP DYNAMICS

To display positive group dynamics, cadets must:

- Contribute to group discussions by providing input. This means contributing to every discussion. Even if a cadet has no new or original ideas, agree or disagree with other member's suggestions. Ask questions. Offer support and volunteer to take on extra assignments.
- Be motivated. Be enthusiastic and ensure the best effort each time when working in a team setting.
- Participate in establishing the team's goals. Cadets will have to work to meet the team's goals, so cadets should have a say in determining them. Ensure group goals are consistent with the aims of the cadet organization.
- Try new things. Do not be afraid to take risks. Trying new things shows courage, and courage is a leadership quality. Remember the turtle: it is perfectly safe when it stays in its shell, but to move ahead, the turtle must stick its neck and feet out.
- Be sensitive to other points of view. Listen to the opinions of other team members. Do not be afraid to express your view even if it is different or even the opposite of everybody else's. Deal respectfully with teammates who disagree. Be willing to compromise to achieve a consensus.
- Know teammates' strengths and weaknesses. If members know their teammates' talents and limitations, it enables the team to use all its personnel to its best advantage. Being aware of teammates' individual habits may make working with them easier.
- Increase self-confidence through positive self-talk. Focusing on one's positive characteristics leads to increased self-confidence. To feel better about yourself, concentrate on the things done well and compliment yourself on those things. This is not always easy.
- Be cooperative. Be polite, be a team player, and support your teammates. Help them by distributing work evenly and by sharing information; do not compete.
- Resolve conflicts as quickly as possible at the lowest and most appropriate level. As mentioned in the PSRY program, if teammates have a conflict, find a solution. Do not let problems fester and do not hold a grudge. Once conflicts are resolved, let them go.
- Celebrate successes. When the team completes a task or completes a goal, share in the enjoyment. Have a quick team meeting and compliment all team members on a job well done. Praise team members in front of others. Show appreciation to teammates who have been especially helpful. Everyone likes to be congratulated. This may lead to increased feelings of enthusiasm and self-confidence by members of the team.

ACTIVITY – ANSWER THE FOLLOWING QUESTIONS

Q1. How can cadets contribute to group discussions?

Q2. Why should cadets not be afraid to try new things within a team setting?

Q3. Why should successes be celebrated?

M203.05 – INFLUENCING BEHAVIOUR

DIRECTIVE BEHAVIOUR

Generally, directive behaviour involves telling teammates what they are to do, and possibly, when, how and to what standard they are to accomplish the task. Directive behaviour may be expressed as a simple request, a formal order or something in between. Directive behaviour is appropriate when passing on and executing a superior's objective, when assigning and co-ordinating tasks and when teammates lack information or experience and need guidance. Directive behaviour is used most often in emergency situations where time, safety, and control of personnel are factors. Another example is drill. Drill is normally conducted using directive behaviour.

PERSUASIVE BEHAVIOUR

Generally, persuasive behaviour is intended to influence decision-making and motivation. This is accomplished by explaining to, or convincing others why a certain course of action is necessary. Persuasive behaviour may involve rational argument based on facts, reason and logic and/or inspirational appeals which motivate others. This behaviour may allow teammates to understand the potential benefits to them created by the course of action and should aid teammates in their commitment to the task. Persuasive behaviour is appropriate to secure agreement or commitment and when particularly high or sustained levels of effort are required to accomplish a task. There are many situations when persuasive behaviour is used. These may include problem-solving, counselling, teaching, etc. Persuasive behaviour is usually effective in a peer setting if all teammates display positive group dynamics.

PARTICIPATIVE BEHAVIOUR

Generally, participative behaviour involves sharing decision-making with others. The primary objective is to improve the quality and/or acceptance of decisions. Participative behaviours employ two basic methods – individual or group consultations and joint decision-making. Obtaining advice, opinions and recommendations from others before sharing decision-making is essential. Sometimes teammates possess critical information or expertise and that knowledge may make the difference between success or failure of the task. The use of the participative behaviour depends on the availability of time to involve others. Teammates expect to be consulted on and have a voice in decisions that affect them. There are many situations when participative behaviour is used including problem-solving, participating in teambuilding activities, resolving conflict in a peer setting, etc. Participative behaviour is usually effective in a peer setting because all teammates have a part to play in making the decision.

ACTIVITY – ANSWER THE FOLLOWING QUESTIONS

Q1. What does directive behaviour involve?

Q2. When is directive behaviour appropriate?

Q3. Where is directive behaviour used most often?

Q4. When is persuasive behaviour used?

Q5. What are the potential benefits of the persuasive behaviour?

Q6. Name three situations where persuasive behaviour may be used?

Q7. What does participative behaviour involve?

Q8. What are the two basic methods of employing persuasive behaviours?

Q9. Name three situations where participative behaviour may be used.

M203.06 EMPLOY PROBLEM SOLVING

A Problem. This is a doubtful or difficult matter requiring a solution. Red Star cadets deal with varying problems daily. We all possess a natural ability to solve dilemmas that may take little effort or planning such as trying to decide with our friends what to do on a Saturday night or getting up to go to school. However, when faced with more complex matters like working with a group on a cadet or school project or finding more than one solution to a problem, a more efficient methodology than trial and error analysis may be required.

Trial and Error Analysis. This method used to solve problems if there is a great deal of time available and the possible outcomes are not serious.

A PROBLEM-SOLVING PROCESS

Logical Analysis. One of the processes to solve problems is logical analysis, if there is sufficient time available for consideration of all the options. Logical analysis helps reduce a complex thought process into a simple format. However, some problems are very simple so all the steps in the process may not be used. If the team follows these steps, they should be able to create a plan to implement a solution. When a task is assigned to cadets in a peer setting, the cadets should follow all the steps in the logical analysis process. If a problem develops that cadets within a peer setting must solve, without being directed to do so, the cadets should begin the logical analysis at step 2.

Steps in Logical Analysis:

1. **Confirm the Task.** By understanding both the problem and the aim or intent of the person assigning the task, the team has the freedom to act within their initiative to lead the team to success, especially when factors or plans change.
2. **Identify the Problem(s).** Once a problem is understood, the team must consider the problem or challenges that may occur in the implementation. This usually requires breaking the problem down into its component parts ("do this, then this, then this...").
3. **Determine the "Critical Factor".** There is usually one overriding problem in which all other issues will depend. This is called the CRITICAL FACTOR. Once identified, a plan to solve the problem can be formed around solving the critical factor.
4. **Develop Alternate Solutions.** Create as many possible solutions as time allows, drawing from the experience, knowledge and initiative of the team.
5. **Compare Alternatives.** Each solution must then be compared by the team in order to decide on the best solution. To decide which solution is the best, some questions may be asked:
 1. Which solution is the simplest?
 2. Which solution is the safest? What is the worst possible outcome? What are the dangerous elements?
 3. Which solution is the most flexible?
 4. Which solution uses available resources in an economical manner?
 5. Which solution will solve the critical factor and all other problems?
6. **Determine the Best Solution.** The team should choose the best solution to implement the plan of action.
7. **Implement the Solution.** The team should create a plan to implement the solution and get the problem solved. If a plan does not work like the team wanted, they may try another of the alternative solutions.

8. **Evaluate the Plan and the Implementation.** The team should evaluate performance once the problem is solved. The team should examine the implementation of the solution and the needs that may not have been anticipated. Questions may include:

1. Was the solution a good one?
2. Was the plan to implement the solution a success?
3. What can we do to improve the plan or the implementation for the next time?
4. What lessons were learned?

ACTIVITY – PROBLEM SOLVING

In recently studying about the environment, cadets decide to initiate the creation of a recycling program at the corps.

1. **Confirm the task** – (what must you do?)
2. **Identify the problem** – (what is the problem?)
3. **Determine the Critical Factor** – (what is the overriding problem?)
4. **Develop alternate solutions** – (different ways to solve the problem)
 - 1)
 - 2)
 - 3)
5. **Compare alternatives** – (simplest, safest, most flexible, best use of resources, best solution to the critical factor)

SOLUTIONS	ANSWER QUESTIONS

6. **Determine the best solution** – (make a choice)
7. **Implement the solution** – (develop a plan to get the problem solved)
8. **Evaluate the plan and the implementation** – (list some questions to ask for evaluation)

M221.01 – DUTIES OF A SECTION MEMBER IN FIELD

MAINTAINING A SAFE SITE DISTANCE BETWEEN SHELTERS

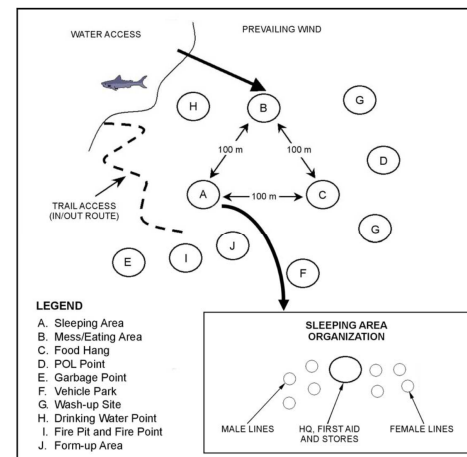
THERE MAY BE MANY CADETS IN THE FIELD AT ANY GIVEN TIME. IT IS IMPORTANT THAT SHELTERS ARE SPREAD OUT THROUGH BOTH THE MALE AND FEMALE LINES. SHELTERS SHOULD BE SPACED AT LEAST TWO METRES APART. WHERE GUY LINES EXIST, THERE MUST BE ADEQUATE SPACE BETWEEN SHELTERS SO THAT CADETS CAN EASILY WALK WITHOUT STEPPING OVER LINES. BY SPACING SHELTERS A SMALL DISTANCE, CADETS ARE PROVIDED WITH PRIVACY, WHILE STILL BEING ABLE TO EASILY COMMUNICATE.

MARKING BIVOUAC LAYOUT

Bivouac layout was discussed in EO M121.09 (Follow Camp Routine). Clearly marking these components is a great way to make sure everyone knows where they are. Components of a bivouac site are:

- headquarters;
- first aid point;
- supply;
- toilets;
- wash station;
- mess/eating area;
- fire pit;
- fire point;
- in/out route for the safety vehicle;
- form-up area;
- food hang;
- vehicle parking area;
- drinking water point;
- petroleum, oils, and lubricants (POL) point;
- female/male quarters; and
- garbage point

The following figure is a sample bivouac site.



FIRE PROCEDURES

The fire pit, cooking area, POL point and supply are the areas with the highest risk of fire. All cadets must know where they are located along with actions to take if a fire occurs. Fire procedures will differ depending on the

location of the weekend bivouac FTX. For example, if the bivouac area is in a recognized park, the cadet corps must follow the park's fire procedures. If the bivouac area is on private property, the cadet corps will be expected to follow their established fire procedures.

ASSIST OTHER CADETS

Supervision ensures **safety**. When tasks are being completed, an effective team will work together and assist each other. Though Red Star cadets are not expected to supervise, as a section member in the field, they can assist their peers and the Green Star cadets in following camp routine. Section members can assist by:

- setting up the components of the bivouac site;
- ensuring that all cadets know the bivouac layout;
- making sure that all drinking water is coming from drinking water points;
- storing and disposing of all garbage properly; and
- practicing safe behaviour individually and as a group.

INDIVIDUAL AND GROUP HYGIENE

CHANGE CLOTHES REGULARLY

It is important to keep all clothing, especially underclothing and socks, as clean and dry as possible. Clothing, as well as the body, must stay clean and dry. Keeping clothes clean will lessen the chances of exposure to rashes and infections. Change clothes, especially socks and undergarments, regularly.

PROPERLY DISPOSE OF WASTE WATER

There will always be a quantity of waste water from personal bathing and cooking in the field.

Follow these steps to properly dispose of waste water.

1. Collect all large particles with a food strainer or cloth and place in the garbage.
2. Place the remaining waste water in a container.
3. Dig a small hole at least 60 m away from any water source.
4. Pour the waste water in the hole.
5. Fill in the hole with natural materials.

WASH REGULARLY

In order to minimize the spread of diseases, hand washing should be enforced when in the field. There are two common approaches to hand washing – hand sanitizers and soap and water.

It is important to always keep the hands clean. Having hand sanitizer is very convenient. When hand sanitizer is not available, use soap and water. Remember to dispose of all waste water.

Washing the body is very important and should be done daily. Pay special attention to areas of the body that are susceptible to rash and fungus infection (the scalp, the crotch, and between the toes).

USE DESIGNATED ABLUTION SITES

Outhouses and chemical toilets should be utilized whenever possible. Disposing of waste must be done using good judgement and common sense. In an emergency:

- Always urinate at least 60 m away from trails and water sources. Urine will leave a smell and will attract animals once it evaporates.
- Feces can create a significant impact on the environment. Feces can contaminate water sources, spread disease, and affect others both visually and by smell.

RECEIVING, CARING FOR, AND RETURNING EQUIPMENT

Section equipment is normally stored either within the section or by the quartermaster when in the field.

Section equipment, also referred to as stores, includes stoves, lanterns, pot sets, tents, water containers, etc.

When drawing stores, the following points shall be kept in mind:

- Equipment should be signed out only through the designated quartermaster (the designated quartermaster may be a section commander or supply officer).
- Equipment shall always be kept clean when not in use.
- Equipment shall be secured and stored when not in use. The performance of equipment is a vital part of a successful weekend bivouac FTX. Improper securing and storing contributes to loss of durability and a shorter life of the equipment.
- Any equipment loss/damage shall be reported to the designated quartermaster as soon as it occurs or is noticed.
- Equipment shall be returned to the designated quartermaster

ACTIVITY – ANSWER THE FOLLOWING QUESTIONS

Q1. What points should be considered in order to maintain a safe site?

Q2. What components of a bivouac site have the highest risk of fire?

Q3. What is the purpose of supervision?

Q4. Why is it important to keep clothes clean?

Q5. What are the steps to properly dispose of waste water?

Q6. How can one minimize the spread of diseases?

Q7. Why should equipment be secured when not in use?

Q8. Who signs in/out equipment?

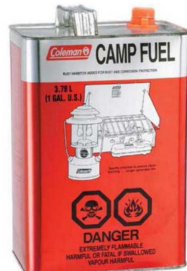
Q9. When should equipment loss/damage be reported?

M221.02 SECTION EQUIPMENT

TYPES OF FUEL BURNING SYSTEMS

The options of available camping and trekking/hiking equipment are vast and vary depending on the manufacturer. There are three basic types of fuel burning systems, which are based on what they burn – liquid fuel, compressed gas and solid fuel.

Liquid Fuel. Liquid fuel stoves burn white gas—kerosene, alcohol or naphtha. They are the best choice for extremely cold conditions and high altitudes. The fuel is stored in a separate tank. In most cases, this tank uses a pump to help pressurize it. The tank should be filled only to the 3/4 point, leaving some air in the tank. Kerosene, alcohol or naphtha are cleaner fuels that leave little residue when burned.



NAPHTHA FUEL

Compressed Gas. Compressed gas stoves burn butane, isobutene or propane. They are easy to turn on and off and require little maintenance. The heat produced is controlled easily and both the fuel and fuel canister are lighter than liquid fuel stoves. Compressed gas stoves do not work very well in cold temperatures. It is difficult to determine the amount of fuel remaining after use because the fuel is stored in a solid vessel.



Solid Fuel. Solid fuel burns flammable pellets, cubes or wood. These systems are simple and easy to use. Regulating temperature is hard at times as they commonly only burn what is added to them. There is little to no maintenance required on these stoves.



CAMPING STOVES

Single-burner. Single-burner stoves are portable stoves that allow one to cook anywhere without having to make a fire. These stoves store easily and can be carried along a trek with ease. Fuel is carried in a separate container to ensure there is no spillage of fuel in the pack.



Two-burner. The two-burner stove is an efficient item that is particularly suited for the field. When travelling in groups, this stove can be carried in a supply vehicle or on a toboggan. This stove is equipped with two burners which can help speed up the cooking process.



LANTERNS

Lanterns are designed to produce light. Each type of lantern will produce different amounts of light and last for many hours.

Single-mantle. Single-mantle lanterns which burn naphtha are clean. They can produce a dim, soft light and can burn bright like a beacon when required. The flame is adjustable and fuel consumption can range. This depends on the model type and light setting.

Dual-mantle. Dual-mantle lanterns burn naphtha. They produce more light than a single-mantle lantern. A soft light/glow can be produced and it is capable of burning bright like a beacon when required. The flame is adjustable and fuel consumption can range depending on the model type and light setting.

Battery-powered. Battery-powered lanterns provide a light that radiates from a centre bulb. The lantern has reflective surfaces above and below the light – reflecting light upward and outward. Bulbs and batteries are easily replaceable. These lanterns will run approximately 4 hours or more depending on model type.



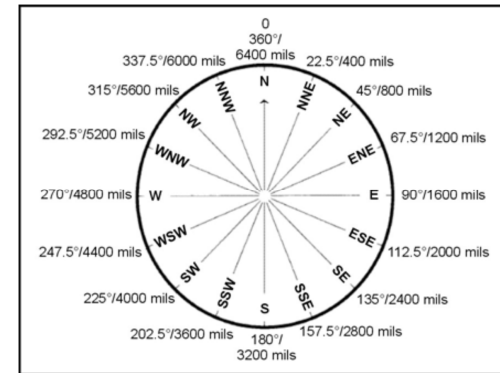
ACTIVITY – ANSWER THE FOLLOWING QUESTIONS

Q1. What are the three types of fuel burning systems?

Q2. What types of lanterns are there?

Q3. What type(s) of fuel is used by a white gas system?

M222.02 BEARINGS



FOUR CARDINAL POINTS

The four cardinal points of the compass, measured at right angles clockwise are north (N), east (E), south (S) and west (W). They can be easily remembered by the using mnemonics, such as “Never Eat Shredded Wheat”.

FOUR INTER-CARDINAL POINTS

The four inter-cardinal points are located halfway between each of the cardinal points. Measured clockwise, they are:

1. north-east (NE);
2. south-east (SE);
3. south-west (SW); and
4. north-west (NW).

EIGHT INTERMEDIATE POINTS

The eight intermediate points are located halfway between each cardinal point and inter-cardinal point. Measured clockwise, they are:

1. north-north-east (NNE);
2. east-north-east (ENE);
3. east-south-east (ESE);
4. south-south-east (SSE);
5. south-south-west (SSW);
6. west-south-west (WSW);
7. west-north-west (WNW); and
8. north-north-west (NNW).

SCALES ON A COMPASS

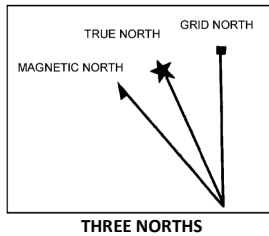
To express direction in an accurate and precise method, the full circle of the compass rose is divided into equal measures of angle. This measurement starts and ends at north (top) and always moves in a clockwise rotation. There are two main scales used to measure a circle – they are degrees and mils.

Degrees. The most common method of dividing a circle is by degrees. There are 360 equal angles in a complete circle and they are represented by the degree symbol (e.g. 360°). On the compass rose, north is located at 0 and 360 degrees, east is located at 90 degrees, south is located at 180 degrees and west is located at 270 degrees.

Mils. When a more accurate division of the same circle is required, the metric milli-radian (mils) method is used. The mils method has a military background and is based on the metric system with 6400 equal angles in a complete circle. On the compass rose, north is located at 0 and 6400 mils, east is located at 1600 mils, south is located at 3200 mils and west is located at 4800 mils.

THREE NORTHS

In navigation there are three different norths that are used – true north, grid north and magnetic north. Each north varies a small amount from each other and must be known for use in navigation. A diagram representing the three norths can be found in the margin of the map being used.



True North. True north is located at the top of the earth where the geographic North Pole is found, and is where all lines of longitude meet. In the diagram on the map, true north is represented by a star (Polaris).

Grid North. Grid north is the north indicated by the grid lines (eastings) on a topographical map. The easting lines run parallel to each other and will never meet at the North Pole; because of this, grid north points off slightly from true north. In the diagram on the map, grid north is represented by a square (map grid).

Magnetic North. Magnetic north is the direction in which the compass needle points. This direction is to the magnetic pole which is located in the Canadian arctic and is slightly different from true north (North Pole). In the diagram on the map, magnetic north is represented by a needle (compass).

DEFINITION OF A BEARING

Bearing. A bearing is an angle that is measured clockwise, from a fixed zero line; north is always this zero line. Simply, a bearing is just another name for an angle.

TYPES OF BEARINGS

Grid Bearings. A grid bearing is a bearing that is measure between two points on a map. The ability to measure a bearing from a map allows a map user to plan routes or activities before going into the field, and allows an easy method of communicating information about movement or location.

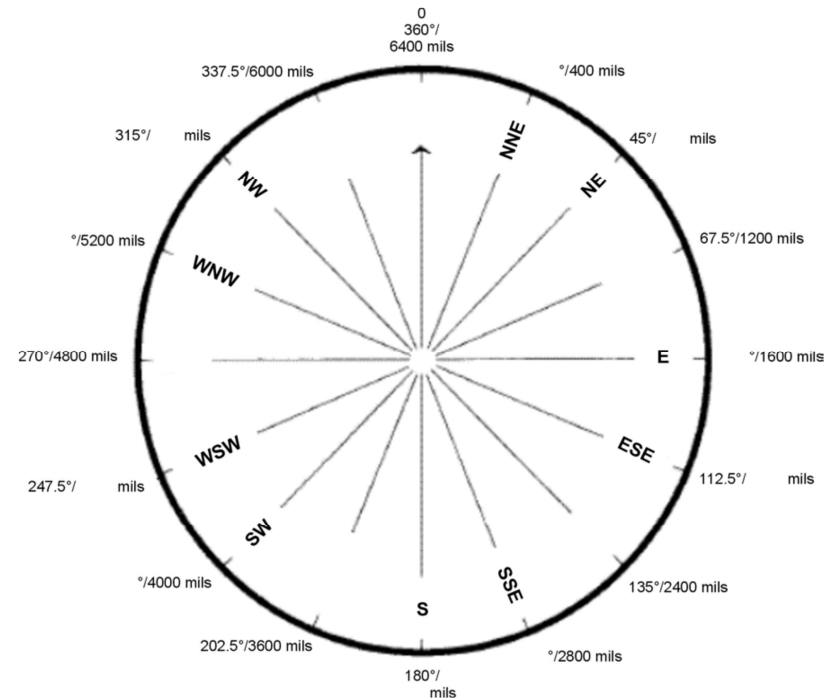
Magnetic Bearings. A magnetic bearing is a bearing that is measured between two points using a compass. A magnetic bearing is a quick and efficient method of describing a route to take. The bearing alone is usually not enough information to navigate with and must also have distance or a target object.

Back Bearing. A back bearing is a bearing that is in the exact opposite direction of the bearing that has been measured. A back bearing can be useful for different reasons; to return to the start location after a hike, or to calculate the bearing from an object to one's current location. Depending on the compass being used, the steps to calculate a back bearing are:

- If the bearing is less than 3200 mils or 180 degrees, add 3200 mils or 180 degrees.
- If the bearing is greater than 3200 mils or 180 degrees, subtract 3200 mils or 180 degrees.

ACTIVITY

FILL IN THE MISSING DETAIL FOR EACH POINT OF THE COMPASS ROSE



M222.03 IDENTIFY PARTS OF COMPASS

The compass is an important tool used in wilderness navigation. It is not a replacement for good map techniques, but it is a trustworthy tool to compliment and complete navigation skills. A compass user must take care to be precise in their measurements with the compass. A small error in calculation or measurement can equal a significant error in the field. A magnetic compass is still viable as a navigation aid, even with the advent of Global Positioning System devices, because it requires no batteries, and remains reliable year after year.

HOW A COMPASS WORKS

Regardless of their intended purpose or the complexity of their construction, most compasses operate on the same basic principle. A small, elongated, permanently magnetized needle is placed on a pivot so that it may rotate freely in the horizontal plane. The Earth's magnetic field which is shaped approximately like the field around a simple bar magnet exerts forces on the compass needle, causing it to rotate until it comes to rest in the same horizontal direction as the magnetic field. Over much of the Earth, this direction is roughly true north, which accounts for the compass's importance for navigation. The Earth has a north and a south magnetic pole. These magnetic poles correspond roughly with the actual geographical poles. The north magnetic pole is located at approximately 78.9°N latitude and 103.8°W, about 1000 km from the geological north pole. The horizontal force of the magnetic field, responsible for the direction in which a compass needle is oriented, decreases in strength as one approaches the north magnetic pole – the compass starts to behave erratically, and eventually, as the horizontal force decreases even more, the compass becomes unusable.

PARTS OF THE COMPASS

A – Sight. Located at the top of the compass cover, the sight is used to align an objective or bearing.

B – Compass Cover. The compass cover protects the compass dial and houses the sighting mirror.

C – Sighting Mirror. The sighting mirror is used to see the compass dial while setting a bearing.

D – Sighting Line. The sighting line is used when aligning the objective or bearing.

E – Luminous Index Point. The luminous index point at the top of the compass dial is where a bearing is set and read from.

F – Compass Dial. The compass dial houses the magnetic needle, the orienting arrow and the declination scale on the inside and the dial graduations on the outside.

G – Dial Graduations. The compass dial is graduated in 50 mil divisions from 0 to 6400 mils, or 2 Degree divisions from 0 to 360 degrees. The dial is rotated by hand.

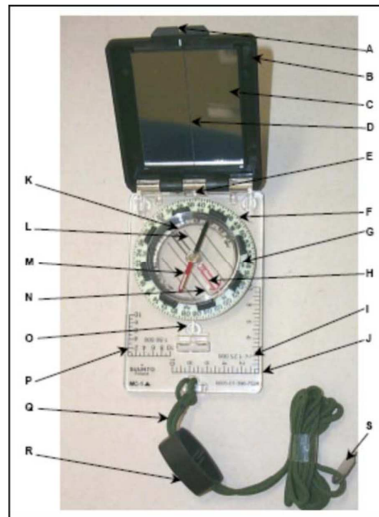
H – Orienting Arrow. The red orienting arrow is located inside the compass dial and is used to line up the magnetic needle. The orienting arrow is always set at 00 mils/degrees.

I – Romer 1:25 000. This romer is used to measure GR on maps with a 1:25 000 scale.

J – Compass Base Plate. The compass base plate is a clear piece of flat plastic, to which the cover, dial and lanyard are attached.

K – Declination Scale. The declination scale is used to compensate for the variation of magnetic Declination between the compass and the map being used.

L – Compass Meridian Lines. Compass meridian lines are black or red lines inside the compass dial and are used to line up the compass dial with the grid lines on a map.



M – Magnetic Needle. The magnetic needle spins freely and points to magnetic north. The south end of the compass needle is black and the north end, with a luminous patch, is red.

N – Luminous Orienting Points. There are two luminous orienting points located on either side of the orienting arrow.

O – Luminous Index Point. The luminous orienting point at the bottom of the compass dial is where a back bearing is read from.

P – Romer 1:50 000. This romer is used to measure GR on maps with a 1:50 000 scale.

Q – Safety Cord or Lanyard. The safety cord is used to fasten the compass to the body.

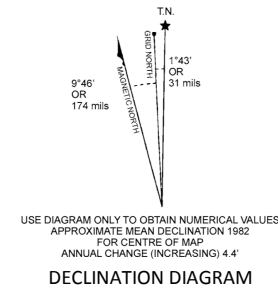
R – Adjustable Wrist Lock. The adjustable wrist lock is used to attach the compass to the wrist.

S – Screwdriver. The tiny screwdriver at the end of the safety cord is used to turn the screw to adjust the declination scale.

T – Declination Adjustment Screw. The declination adjustment screw is located on the back side of the compass dial and is used to adjust the declination scale (not shown).

DECLINATION

Also called magnetic declination, it is the difference in angle measured in degrees and minutes between true north (map) and magnetic north (compass). Declination will change depending on geographic position and it also changes annually due to the shifting magnetic pole. Declination is further described by stating whether the declination is east or west of true north. The declination for the map being used is calculated using the information in the declination diagram found in the margin of the map.



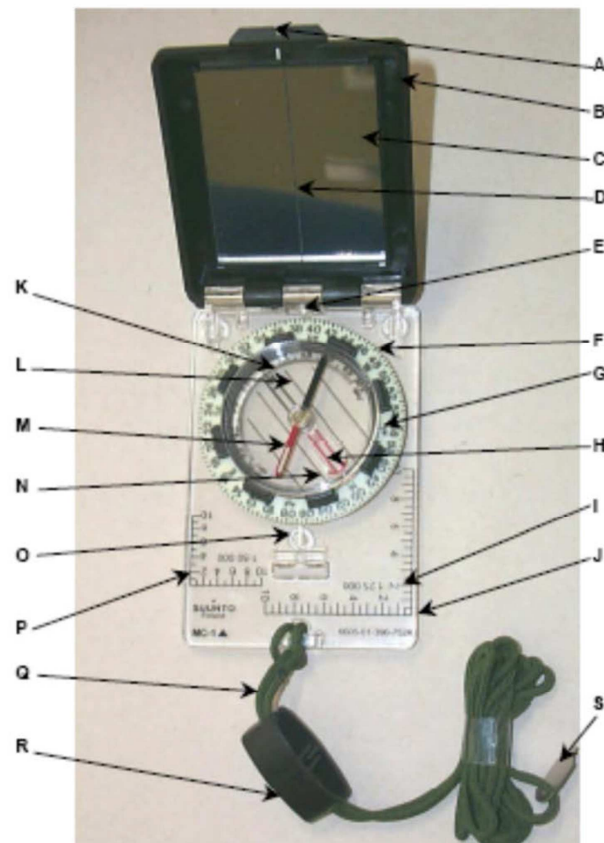
SETTING DECLINATION ON A COMPASS

The compass's declination scale must be set to compensate for the difference between true north and magnetic north. To do this we must first have the amount of declination in degrees east or west. Then, turn the compass over and look at the back of the dial.

From the zero point, using the screwdriver on the end of the safety cord, turn the declination screw to the right for west and to the left for east declination. Each small black line is two degrees.



ACTIVITY – LABEL THE PARTS OF THE COMPASS



LEGEND

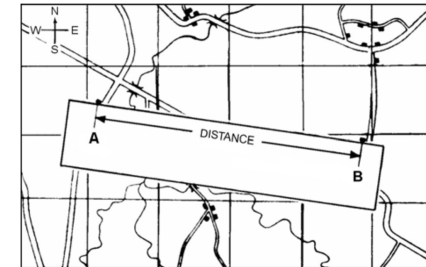
A - Sight	B - Compass Cover	C - Sighting Mirror	D - Sighting Line
E - Luminous Index Point	F - Compass Dial	G - Dial Graduations	H - Orienting Arrows
I - Romer 1:25,000	J - Compass Base Plate	K - Declination Scale	L - Compass Meridian lines
M - Magnetic Needle	N - Luminous Orienting Points	O - Luminous Index Point	P - Romer 1:50,000
Q - Safety Cord or Lanyard	R - Adjustable Wrist Lock	S - Screwdriver	T - Declination Adjusting Screw (not shown)

M222.04 DETERMINE DISTANCE ALONG A ROUTE

DETERMINING DISTANCE ON A MAP

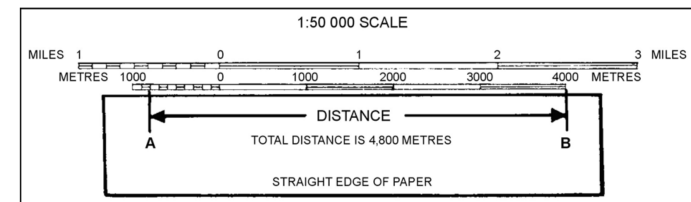
Cadets can use their maps to measure the distance between two points (A and B) on the ground. All maps are drawn to scale; therefore, a specified distance on a map equals a specified distance on the ground. The scale of a map is printed at the top and bottom of each map (e.g. Scale 1:50 000). This means that one cm on the map equals 50 000 cm (500 m) on the ground. There are two ways to determine distance on a topographical map – point to point and along a route.

Measuring Point to Point



To measure a distance point to point:

1. lay the straight edge of a piece of paper against the two points;
2. with a sharp pencil, mark the paper at the A (start) and B (finish) points;
3. lay the paper just under the scale bar (metres) and move the B mark backwards to each thousands mark until the A mark falls within the sub-divided thousands (hundreds) to the left of the zero; and
4. to calculate the total distance, add the number of thousands where the B mark is, plus the number of subdivided thousands where the A mark is to the left of the zero.

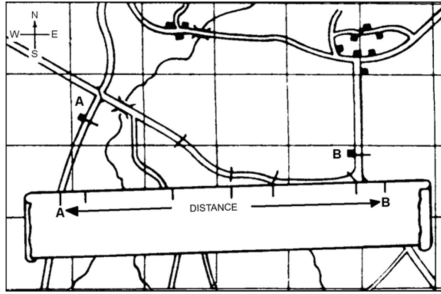


Measuring Along a Route

Sometimes cadets need to find the distance between A and B around curves in a road or along a planned route. To measure a distance along a route between two points:

1. lay the straight edge of a piece of paper against point A;
2. with a sharp pencil, mark point A on the paper and the map;
3. line up the paper with the edge of the road until you come to a curve and make another mark on the paper and on the map;
4. pivot the paper so that it continues to follow the road edge. Repeat until you reach point B;
5. mark your paper and the map at point B;

6. lay the paper just under the scale bar (metres) and move the B mark backwards to each thousands mark until the A mark falls within the sub-divided thousands to the left of the zero;
7. add the number of thousands where the B mark is, plus the number of sub-divided thousands where the A mark is to the left of the zero, will determine the total distance.



PACE COUNTING METHOD

The pace counting method (pacing) is used for measuring a given distance by counting every other step. Two steps equal one pace. Pacing is a very important skill in navigation, as each person has a different pace and needs to establish their pace before it can become a useful measurement tool. Pacing varies between individuals as it uses a natural stride – an average adult will pace about 60 to 70 paces in 100 m.

To determine an individual pace, practice taking uniform, comfortable steps over a measured distance (100 m) counting every second step of the dominant foot. Do this three to five times to get an average. This will be the individual's pace number and should be remembered.

FACTORS AFFECTING PACING

Pacing can be affected by different factors and numbers may vary. Some of the factors and the Effect on individual pacing are:

Topography. This is the most common factor. Walking through mud, thick bush and tall vegetation can shorten the paces.

Slopes. Walking uphill will shorten the paces, while walking downhill can lengthen the paces.

Fatigue. Pacing may change from natural in the morning, when cadets are rested, and shorter in the afternoon as they start to get tired.

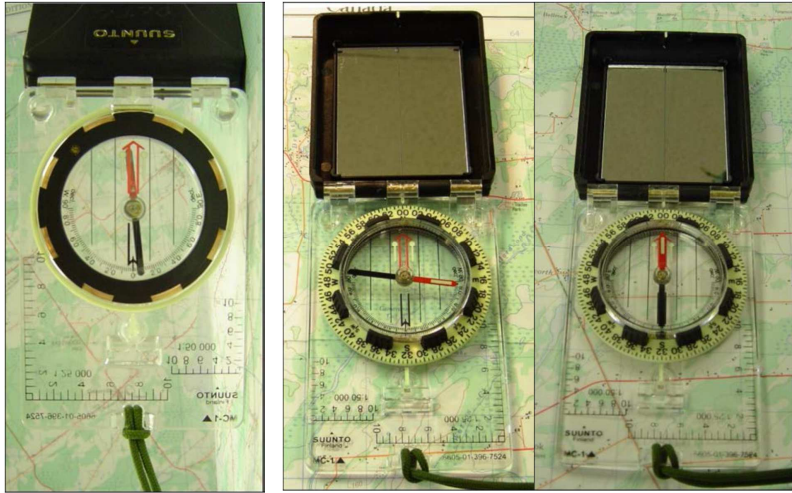
Equipment. Equipment could affect pacing, such as the wrong type of footwear. Too much or too little clothing and the amount of equipment being carried can shorten the paces.

Weather. Heavy rain, wind velocity, temperature and snow can shorten the paces.

ACTIVITY – ANSWER THE FOLLOWING QUESTIONS

- Q1. What are the two methods of measuring distance on a map?
- Q2. What is the distance on the ground, for every cm measured on a 1:50 000 scale map?
- Q3. What scale bar must be used when calculating the distance measured?
- Q4. What is pacing used to measure?
- Q5. How many steps equal one pace?
- Q6. What foot should be used to count paces?
- Q7. What is the most common factor affecting pacing?
- Q8. What effect does walking downhill have on pacing?
- Q9. How can fatigue affect pacing from morning to afternoon?

M222.05 – ORIENT A MAP WITH A COMPASS



SET DECLINATION

SET COMPASS TO 00

RED IN BED

To orient a map using a compass:

1. set the current declination on the compass;
2. set the compass dial to read 00 (zero) mils or 0 degrees (north);
3. lay the compass flat on the map with the cover open;
4. point the mirror to North (top of the map);
5. align one side of the base plate with an easting line; and
6. turn the map and compass together until the red end of the magnetic needle is over the orienting arrow.

M222.06 – FOLLOW MAGNETIC BEARING

To determine the magnetic bearing of a prominent object:

1. Check and set the pre-determined declination on the compass.
2. Hold the compass at eye level, at arm's length, and face the prominent object.
3. Aim at the object using the compass sight, ensuring the sighting line is in line with the index pointer.
4. Adjust the compass cover so the compass dial is seen in the sighting mirror.
5. Look in the mirror and turn the compass dial until the magnetic needle is over the orienting arrow (red in the bed).
6. Read the number on the compass dial at the luminous index pointer. The magnetic bearing of the prominent object is read at the luminous index pointer.



TAKE MAGNETIC BEARING ON MAP

The ability to measure a bearing from a map allows cadets to plan routes or activities before going into the field, and allows an easy method of communicating information about movement or location. When a compass is adjusted to compensate for declination, it will provide the equivalent of a magnetic bearing. Magnetic bearings may be set on the compass without further conversions.

1. Set the pre-determined declination on the compass.
2. Identify and mark the start (point A) and finish (point B) points on a map.
3. Draw a plotting ray from point A to point B.
4. Lay the fully opened compass with the edge of the compass base plate along the plotting ray, in the direction of travel (point A to point B).
5. Hold the compass in place, rotate the compass dial so that the compass meridian lines align with the easting lines on the map, ensuring north on the dial indicates north on the map.
6. Read the number on the compass dial at the luminous index pointer.

The magnetic bearing is read at the luminous index pointer.

ACTIVITY – ANSWER THE FOLLOWING QUESTIONS

Q1. When would you orient a map by compass instead of by inspection?

Q2. What number is the compass dial set to read?

Q3. What is the mnemonic for putting the magnetic needle over the orienting arrow?

Q4. What is the first step to orienting a map using a compass?

Q5. What direction is the compass mirror to be pointed on the map?

Q6. How is the map aligned with the compass?

NOTES

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NOTES

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EVALUATION SHEET

The following page is a performance evaluation to be submitted to the Training Officer at completion of this manual. It allows for checking that all mandatory training has been met. Some of the evaluations will occur when out on field training exercises. Form will be filed into your training file.

RED STAR PROGRAM QUALIFICATION RECORD

Cadet's Name: _____

			PO Assessment	
Topic	PO	Performance Statement	Incomplete	Completed
Citizenship	X01	Participate in Citizenship Activities		
Community Service	X02	Perform Community Service		
Leadership	203	Demonstrate Leadership Attributes Within a Peer Setting		
Personal Fitness and Healthy Living	X04	Track Participation in Physical Activities		
Physical Activities	X05	Participate in Physical Activities		
Air Rifle Marksmanship	206	Fire the Cadet Air Rifle During Recreational Marksmanship		
General Cadet Knowledge	207	Serve in an Army Cadet Corps		
Drill & Ceremonial	208	Execute Drill as a Member of a Squad		
CAF Familiarization	X20	Participate in CAF Familiarization Activities		
Field Training	221	Perform the Duties of a Team Member During an Overnight Field Training Exercise		
Navigation	222	Navigate Along a Route Using a Map & Compass		
Trekking	223	Hike Along a Route as Part of an Overnight Exercise		
Wilderness Survival	224	Identify Immediate Actions to Take When Lost		

Qualification Achieved			Training Officer	Date:
	Yes	No		
			Signature: _____	_____