



National
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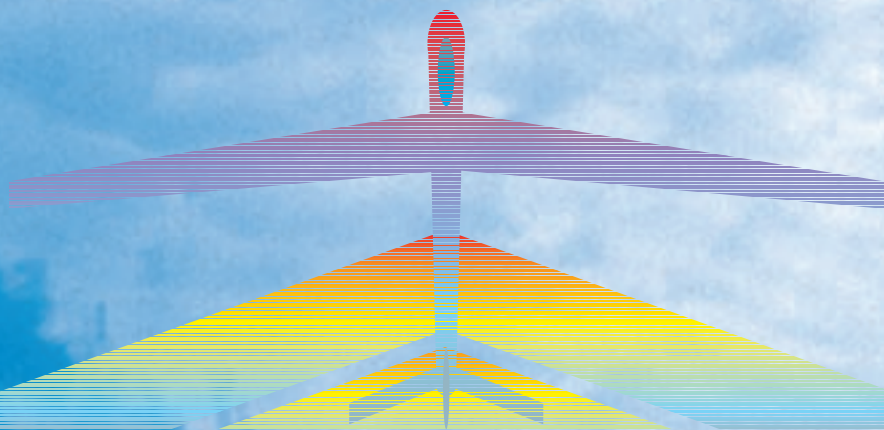
Royal Canadian Air Cadets

SQUADRON TRAINING



LEVEL

2



Canada



National Défence
Defence nationale

A-CR-CCP-267/PT-001

ROYAL CANADIAN AIR CADET MANUAL

PROFICIENCY LEVEL TWO HANDBOOK

**(Supersedes A-CR-CCP-267/PT-001
dated 1996-06-04.)**

Issued on Authority of the Chief of the Defence Staff

OPI: D Cdts

1998-07-01

Canada

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Mod	1	1998-07-01	Mod
Mod	2		Mod
			5.....

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Cover	0
Title	0
A, B/C	0
i/ii	0
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9-1 to 9-7/9-8	0
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11-1 to 11-11/11-12	0

Contact Officer: D Cdts 4

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FOREWORD

1. A-CR-CCP-267/PT-001, Royal Canadian Air Cadet Manual, Proficiency Level One Handbook, is issued on authority of the Chief of the Defence Staff.
2. This publication is effective on receipt and supersedes A-CR-CCP-267/PT-001 dated 1994-04-22.
3. Requests for changes to this publication are to be sent through NDHQ, Attention: D Cdts 4.

PREFACE

1. A-CR-CCP-267/PT-001 is intended to be used as a handbook for study and reference by Royal Canadian Air Cadets in training at their local squadron.
2. A-CR-CCP-267/PT-001 is based on the Course Training Standard and Course Training Plan for Level One found in A-CR-CCP-267/PC-001 and A-CR-CCP-267/PH-001, respectively, and is intended for use by air cadets in their first training year of the Air Cadet programme.

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CHAPTER 1

PERFORMANCE OBJECTIVE 401

DRILL

INTRODUCTION

1. The drill movements that you learned in Proficiency Level One were all ones that you had to execute during your squadron's Annual Inspection Parade. Some of you may have received additional training in drill at summer camp. All this training helps develop skills in self-discipline that will assist you as you approach future challenges and goals.
2. The drill movements you will learn in Proficiency Level Two are a little more difficult to execute. Hard work and practice will bring results.

CLOSING TO THE RIGHT (LEFT)

3. Paces right (left) close march shall not be ordered when the distance required to move exceeds eight paces. When the distance is greater, the squad shall be turned and marched the required distance.
4. On the command. "ONE PACE(S) RIGHT CLOSE – MARCH". squad members shall:
 - a. bend the right knee, carry the foot to the right and place it smartly on the ground with the inside of the heels 25 cm (10 inches) apart;
 - b. balance the weight of the body evenly on both feet;
 - c. keep the arms still at the sides;
 - d. shift the weight of the body to the right foot; and
 - e. bend the left knee and place the foot smartly by the right to assume the position of attention.

5. On the command, "ONE PACE(S) LEFT CLOSE – MARCH", the drill as outlined in paragraph 4 is followed except that the details of moving the feet and direction are reversed.
6. The timings for the previously mentioned movements are counted as follows:
 - a. for one pace, one-two;
 - b. for two paces, one-two, two-two; and
 - c. for three paces, one-two, two-two, three-two.

SIZING IN THREE RANKS

7. On the command, "TALLEST ON THE RIGHT, SHORTEST ON THE LEFT, IN THREE RANKS – SIZE", the members of the squad shall turn right, observe the standard pause, then arrange themselves according to height, with tallest on the right and shortest on the left in three ranks, shoulder to shoulder dressing and covering off front to rear.
8. On the command, "OPEN ORDER – MARCH", the squad shall act as ordered.
9. On the command, "SQUAD – NUMBER", the squad shall act as ordered.
10. On the command, "EVEN NUMBERS ONE PACE STEP BACK – MARCH", the even numbers shall step back one 35 cm (15-inch) pace.
11. On the command, "NUMBER ONES STAND FAST; ODD NUMBERS RIGHT; EVEN NUMBERS LEFT TURN", the squad shall act as ordered.
12. On the command, "REFORM THREES, QUICK – MARCH":
 - a. The right file shall stand fast.

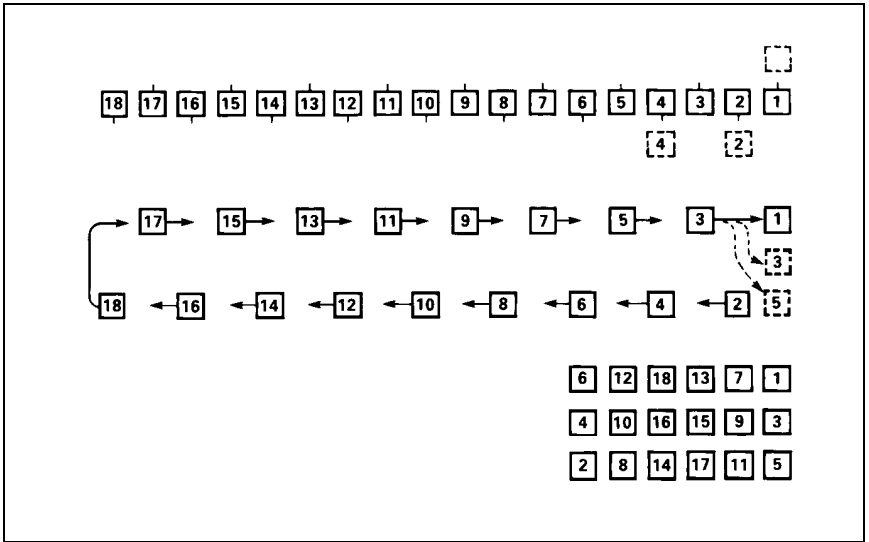


Figure 1-1 Sizing in Three Ranks

- b. The remainder of the odd numbers shall march forward and form up on the left of the number one of each rank.
- c. The even numbers of each rank shall wheel around to the right and follow the odd numbers of their respective rank.
- d. When each cadet arrives in the new position judging arm's-length interval, the cadet shall halt, observe the standard pause, turn left, and remain at attention.

SIZING IN TWO RANKS AND REFORMING THREES

13. On the command, "TALLEST ON THE RIGHT; SHORTEST ON THE LEFT; IN TWO RANKS – SIZE", the squad members shall turn right, observe the standard pause, then march at attention and arrange themselves according to height in two ranks, with the tallest on the right, shortest on the left, and dress shoulder to shoulder.

14. On the command, "MARKER STAND FAST; FRONT RANK RIGHT; REAR RANK LEFT – TURN", the ranks shall act as ordered.

15. On the command, "REFORM THREES, QUICK – MARCH", the squad reforms three ranks as follows:

- a. The marker remains the right-hand cadet of the front rank.
- b. The second cadet of the front rank becomes the right-hand cadet of the centre rank.
- c. The third cadet of the front rank becomes the right-hand cadet of the rear rank.
- d. The rear rank wheels right following the front rank and as each cadet closes up towards the new position the procedure as detailed in subparagraphs 15a, b and c shall be followed.
- e. When each cadet arrives in the new position, judging arm's-length interval, the cadet shall halt, observe the standard pause, turn left, and remain at attention.

SIZING IN SINGLE RANK AND REFORMING THREES

16. On the command, "TALLEST ON THE RIGHT; SHORTEST ON THE LEFT; IN SINGLE RANK – SIZE", the squad members shall turn right, observe the standard pause and then arrange themselves according to height in a single rank, at shoulder dressing, tallest on the right, shortest on the left.

17. On the command. "SQUAD – NUMBER", the squad shall act as ordered.

18. On the command, "ODD NUMBERS ONE PACE FORWARD; EVEN NUMBERS ONE PACE STEP BACK – MARCH", the squad shall act as ordered.

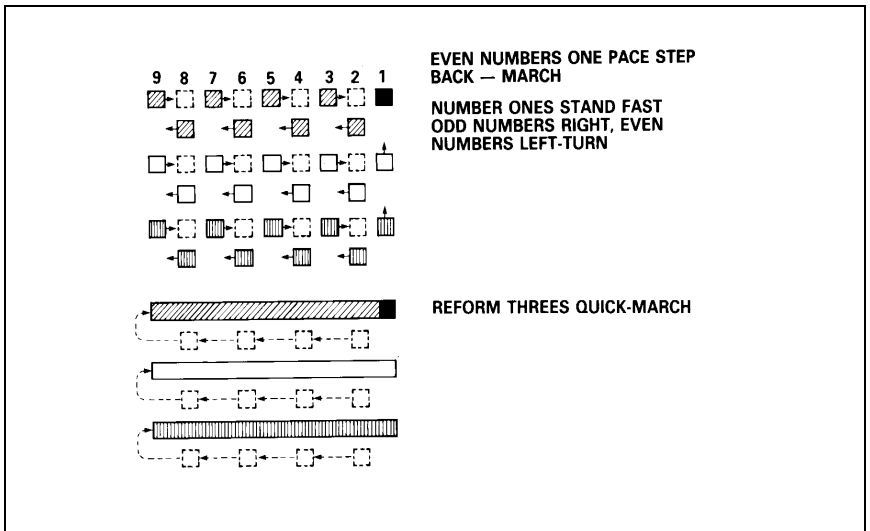


Figure 1-2 Sizing in Single Rank

19. On the command, "NUMBER ONE STAND FAST; ODD NUMBERS RIGHT; EVEN NUMBERS LEFT – TURN", the squad shall act as ordered.

20. On the command, "REFORM THREES, QUICK – MARCH", the squad re-forms three ranks as follows:

- a. Number one remains the right-hand cadet of the front rank.
- b. Number three becomes the right-hand cadet of the centre rank.
- c. Number five becomes the right-hand cadet of the rear rank and so on.
- d. When each cadet arrives in the new position, judging arm's-length interval, the cadet shall halt, observe the standard pause, turn left, and remain at attention.

CHANGING STEP ON THE MARCH IN QUICK TIME

21. In quick time, on the command, "CHANGE STEP", given as the right foot is forward and on the ground, squad members shall:

- a. complete a 35 cm (15-inch) pace with the left foot;
- b. swing the right arm forward;
- c. swing the left arm to the rear;
- d. force the weight forward on the left foot;
- e. raise the right heel off the ground;
- f. cut the arms to the side as in the position of attention;
- g. bring the right foot forward in double time by bending the right knee;
- h. straighten the right leg in double time and place the right foot smartly beside the left;
- j. as the right foot strikes the ground, shoot the left foot forward in a 35 cm (15-inch) pace, landing on the heel with the toe up;
- k. swing the right arm forward;
- m. swing the left arm to the rear; and
- n. continue marching in quick time.

22. The timing is counted as **left, right, left** in double time.

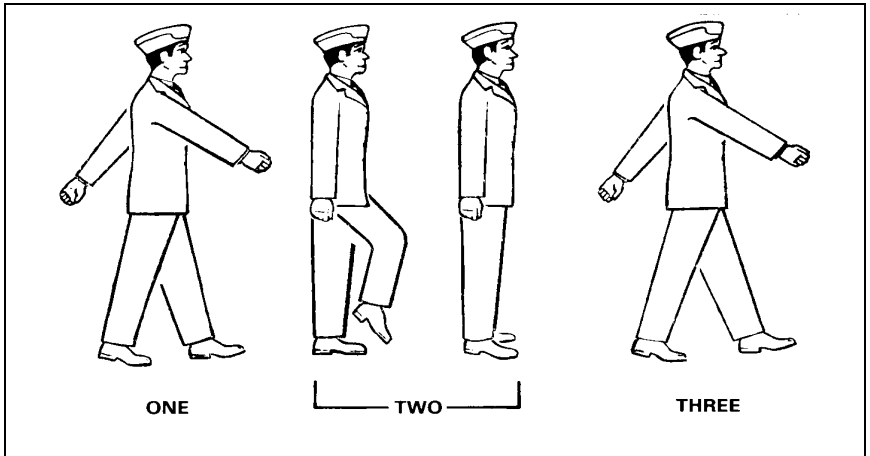


Figure 1-3 Changing Step on the March in Quick Time

CHANGING STEP WHEN MARKING TIME

23. In slow time or quick time on the command, "CHANGE – STEP", given as the right foot is on the ground, squad members shall:

- a. take two successive mark time paces with the left foot; and
- b. continue marking time.

24. The timing is counted as left, left-right in the same cadence as marking time.

TURNING AND INCLINING ON THE MARCH IN QUICK TIME

25. Turns and inclines on the march are executed to change direction and formation.

26. On the command, "LEFT – TURN", given as the right foot is forward and on the ground, members shall complete a 35 cm (15-inch) pace with the left foot, with the right arm swung forward and the left to the rear. Members shall then:

- a. cut the arms to the side as in the position of attention;
- b. bend the right knee so the upper leg is parallel to the ground;
- c. force the shoulders 90 degrees to the left to face the new direction;
- d. simultaneously, pivot on the ball of the left foot 90 degrees to the left and straighten the right leg as in the position of attention;
- e. shoot the left foot forward in a 35 cm (1 5-inch) pace with the toe just clear of the ground;
- f. keep the body and head held up;
- g. keep the arms, body and head steady; and
- h. complete the 35 cm (15-inch) pace with the left foot and continue marching (swing the arms).

27. On the command, "LEFT IN – CLINE", the drill described in turning to the left is followed except that the turn is made through 45 degrees only.

28. On the command, "RIGHT – TURN", given as the left foot is forward and on the ground, squad members shall complete a 15-inch pace with the right foot, swing the left arm forward and the right to the rear. Members shall then:

- a. cut the arms to the side as in the position of attention;
- b. bend the left knee so the upper leg is parallel to the ground;
- c. force the shoulders 90 degrees to the right to face the new direction;

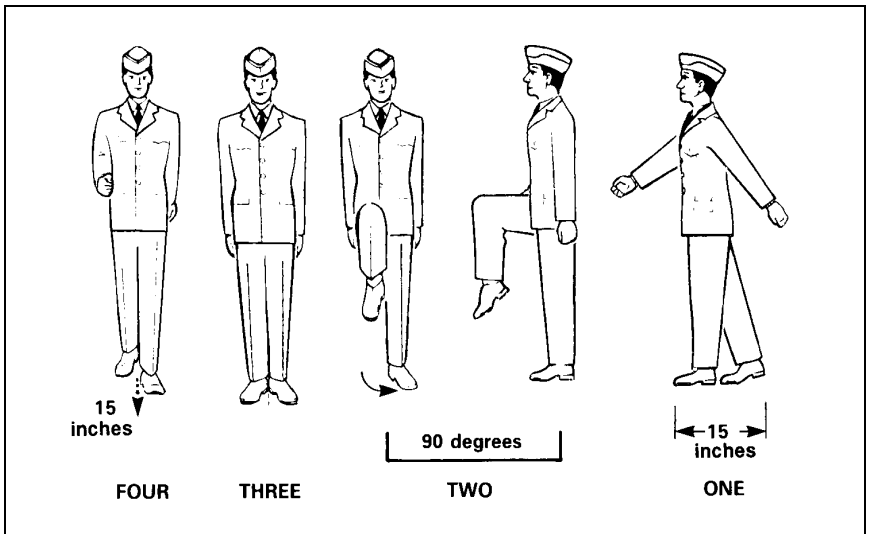


Figure 1-4 Turns In Quick Time

- d. simultaneously, pivot on the ball of the right foot 90 degrees to the right and straighten the left leg as in the position of attention;
 - e. shoot the right foot forward in a 35 cm (15-inch) pace with the toe just clear of the ground;
 - f. keep the body and head held up;
 - g. keep the arms, body and head steady; and
 - h. complete the 35 cm (15-inch) pace with the right foot and continue marching (swing the arms).
29. On the command, "RIGHT IN – CLINE", the drill described in turning to the right is followed except that the turn is made through 45 degrees.

TURNING ABOUT ON THE MARCH IN QUICK TIME

30. On the command, "ABOUT – TURN", given as the right foot is forward and on the ground, squad members shall:

- a. take a 35 cm (15-inch) pace with the left foot;
- b. bring the right foot in to the left, in a straight-leg manner above the ground, to the position of attention;
- c. simultaneously, cut the right arm down and the left in from the rear as the left foot comes in;
- d. maintain the cadence;

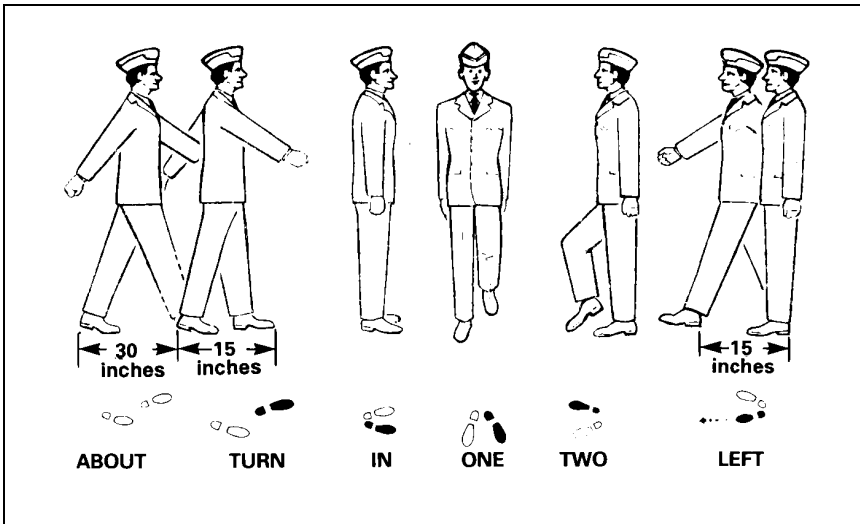


Figure 1-5 About Turn in Quick Time

- e. maintain the arms at the sides;
- f. pivot on the sole of the right foot to force the body through a turn of 90 degrees to the right;
- g. simultaneously, bend the left knee so that the thigh is parallel to the ground:
- h. then lower the leg smartly to the ground to assume the position of attention;
- j. keep arms at the sides;
- k. pivot on the sole of the left foot to force the body through a turn of 90 degrees to the right;
- m. simultaneously, bend the right knee so the thigh is parallel to the ground;
- n. then lower the leg smartly to the ground to assume the position of attention; and
- p. step off in quick time with a 35 cm (15-inch) pace with the left foot in the new direction.

MARCHING AND HALTING IN DOUBLE TIME

31. On the command, "DOUBLE – MARCH", squad members shall:
- a. step off with the left foot and double on the balls of the feet with easy swinging strides, inclining the body slightly forward;
 - b. raise the feet clear off the ground at each pace;
 - c. bend the arms at the elbow and, with the hands closed, swing the arms naturally from the shoulder; and
 - d. maintain dressing by the directing flank.

32. On the command. "SQUAD – HALT", given as the left foot is forward and on the ground, squad members shall:

- a. complete two forward paces; and
- b. bring the right foot to the left after the second pace and simultaneously cut the arms to the sides and assume the position of attention .

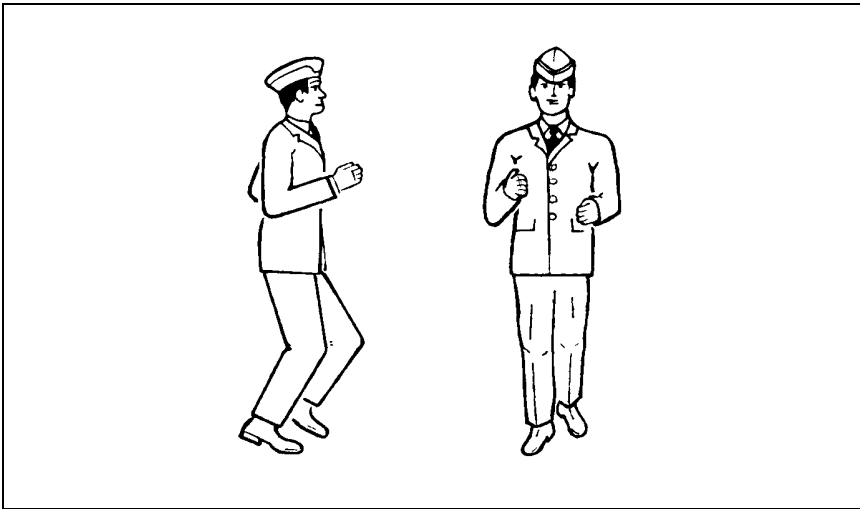


Figure 1-6 Marching in Double Time

CHANGING TO DOUBLE TIME FROM QUICK TIME

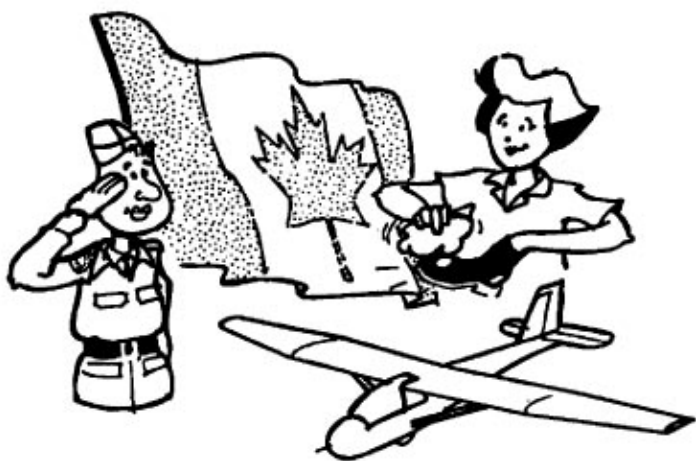
33. On the command, "CHANGE TO DOUBLE TIME, DOUBLE – MARCH", given as the right foot is forward and on the ground, squad members shall step forward with the left foot in double time and with the arms in the position for marching in double time.

CHANGING TO QUICK TIME FROM DOUBLE TIME

34. On the command, "CHANGE TO QUICK TIME, QUICK – MARCH", given as the right foot is forward and on the ground, squad members shall shorten the pace to 70 cm (30 inches) while completing four more paces in double time. The squad members shall then break into quick time.

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CHAPTER 2

PERFORMANCE OBJECTIVE 403

GENERAL CADET KNOWLEDGE

SECTION 1

PROFICIENCY LEVEL TWO

1. The aim of the Proficiency Level Two course is to build on Level One training, and provide some opportunities to apply skills in communication and in the field of aviation. You are no longer recruits, and some of you may even be corporals. It is time to learn more about the air cadet movement and your role within it.

2. You will receive training in the following subjects:

- a. Drill.
- b. General cadet knowledge.
- c. Citizenship.
- d. Physical fitness.
- e. Sensible living.
- f. Leadership.
- g. Effective speaking.
- h. Principles of flight.
- j. Propulsion.
- k. Radio communications.
- m. Aircrew survival.

3. You probably think that you studied some of these courses last year because the titles are the same. Don't worry, all the material is new and interesting and designed to help you become a qualified Proficiency Level Two cadet.

4. Proficiency Level Two training provides you with the opportunity to participate in one survival exercise, Canada Fitness Awards Programmes Testing, one team sports activity, and two citizenship activities. One of the citizenship activities must be directed towards protecting the environment in your community.

5. Successful Proficiency Level Two cadets have completed training that qualifies them to be recommended to be promoted to the rank of Sergeant. Don't expect to get promoted right away. There are many factors to be considered, but a positive attitude and an enthusiastic and co-operative approach to activities will put you well in the running.

6. Completing Proficiency Level Two training will make you eligible to attend the following summer camps:

- a. Introduction to Leadership.
- b. Aircrew Survival Course.
- c. Air Studies.
- d. Physical and Recreational Training.
- e. Cadet Musician.

7. **Introduction to Leadership.** The Introduction to Leadership course is designed to instruct cadets in completing the tasks performed by a leader at the home squadron and provide them with the opportunities to practise these skills. You will learn how to plan and organize activities where you will be responsible for other cadets. This will let you practise your skills in leadership.

8. **Air Studies.** The air studies course is designed to complete squadron training of flying training subjects for the selected cadets who are considered future candidates for pilot training. The candidates for this course are carefully selected by their commanding officer who takes into consideration their motivation and aptitude for following the air cadet pilot programme.

9. **Physical and Recreational Training.** This course will teach the basics in physical and recreational training. Cadets with skills in this area will assist with running and developing such programmes at the home squadron.

10. **Aircrew Survival.** If you are interested in learning how to survive off the land this is the course for you. You will receive instruction in the fundamentals of survival: how to build a shelter or a fire; what food to eat and any other essentials to save your life in a wilderness emergency.

11. **Band.** Band courses are designed to teach cadets fundamental music theory. The cadets who receive instruction should return to their home squadrons with the aim to further develop the band programme at the home squadron. If you are interested in music, band can be great fun for the summer as you will have the opportunity to play in a large performance band with cadets from all over your region.

12. Summer camps are a great opportunity to improve your skills as a cadet and participate in many different activities that your squadron may not be able to provide. Don't forget that not everyone can go to camp. A place at camp is earned through hard work at your home squadron. Good luck.



SECTION 2

A PARTNERSHIP – RESPONSIBILITIES OF THE DEPARTMENT OF NATIONAL DEFENCE AND THE AIR CADET LEAGUE

13. You should all know what the name of your sponsoring committee is by now. In Proficiency Level One you learned that the committee payed for some of your squadron's special activities. What is the relationship that exists between the officers in uniform at your squadron and the civilians that provide support?

14. Some of your parents may have been concerned when you joined cadets that you would become a soldier and have to participate in military activities. Cadets, as you know, is not the military, and one of the aspects that makes it a civilian organization is the unique relationship that exists between the Department of National Defence (DND) and the Air Cadet League of Canada. These two organizations put their efforts together to operate and assist 440 Royal Canadian Air Cadet Squadrons in Canada. Their responsibilities are different but they work together to complement each other.

15. Main responsibilities are divided as follows:

- a. The Canadian Forces (CF) is responsible for training, supply, administration and organization of the squadron.
- b. The League is responsible for public relations with the community; providing training equipment, transportation and facilities not supplied by the CF; providing financial support as required; and for the administration of the local sponsor.

16. More specifically, DND provides uniforms for cadets and some transportation, such as buses, to go on survival exercises. DND also provides facilities for summer camps and reviewing officers for annual inspections. Training of Cadet Instructors List officers from your squadron staff is also conducted and provided by DND.

THE AIR CADET LEAGUE OF CANADA

17. To carry out its assigned duties the League is organized as follows:

a. **The National Level.** The following apply:

- (1) The League is governed by a National Board of Directors made up of 55 Canadians from all 10 provinces. From this Board of Directors 11 people are selected to make up the National Executive Committee. There is also an Advisory Committee made up of past presidents of the League. These two committees assist the president with the League's policy direction during the year.
- (2) The National Board of Directors maintains a full time headquarters in Ottawa under the supervision of the Executive Director. This office works closely with NDHQ and provides year round supervision and administration of the Air Cadet League and its numerous activities.

b. **Provincial Level.** The following apply:

- (1) There are 12 provincial committees: one for each province, plus one for northwestern Ontario and one for the Yukon and Northwest Territories. Provincial committees are made up of the chairperson of each local sponsoring committee, and other people who may be selected. Financial support for provincial committees is derived from public donations and the support of their members' squadrons.
- (2) The duties of the provincial committee include the supervision of all air cadet squadron activities within the area or boundary as agreed upon. The provincial committee assists in the formation and guidance of squadron sponsoring committees and squadrons.

- c. **Local Level.** Sponsoring committees may be affiliated with a service club, RCAF Association Wing, Canadian Legion Branch, school board or other community group. Local sponsoring committees are expected to finance the squadrons, and ensure they are properly managed, adequately housed and efficiently operated. It is also the function of the sponsor to provide transportation, manage public relations and assist in fund raising, to ensure the successful operation of the squadron. The sponsors are considered to be the backbone of the League.

18. For each level in the Air Cadet League, a counterpart exists in the CF (Figure 2-1). At the national level, there is a direct line of communication between the President of the League, the Minister of National Defence and the Chief of Defence Staff. Contact is also maintained regularly between the Executive Director of the League and the Director of Cadets at NDHQ.

19. Liaison with provincial committees of the League is the responsibility of the appropriate commands and regions of the CF that also supervise and implement training policies for the air cadet squadrons in their area.

20. Liaison at the squadron level is maintained through the area cadet officers at functional commands. In addition, each individual air cadet squadron is attached to a Canadian Forces base, Canadian Forces station, or affiliated unit for liaison, material supply and accounting purposes.

21. As you can see, the cadet organization is complex and demands a large number of people to make it operate. All these people work together to accomplish the three aims of the movement. You are not expected to know everybody who works with cadets but you should know a few important people. At the end of this unit there are questions that will guide you in identifying the personnel filling various positions discussed in this chapter.

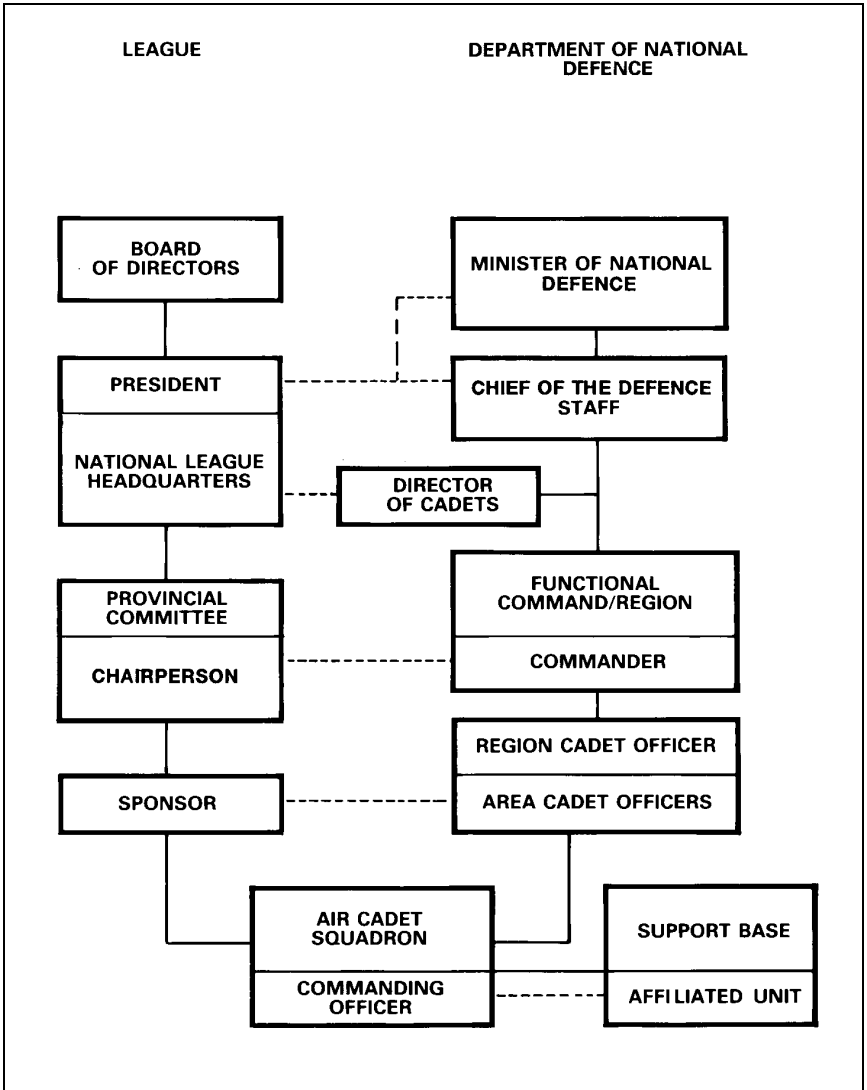


Figure 2-1 Air Cadet League--DND Channels of Communication

SECTION 3

RECOGNITION OF RANK

22. As a second year cadet you may, at times, have the opportunity to interact with sea and army cadets. At such times you should be able to recognize their ranks and address them properly. Figures 2-2 and 2-3 illustrate the rank badges for sea and army cadets.

23. Sea and army cadets are just the same as you but they have decided to join a different element because it met their interests and goals better. The basic training for a cadet is essentially the same, although senior cadets learn more skills specific to their element as they progress. Senior sea cadets learn seamanship skills and senior army cadets learn advanced skills in fieldcraft. Respect the word of all senior non-commissioned officers (NCOs), whatever element they are.





Figure 2-2 Sea Cadet Rank Badges

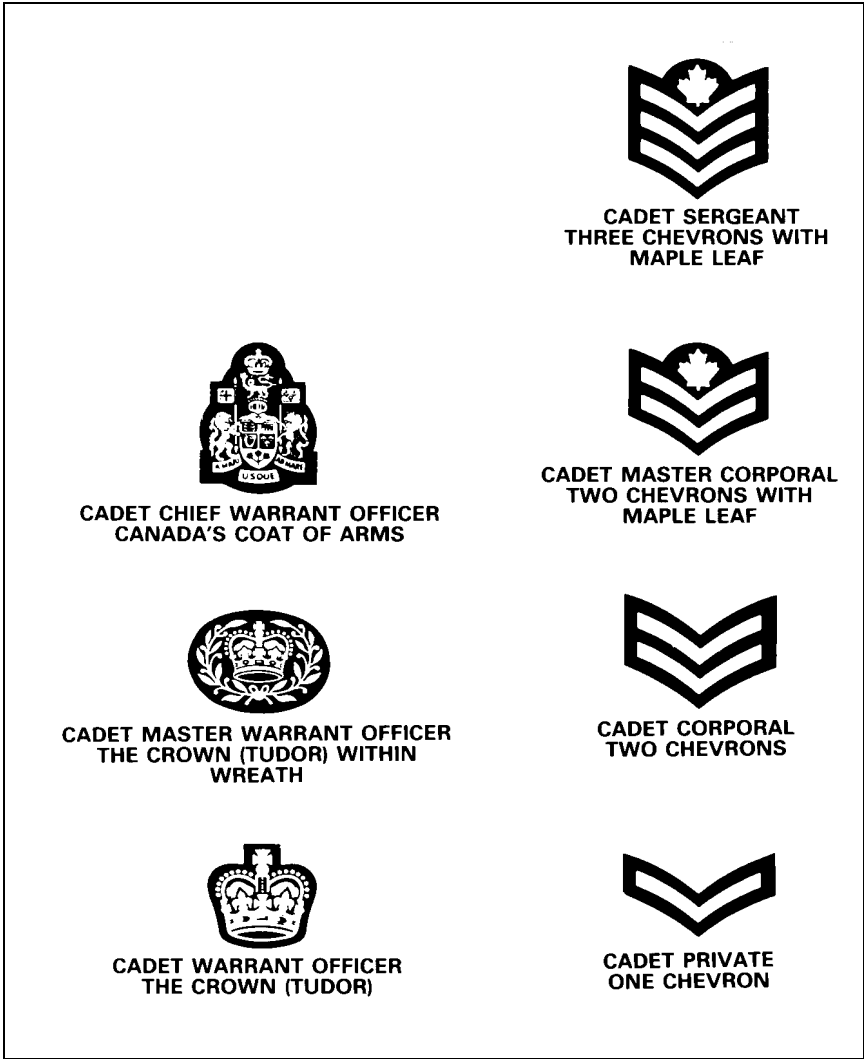


Figure 2-3 Army Cadet Rank Badges

LEAGUE AND DND PERSONNEL

24. League and DND personnel change from year to year. This section is included for you to use as a guide in identifying these people.

25. You should learn who these people are during the General Cadet Knowledge classes you attend this year. If you do not learn the name, ask your officers and they will help you to complete the following questions. Copy the questions into your notebook. Identify the following:

a. **Department of National Defence.** Identify the following:

- (1) Chief of Defence Staff (CDS).
- (2) Director of Cadets (D Cdts).
- (3) Area Cadet Officer (ACO).
- (4) Cadet Liaison Officer (CLO).

b. **Air Cadet League.** Identify the following:

- (1) National President.
- (2) Executive Director.
- (3) Provincial Committee Chairperson.
- (4) Sponsoring Body.
- (5) Sponsoring Committee Chairperson.

26. **READ THE NEXT SECTION IF YOU WANT TO FIND OUT ALL THE ANSWERS FOR THE AVIATION TRIVIA GAME – IMPRESS YOUR FRIENDS OR MAYBE EVEN YOUR WARRANT OFFICER!**

SECTION 4

CANADIAN AVIATION HISTORY

GENERAL

27. This section contains all the information you will need to know to answer questions in the Aviation Trivia Game you will play. You must be able to answer three questions correctly. It looks as though there is a great deal of information but if you take it one section at a time you will find it enjoyable and fun.

28. Aviation has played an important role in Canada's history. Airplanes and aircrew have helped develop the country by crossing its great distances faster than any train or truck, often in very difficult conditions. In times of war, Canada's aviators were always known for their skill and courage. Canadian designers and engineers have made many important inventions and advances.

29. In this section you will learn some of the names and events that have given Canada its great aviation tradition. Play the Aviation Trivia Game with your class instructor to use your knowledge from this chapter, learn more and have fun!

EARLY DAYS

30. Aviation came early to Canada. Scientist Wallace Turnbull began experimenting with aerodynamics in a wind tunnel in 1902, the first in Canada. By 1907, the Aerial Experiment Association had been formed in Nova Scotia with the help of American inventor Alexander Graham Bell. Canadian Casey Baldwin made the first public flight of an airplane in the United States in 1908, and in 1909 his colleague J.A.D. McCurdy flew a biplane called the Silver Dart in Nova Scotia. This was the first flight of a powered aircraft anywhere in the British Commonwealth. It didn't take long for aviation to catch on right across the country. In 1913 Alys McKee of Vancouver became the first Canadian woman to fly an airplane. Unfortunately, this enthusiasm didn't reach the Canadian military. The military was not impressed when two planes crashed during demonstrations in 1909. As a result, Canada entered the First World War with no air force.

31. After the First World War broke out in 1914, Canada decided to form an air force. It was a half-hearted attempt. The Canadian Aviation Corps went to England with one Burgess-Dunne biplane that never flew. One of its officers, Lieutenant W.F. Sharpe was killed in a flying accident in 1915 and became the first Canadian to die in air force service. The Canadian Aviation Corps died soon after. In spite of this, Canada's aviation contribution to the First World War was great. By the time the war ended in 1918 over 22 000 Canadians had served in the British Royal Flying Corps Royal Naval Air Service and Royal Air Force.

32. Canadian airmen became famous for their skill and courage in the First World War. The two highest scoring aces on the allied side were Canadians Billy Bishop (72 victories) and Raymond Collishaw (60 victories). Canadian airmen won many decorations, including three Victoria Crosses (VCs), the highest award for courage. Bishop was awarded the VC for a solo attack on a German airfield where he shot down three enemy planes. William Barker was awarded the VC after he singlehandedly took on about 60 German fighters, shot down four of them and escaped in spite of his serious wounds. A.A. McLeod was awarded a VC after he and his observer survived an attack on their bomber by eight German fighters and managed to shoot three of them down. Although McLeod was wounded and his plane was in flames he managed to climb out on the wing and fly the plane from there. He crash landed the plane and risked his life once more to rescue his observer from the wreckage, wounding himself again.

33. Canada finally got its airmen together in a separate Canadian Air Force (CAF) in 1918. The CAF was equipped with a fighter squadron and a bomber squadron. The war ended before either squadron could see action. By that time 1 563 Canadian airmen had given their lives in the First World War.

1920s AND 1930s

34. The aviation experience gained by Canadians in the First World War was put to good use in the decades that followed. In 1919 Canada issued air regulations to control the booming new industry. Small air services had appeared almost immediately, and the first trans-Canada flight was made in 10 days in 1920. Mail began to travel by air and in 1927 bush pilot Romeo Vachon made the first parachute delivery of mail, which was delivered to Quebec City. Canadians pioneered the art and science of bush flying. The north was opened up and explored by bush pilots who had to adapt their aircraft and themselves to the harsh, cold climate. Aircraft were sent by Canada's air force to the far north in 1927 to survey a shipping route through Hudson's Bay. The historic 13 month expedition taught pilots many lessons about cold weather flying.



35. Advances in technology were made. Canadian Wallace Turnbull developed the variable pitch propeller in the 1920s. This allowed pilots to adjust the angles of propeller blades for more efficient operation. Dr Wilbur Franks of Toronto invented the pressure suit, which allowed pilots to withstand more G-forces and has become a standard part of fighter pilot's gear. Pioneer bush pilot Rodolphe Page designed, built and flew his own aircraft in 1935 the first Canadian to do so. The Canadian aviation industry had begun to develop, with several types of aircraft being built, by the 1930s. In 1938 the Froebe brothers, three Manitoba farm boys, designed, built and flew their own helicopter. They had trouble with their engine and eventually gave up. This remarkable early achievement went unnoticed by Canadian authorities.

36. The CAF was brought back to Canada from England in 1920. In 1924 it was reorganized and became the Royal Canadian Air Force (RCAF). During the 1920s and 1930s the RCAF performed mainly civil

duties such as forest fire, fishery and anti-smuggling patrols; air mail deliveries; surveying the North; and others. The RCAF trained boys in technical trades between 1927 and 1932, and gave them the rank "Boy". This was perhaps an early precedent for air cadets. But the 1930s were not kind to the RCAF. The Great Depression struck Canada and this led the government to make spending cuts. The big cut to the RCAF in 1932 forced many personnel to leave and ended the boy apprentice programme.

37. New types of aircraft were taken on strength by the RCAF in the 1920s and 1930s. The Whitworth Siskin was Canada's first modern fighter and equipped the RCAF's first aerobatic team, the Siskins. The Blackburn Shark was Canada's first torpedo aircraft, and the Northrop Delta was the RCAF's first all-metal, stressed skin aircraft. Other new aircraft came on strength with the RCAF in the 1930s, but Canada's air force still found itself badly under equipped when Canada entered the Second World War in September 1939.

THE SECOND WORLD WAR

38. Canada's tiny air force was given a giant task at the start of the Second World War. The government agreed to train all the aircrew in the Commonwealth during the war, because Canada had so much wide open space and was far away from the fighting. This was called the British Commonwealth Air Training Programme (BCATP). Scores of new airfields were built and thousands of people recruited to support the massive operation. When the war ended in 1945 the RCAF had trained an incredible 131 533 pilots, flight engineers, navigators, radio operators, bombardiers and gunners from Canada, Britain, Australia and New Zealand.

39. Many of the Canadians who served in the RCAF in the Second World War were members of bomber squadrons. One quarter of all the British and Commonwealth bomber crews were Canadian. These men flew night after night on dangerous missions in bombers like the Halifax and the Lancaster. Anti-aircraft fire and enemy fighters inflicted heavy casualties on the bomber crews, but they continued their attacks in the hopes of forcing Germany to surrender. The bombing campaign did tremendous damage to Germany, but at a terrible cost to the men of Bomber Command. One quarter of all Canadians killed in the Second World War were bomber crewmen.

40. One of Canada's famous bomber crewmen was Air Commodore John Fauquier. He was one of the most highly decorated bomber pilots in the Second World War and became known as "the King of the Pathfinders". Pathfinders were squadrons of bombers that flew ahead of the main force to find a target in the darkness and mark it with flares. Fauquier became such an expert marker and bomber that he was given the position Master Bomber on many missions, including an important attack on a secret German missile base. Fauquier also commanded the famous Dambuster squadron after it returned from its 1943 raid on the Mohne and Eder dams in Germany. The Dambusters destroyed the dams with special bombs dropped from Lancaster bombers and flooded miles of Germany. A large number of the crewmen on this mission were Canadian.

41. Many Canadians continued the tradition of the First World War and flew as fighter pilots in the Second World War. During the Battle of Britain in the 1940s Canadian fighter pilots saw action for the first time and helped defeat the German air force in the skies over Britain. In 1941 Canadian fighter pilot Omer Levesque shot down an 0 190 fighter; this was the first time this new German fighter had been downed. Canadian fighter pilot George "Buzz" Beurling flew with the RAF on the Mediterranean island of Malta and became the highest scoring allied ace there by shooting down at least 29 enemy aircraft.

42. Canadian airmen were again noted for their courage in the Second World War. Pilot officer Andrew Mynarski was a crewman in a Lancaster bomber that was hit and was going down in flames. The crew was bailing out, but the tail gunner was trapped in his turret. Mynarski stayed with the plane and tried to free the tail gunner in spite of the flames all around him. He failed and was forced to jump, but died soon after from the severe

burns he received during the rescue attempt. Incredibly the trapped tail gunner survived the crash and lived to tell of Mynarski's courage. Mynarski was posthumously awarded the VCs. Lieutenant Robert Gray of the Royal Canadian Navy Volunteer Reserve attacked a Japanese destroyer in port with his Corsair fighter bomber and sank it in spite of heavy anti-aircraft fire which eventually killed him. He was posthumously awarded the VCs. In 1942 Wing Commander Birchall and the crew of his Catalina Flying aircraft spotted a Japanese invasion fleet approaching Ceylon, an island off the coast of India. He was shot down and taken prisoner but managed to alert the island in time to ready its defence. "The Saviour of Ceylon" spent the rest of the war a prisoner but frequently risked his life to protect his men from brutal treatment at the hands of their captors. He was awarded the Order of the British Empire after the war.

43. The huge demand for trained airmen in the Second World War led to the creation of air cadets so training could begin early for young men. The Air Cadet League of Canada was created in 1941, and in 1943 the Air Cadet Corps became a component of the RCAF. The Air Cadet Corps grew to a peak of 29 000 cadets during the Second World War.

POST-WAR AND THE 1950s

44. The post-war period and the 1950s were an exciting time for aviation in Canada. Many advances were made that helped make Canada a world aviation leader. In 1947 the RCAF took delivery of its first helicopter, the Sikorsky H-5. A year later the RCAF received the Vampire fighter, its first jet aircraft. In 1953 the RCAF received Comet jet transports, becoming the first air force in the world to use jet transport. The RCAF began using Sabre fighters in the 1950s and equipped a 12 squadron Air Division in Europe with them for the NATO forces. In the 1950s, the RCAF also recruited women for the first time since the Second World War. The Air Cadets became the Royal Canadian Air Cadets in 1946, and began to adapt their programme for peacetime.

45. The RCAF went back to war in the 1950s in the Korean War (1950 to 1953). Communist North Korea had invaded South Korea and the United Nations sent in forces to stop them. Canada sent the third largest force, including the RCAF to transport supplies, and also sent fighter pilots to serve with the US Air Force. The RCAF carried out a massive airlift operation during the war, making 599 round trips between North America and Japan carrying supplies. Less than two dozen North Star transports were used in this operation. Canadian fighter pilots shot down nine enemy planes. Flight Lieutenant Omer Levesque became the first Commonwealth pilot to score a victory in jet-to-jet combat in 1950 when he shot down a MIG-15 while flying an American F-86 Sabre fighter.

46. Canadian aircraft design became world class during the post-war years and the 1950s. The Avro Jetliner flew in 1949, missing being the first jetliner in the world to fly by only two weeks. Unfortunately, no additional funding was found for this unique Canadian design and only one was built. The Avro CF-100 first flew in 1950, becoming the first – and last – jet fighter to be designed and produced in Canada. Six hundred and ninety-two of these all weather fighters were built. The "Clunk", as it was known, served Canada's air force until the 1980s. Avro unveiled its masterpiece in 1958 when it introduced the CF-105 Arrow. The huge interceptor was years ahead of its time, but so was its price tag. The government cut off funding in 1959 and cancelled the project.

47. Short takeoff and landing (STOL) aircraft became a Canadian specialty during this time. The De Havilland company designed the Beaver, a popular STOL aircraft. One thousand six hundred and ninety-one of these planes were built. The Canadair company built an improved version of the American Sabre fighter for the RCAF, which also used them to equip its famous aerobatic team, the Golden Hawks. A Canadair Sabre was used by American Jacqueline Cochrane, who became the first woman to fly faster than the speed of sound.

1960s

48. The 1960s were years of great change in Canada, and the world of aviation was no exception. Perhaps the greatest change involved the RCAF: it disappeared. In February 1968 the air force, army and navy were merged into the unified Canadian Armed Forces. The air force was divided into various commands within the Armed Forces. These commands

became the new partner for Air Cadets, which also saw changes in the 1960s. A gliding programme was introduced to air cadets at summer camp in Penhold, Alberta in 1965. By 1967 gliding had become a major priority for the Air Cadet League which began to buy its own gliders. Today the League owns 52 gliders which the CF operate at gliding sites all over the country during the spring and the fall, and at five Regional Gliding Schools during the summer.

49. The 1960s were also years of celebration in Canada. Canada marked its centennial or 100th birthday in 1967 and the RCAF did its best to help celebrate. Fighter pilot Lieutenant Colonel R.A. "Bud" White flew a CF-104 Starfighter to 100 110 feet. He was hoping to reach a record altitude to celebrate the Centennial, but he fell short of the record held by a Soviet pilot. The RCAF formed a special aerobatic team called the Golden Centennaires to perform during 1967. The Centennaires flew the new Tutor training aircraft, built by Canadair as the CL-41. Other aerobatic teams of the 1960s included the Goldilocks, who flew Harvard trainers until the Tutor was delivered; the Grey Ghosts, a navy team who flew Banshee jet fighters; and the famous Red Knight. The Red Knight thrilled crowds in his bright red T-33 jet until 1969.

50. More strange new aircraft appeared in Canada during the 1960s. The Canadair CL-84 aircraft could convert itself from an airplane to a helicopter by tilting its wings and engines upward. Two RCAF squadrons found themselves not needing pilots when they took delivery of the BOMARC surface-to-air missiles. These huge missiles were designed to knock down invading bombers with nuclear warheads. The CF-104 Starfighter entered RCAF service in the 1960s, looking more like a missile than an airplane. The Grumman Albatross was able to operate off land, water or snow and served the RCAF as a rescue aircraft. The RCAF also took delivery of the CF-101 Voodoo interceptor and CF-5 Freedom Fighter during the 1960s. The Royal Canadian Navy began to fly the new Sea King helicopters from the tiny decks of destroyers, a technique they developed. The navy's last aircraft carrier HMCS Bonaventure operated aircraft like the Banshee and the Tracker all over the world.

51. The RCAF operated in some strange places in the 1960s. United Nations peacekeeping operations had been going on since the 1950s and the RCAF sent aircraft to places like Yemen, Pakistan and Cyprus to support peacekeepers in the 1960s. There were always dangers in war zones like these. RCAF Caribou transports had trouble taking off from runways at an airport in India because the runways were covered with bomb fragments. Canadian airmen would find more danger on peacekeeping operations in the future.

1970s AND 1980s

52. Canada's airmen and women were brought back together in a single Air Force in 1975. Air Command of the Canadian Armed Forces was created in that year, and in 1984 they began to wear blue uniforms again. New aircraft were purchased, including the Boeing 707 transport aircraft the Aurora maritime patrol aircraft and the CF-18 jet fighter. Old aircraft such as the Cessna L-19 observation aircraft, were sold to the Air Cadet League in 1972 for use in the gliding programme. The Air Cadet League now owns 28 tow aircraft. Air cadet recruitment was also given a boost in 1975 when females were allowed to join the movement for the first time. The Armed Forces went one step further in 1980 when its first female pilots graduated. Captains Leah Mosher, Deanna Brasseur and Norma Bottomley graduated at CFB Moose Jaw, Sask where all CF pilots earn their wings. Moose Jaw is also the home of 431 Air Demonstration Squadron better known as the Snowbirds.

53. Peacekeeping duties continued in the 1970s and 1980s and so did the dangers that went with them. A CF Twin Otter was destroyed in 1971 in Pakistan when an Indian aircraft attacked the airport where it was parked. No Canadians were injured. However, tragedy struck in 1974 when a CF Buffalo on peacekeeping duty in the Middle East was shot down by Syrian air-to-air missiles. The Buffalo had appeared as an enemy Israeli aircraft on the Syrian's radar. Nine Canadian airmen died.

54. Canada's aircraft industry continued to advance. DeHavilland has continued to use its STOL technology to produce the Dash-7 and Dash-8 aircraft, which are popular with small airlines. Canadair's Challenger executive jet has been a success, and the SPAR aerospace company brought Canada to the forefront of space technology with the Canadarm that equips the US space shuttles. Marc Garneau made history in 1984 when he flew aboard the space shuttle Challenger, becoming the first Canadian to fly in space.

55. An extraordinary aviation event took place at the airport at Gimli, Manitoba on 23 July 1983. An Air Canada 767 air liner carrying 61 passengers and eight crew landed there with no power. Flight 143 had suddenly run out of fuel at 41 000 feet over Manitoba while en route from Montreal to Edmonton. Without power, the huge airliner became a glider with only limited control. The pilot Captain Robert Pearson glided the 767 for 80 km to a landing that caused no injuries and only minor damage.

56. You now know where to find most of the answers to the aviation in trivia game. However, developments in the field of aviation in Canada are constantly being made. As an air cadet you should be on the look out for new aircraft.



CHAPTER 3

PERFORMANCE OBJECTIVE 404

CITIZENSHIP

SECTION 1

FORMS OF GOVERNMENT

1. All of us need to know how we can make a difference in our community or country. An understanding of how governments function will enable us to work with the system to obtain what is best for everyone.
2. Government exists in some form even in the most primitive societies. Governments in each society have distinctive characteristics and as society develops, government usually passes through several changes.
3. The basis used for the classification of these various types of government is the number of persons who rule or share the ruling power, as follows:
 - a. **Autocracy.** Autocracy means one person governs. The government is usually an absolute monarchy or a dictatorship, eg, France under Louis XIV and Nazi Germany. Although, the result of a dictatorship and a monarchy is similar, they come about in different ways.
 - b. **Oligarchy.** Oligarchy means power is in the hands of a few.
 - c. **Democracy.** Where control is generally vested in the population, then the government is often a democracy, eg, Canada.

DEMOCRATIC CONSTITUTION

4. A democratic constitution such as we have in Canada, is a body of basic rules that the government of the day cannot change without following a detailed, prescribed procedure. A democratic constitution is merely a set of rules that govern the people. It is also a device to ensure that the state remains an instrument for furthering common interests.

5. The main features of the democratic constitution ensure that those who exercise the powers of government act responsibly.

TRUE DEMOCRACY

6. Democracy is more than a method of government, it implies several important beliefs and traditions. One of these beliefs is that open discussion by a well-informed public will result in the best policies for the country. Another belief is that the best political system is one in which as many people as possible have a share in decision making and responsibilities. Freedom of choice in politics and other related matters, and individual values are also basic to democracy. Democracy recognizes personal freedom and the right to make your own choices as being important. Democracy means that people know what is best for themselves.

7. Democracy provides certain rights and freedoms. When the Canadian Bill of Rights was passed in 1960, the human rights and basic freedoms to which everyone is entitled under the laws of Canada were listed as follows:

- a. The right of the individual to life, liberty, security of the person and enjoyment of property, and the right not to be deprived thereof except by due process of the law.
- b. The right of the individual to equality before the law and the protection of the law.
- c. Freedom of religion.
- d. Freedom of speech.
- e. Freedom of assembly and association.
- f. Freedom of the press.

8. The bill states that these rights and freedoms exist for everyone without discrimination by reason of race, national origin, colour, religion or sex.

9. The Bill of Rights was officially replaced by a new Charter of Rights and Freedoms in 1982. This new Charter reflects the same basic freedoms expressed in paragraph 7. In addition, it adds to the protection provided for every citizen by the original Bill of Rights.

10. The individual is expected to be moderate in exercising personal rights. No freedom is complete. Freedom of speech, for example, is only permitted within reasonable limits, and it does not include slander or treason, which are forbidden by other laws. Consideration for the rights of others is the mark of a good citizen. A good team member at the squadron will consider the well being of other cadets. If you look after others you will gain their respect.

EVERYONE'S IDEAS ARE IMPORTANT

11. Whether you have been here in Canada just a few years or all your life, you can't help reacting to situations around you. You probably have some good ideas about how to make life in Canada better for yourself and for other people. You might want to change some school or recreation programmes, or traffic patterns – things in your neighbourhood and in society that affect you and other people too.

12. Have you done anything about these ideas? Did you know that you can? There are many ways in Canada to change things for the better. For example, people improve the school programme by helping as volunteers; they improve recreation by teaching the crafts and sports they know; they serve as volunteer firefighters in smaller communities; and so on.

13. Often it is not enough to act alone. People need to let each other know what they think. They can do this by reading and writing letters to the newspapers, and by attending meetings where plans are discussed. They can share ideas with organizations, such as associations at their children's schools and in their neighbourhood. Often the most effective way to communicate your ideas is to form or to join a group of people who want to see the same changes.

14. As a resident of a democratic country, you are free to have your own political ideas. You are free to express your opinions and to agree or disagree with the ideas of others; you are free to join with others for political action.

15. A Canadian citizen has the right to vote in democratic elections and to run as a candidate for political office. Those who vote choose the people who oversee the daily work of government and make our laws – laws that affect the lives and rights of everyone in Canada.

16. The rights of Canadians are embodied in various laws. For example, civil and criminal laws indicate people's rights during court procedures. In addition, all the provinces, the territories and the Federal Government have legislation dealing with human rights.

17. It is not the laws themselves, however, that guarantee your rights. Your best guarantee of your rights is your active interest and involvement in making and changing laws. You must share your ideas with others and convince your political representatives to put forward your ideas. People often disagree over what the law means, or over which new laws are needed. Some disagreements disappear as people discuss and change their views. Others are resolved by decisions of the law courts. All of these are aspects of Canada's political life.

SECTION 2

HOW CANADA IS GOVERNED

18. The federal Government of Canada is a government that controls a union of provinces, each of which has its own government. Federal Government refers to the central government of all provinces and is headquartered in Ottawa.

19. In Canada there are three levels of government: municipal, provincial/territorial and federal. The provincial or territorial governments are responsible for such areas as education, child welfare, highways and health care. The Federal Government is responsible for citizenship, foreign policy, postal services and currency.

20. The Federal Government is divided into three major groups called branches. The following are the branches:

- a. **Executive Branch.** The executive branch consists of the Governor General, the Cabinet and the Public Service. The executive branch is the branch that executes the wishes of the people as expressed by Parliament.
- b. **Legislative Branch.** The legislative branch is the law-making part of the government. It is the legislative branch that passes the acts which give the executive branch the authority for governing the country. The legislative branch consists of the Senate and the House of Commons. The legislative branch expresses the desires of the people by legislation.
- c. **Judicial Branch.** An important feature of Canadian democracy is the rule of supremacy of law. This means that the government itself is controlled by law and must act according to its terms. A prime minister, a public servant or a police officer are subject to the law of the land in the same way as every other citizen.

SECTION 3

COMMUNITY GROUPS

21. During your first year training you learned about the sponsor of your squadron. You learned that the sponsors are the backbone of the Air Cadet League. Many sponsors are community groups such as the Lions Club, Rotary Club, Kinsmen, Royal Canadian Legion or Royal Canadian Air Force Association. In addition to sponsoring your squadron, these groups conduct many other very worthwhile activities. For example, Lions International is committed to helping blind and vision-impaired people. They sponsor the training of seeing eye dogs and donate money to research in the field of vision.

22. Other community/service groups do similar work in other areas. Find out what community groups exist in your area and on what areas of concern they concentrate.

SECTION 4

YOUR ENVIRONMENT

23. This year you will have an opportunity to make a contribution toward saving the environment in your squadron's community. Your instructor will work with you for two classes discussing different ways to save the environment. Some of you may have reviewed this topic at school. Bring those ideas to your discussions and develop with your friends what your contribution to saving the environment will be this year. In total you will have to participate in two community activities this year. Have fun and make your community proud of air cadets.

SOME SUGGESTIONS

24. **While Shopping.** Buy beverages in returnable containers or if that is not possible, then in recyclable ones.

25. **In the Home.** The following are suggestions for the home:

- a. When brushing your teeth, turn the water off while you are actually brushing, instead of running it continuously. Use water from a mug for rinsing.
- b. Short showers use less water than baths.
- c. Never flush garbage of any kind down your toilet. Solvents and chemicals are harmful to the environment and cigarette butts, dental-floss, etc, can cause problems at sewage treatment plants.
- d. Turn off the lights, radio and television when you leave the room.



e. Practice the three R's:

REDUCE – Don't buy more than you need. Buy products that are lasting and durable.

RE-USE – Be practical and be creative in finding further uses for things instead of discarding them.

RECYCLE – Contact environmental groups in your area to find out more about the recycling programmes and Blue Box activities in your community.

26. **Group Projects.** The following are applicable:

- a. Join neighbourhood litter and pollution clean-up days or weekends.
- b. Plant trees. They help to reduce air pollution by absorbing carbon dioxide.
- c. Organize a neighbourhood or area paper, bottle or can recycling programme and establish a recycling depot, if one does not already exist.
- d. Plan environmental education events.

DID YOU KNOW?

In 1991 the average Canadian discarded 1.7 kg of garbage each day. The average American throws out 1.6 kg. Residents of the UK and Japan both produce about 0.9 kg of garbage each day, while in China, that number is about 0.5 kg.

ENVIRONMENT CANADA COMMUNICATIONS OFFICES

27. The following are the Environment Canada Communications Offices:

*** Atlantic Region** (902) 426-7990

Publications Officer
Environment Canada
Queen Square
45 Alderney Drive, 15th Floor
Dartmouth, Nova Scotia
B2Y 2N6

*** Quebec** (418) 648-7204

Communications Directorate
Environment Canada
PO Box 6060
3 Buade Street, 4th Floor
Quebec, Quebec
G1R 4V7

*** Ontario** (416) 973-6467

Communications Directorate
Environment Canada
25 St. Clair Avenue East. Room 600
Toronto, Ontario
M4T 1M2

*** National Capital Region** (819) 997-2800

Inquiry Centre
Environment Canada
351 St. Joseph Boulevard
Hull, Quebec
K1A OH3

*** Manitoba** (204) 983-2021

Communications Directorate
Environment Canada
457 Main Street, Room 703
Winnipeg, Manitoba
R3B 3E8

*** Saskatchewan** (306) 780-6002

Communications Directorate
Environment Canada
1901 Victoria Avenue, Room 241
Regina, Saskatchewan
S4P 3R4

*** Alberta and Northwest Territories** (403) 468-8075

Communications Directorate
Environment Canada
Twin Atria 2
4999 98th Avenue, Room 210
Edmonton, Alberta
T6B 2X3

*** British Columbia and Yukon Territory** (604) 666-5900

Communications Directorate
Environment Canada
224 West Esplanade,
North Vancouver, British Columbia
V7M 3H7

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CHAPTER 4
PERFORMANCE OBJECTIVE 405
PHYSICAL FITNESS

GENERAL

1. The promotion of physical fitness is one of the primary aims of the cadet movement.
2. Physical fitness is a basic part of existence and should be an enjoyable use of your time. Many people enjoy team sports on a competitive level while some people do not enjoy this type of activity. For those who do not wish to take part in team/competitive sports there are many other activities that may be of interest. Some of these activities include skiing, skating, walking, canoeing and bicycling.
3. The Air Cadet Fitness Programme (ACFP) is based on six fitness-performance tests that give an overall picture of your general physical fitness condition. The six tests, each of which have a specific purpose, include the following:
 - a. push-ups, for arm and shoulder girdle strength;
 - b. shuttle run, for speed, power and agility;
 - c. partial curl-ups, for abdominal muscles;
 - d. standing long jump, for power and agility;
 - e. 50 m run, for speed, power and agility; and
 - f. endurance run, for stamina.

CRESTS

4. Crests are awarded on the basis of level of achievement. The following are applicable:
 - a. **Award of Excellence.** Excellence level in all six test items.
 - b. **Gold.** Gold level or higher in five test items including endurance run.

- c. **Silver.** Silver level or higher on four test items, including endurance run.
 - d. **Bronze.** Bronze level or higher in four test items, including endurance run.
5. The crest has its origin in the **TRISCELE**, which is an ancient symbol of the sun. The triscele represents the revival of life and of prosperity. The symbol of the triscele is on monuments that date back as far as 1300 BC. It is interesting that the earliest instances of the classical triscele's use have a clear connection with fitness. A shield bearing this symbol appears on a vase designed as a prize in Athenian competitions during the sixth century. (Figure 2-9 illustrates the badges that may be awarded to you. They are to be worn on your uniform.)

PREPARATION

6. A basic conditioning or training programme of about three to four weeks may be conducted by your instructors. A similar programme could follow the testing to improve the results.
7. The six ACFP activities are described in Figures 4-1 to 4-6. The standards charts from which your score is calculated are shown as Figures 4-8 to 4-13. Your instructor will explain the use of these charts. A sample personal progress chart is illustrated in Figure 4-7. You should receive one of these from your instructor.
8. The ACFP is based on the Canada Fitness Award, a programme of Fitness Canada Government of Canada. The figures are reproduced with permission.
9. If you have achieved a Canada Fitness Award level from school or from another organization, you can get credit for this at Cadets. You will probably have to bring in proof of this level. Check with your instructor or training officer to determine the procedure.

1 Push-Ups

Equipment: Ensolite or hard surface gymnastic mat.

Starting Position: The participant assumes a front lying position on the mat with hands placed approximately under shoulder, legs straight and together, and toes tucked under so that they are in contact with the mat.

Action: The participant then pushes with the arms until they are fully extended, keeping legs and back straight. The body is then lowered, using the arms and keeping the back in a straight line from head to toes, until the elbows reach 90 degrees and the upper arms are parallel to the floor. This movement is repeated as many times as possible.

There is no time limit to this test, but push-ups must be performed rhythmically and continuously.

The test is terminated for the following reasons:

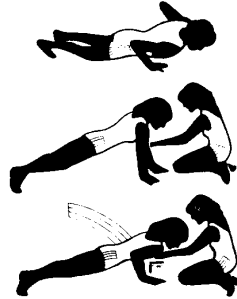
- participant appears to be experiencing severe discomfort and/or pain;
- participant is unable to maintain a rhythmic movement and must rest (stop test after participant falls behind more than three repetitions); and/or
- participant consistently displays poor techniques*, despite repeated corrections by the examiner (a maximum of three corrections may be tolerated).

The examiner should demonstrate the correct movement and most common faults and allow participants to practise the exercise several times prior to testing day.

***Examples of poor technique:**

- knees touching floor;
- upper or lower back swaying;
- failure to reach a complete arm extension;
- failure to attain an approximate 90 degree bend at elbow.

Administrative Hint: 1) Have participants work in partners. Test what a 90 degree bend at elbows feels like. Partner checks for 90 degree accuracy and places a hand under shoulder or chest at a height where 90 degrees is attained. During the execution of each push-up, the participant only has to touch the partner's hand with chest or shoulder to know that the accurate height has been reached, as well as how many push-ups have been completed. 2) Too many practice trials of this test item on testing day can fatigue the participant unnecessarily. Use your own discretion.



2 Shuttle Run

Equipment: Stop-watch, three wooden blocks (or beanbags, etc), two parallel lines 10 m apart.

Instructions: Place one block beside subject just behind starting line, two blocks just behind far line.

Starting Position: Begin face down, forehead on starting line, hands at side of chest.

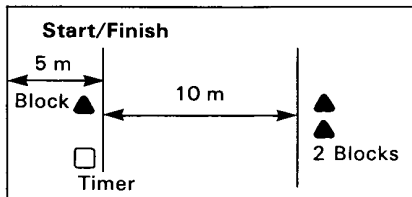
Action: On signal ("ready") GO! participant runs to far line and picks up a block; returns to the starting line; drops the block and picks up the other block (ie, **exchange**); runs to the far line; **exchanges** blocks again; and **carries** block across the finish line.

Administrative Hint: Participant should be in gym shoes (or barefeet) but not in stocking feet.

Ensure that there are no obstructions beyond the start-finish line.

Ensure an appropriate rest interval between trials.
Scoring: Start watch on 'GO'; stop when participant crosses start-finish line.

At the time of the test, record best of two trials to nearest 1/10th of a second on test record card.



3 Partial Curl-Ups

Equipment: Gymnastic mat, metronome (set to 40 beats per minute).

Starting Position: The participant lies on back, with the knees slightly bent at an angle of 140 degrees (approximately 6 to 10 cm off the floor), heels on the ground, arms extended along thighs with fingers pointing towards the knees. **Stabilization, hooking or anchoring of the feet is NOT permitted.**

Action: The initial phase of the curl-up must involve a "flattening out" of the lower back region (ie, pelvic tilting), followed by a **slow** "curling-up" of the upper spine with the hands sliding along thighs until finger tips touch knees. At this point, the trunk should be raised at an angle of no greater than 30 degrees to the floor. Heels must remain in contact with the floor at all times. Return to starting position, touching the partner's hand with back of head.

The movement is slow, and well controlled. The time to perform the lifting and lowering stages is the same. The cadence is 20 curl-ups per minute or 3 seconds per movement. Verify metronome accuracy with a stop-watch.

The participant is to perform without pausing between curl-ups to a maximum number without a time limit. Allow the participant to practise the exercise several times prior to test day.

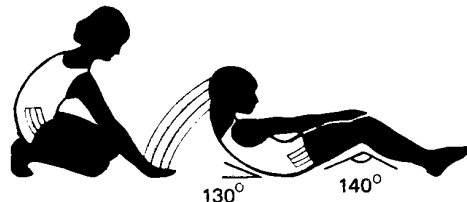
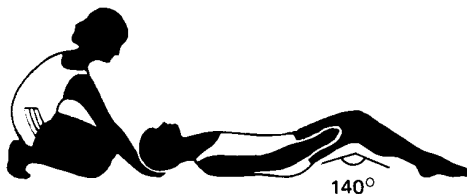
The test is terminated if the participant:

- appears to be experiencing severe discomfort and/or pain;
- is unable to maintain correct rhythm and must rest (stop test after participant falls

- behind more than three repetitions); and/or
- consistently displays poor technique*, despite repeated corrections by the examiner (a maximum of three corrections may be tolerated).

***Examples of poor technique:**

- lifting the heels off the floor;
- failure to slide hands along thighs (ie, throwing forward is not allowed);
- failure to touch knees;
- head not touching the partner's hand; and
- failure to maintain desired angles at knees or trunk.



4 Standing Long Jump

Equipment: Three-metre ensolite or hard surface gymnastic mat, tape measure, stick.

Instructions: On the mat, mark a starting line with masking tape approximately 40 cm from one end of the mat. Secure the tape measure from the starting line along the mat, close to one edge.

Starting Position: As many practice trials as time permits are allowed. Begin with feet slightly apart, toes behind starting line.

Action: Bend hips, knees and ankles, push vigorously with legs while swinging arms forward.

Scoring: Use stick behind heel nearest take-off line to extend perpendicularly to measuring tape. At the time of the test, record the better of two trials to nearest centimetre on test record card.

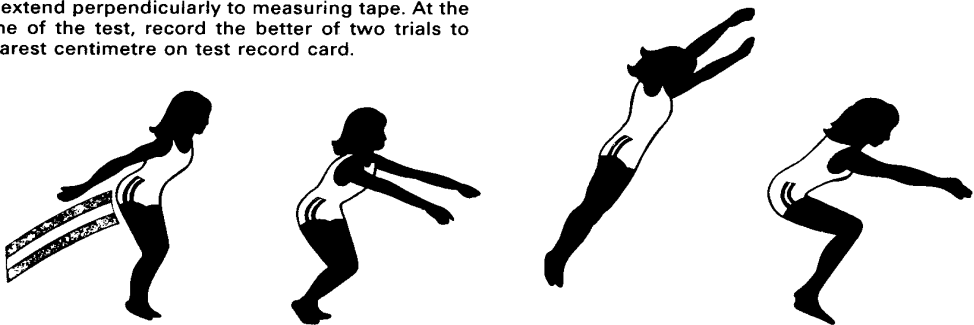
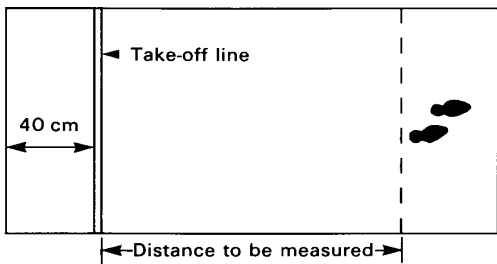


Figure 4-4 Standing Long Jump

Figure 4-5 50 m Run

5 50 m Run

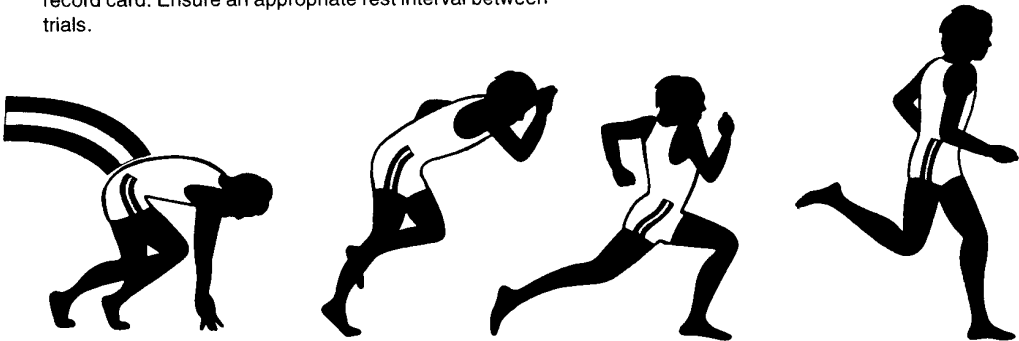
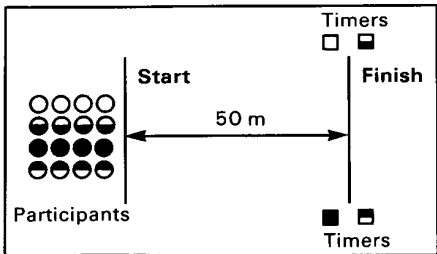
Equipment: Stop-watch for each timer, 50 m straight-away with run-off, four pylons or flags, starting flag.

Instructions: Mark off 50 m course. Ensure that all participants are wearing running shoes.

Starting Position: Line participants in four lanes behind starting line, timers at finish line.

Action: On signal ("ready") GO! starter drops flag and each participant runs as fast as possible **past** the finish line.

Scoring: From drop of flag until participant crosses finish line. Score to nearest 1/10th of a second on test record card. Ensure an appropriate rest interval between trials.



6 Endurance Run

Equipment: Stop-watch for each timer, four pylons or flags, starting flag.

Instructions: Mark off 50 m square (alternatives 60 m by 40 m or 70 m by 30 m). Ensure that all participants have running shoes.

Starting Position: Place one group of participants, with timer, at each corner. Timers tally laps for each runner on back of the test record card.

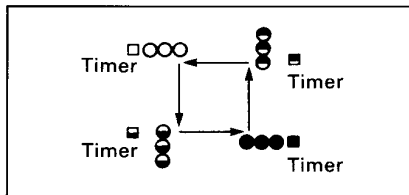
Inform participants how many laps they will run (four laps, ages 6 to 9; eight laps, ages 10 to 12; 12 laps, ages 13 to 17).

Instruct participants to maintain a steady, pace to complete the distance as quickly as possible, but to stop or **preferably** walk if they are unable to continue running.

Action: On signal ("ready") GO! flag drops and all participants begin.

Scoring: At completion of required number of laps, register elapsed time in minutes and seconds on test record card.

Note — It is important that participants be allowed a light "warming-up" before and a "cooling down" period following this event. Stretching leg muscles before and after releases strain and tightness in muscles. Encourage participants to continue walking and "deep breathing" for three to five minutes.



Your Personal Progress Chart						
TESTS	Push-ups	Shuttle Run	Partial Curl-ups	Standing Long Jump	50 m Run	Endurance Run
GOAL						
September						
October						
November						
December						
January						
February						
March						
April						
May						
June						
July						
August						

Figure 4-7 Personal Progress Chart

1 PUSH-UPS

(Total Number)

Standard by Age	Female						
	12	13	14	15	16	17	18
Excellence	20	21	20	20	24	25	25
Gold	17	17	16	20	20	20	20
Silver	10	11	16	15	12	16	16
Bronze	2	4	3	7	4	7	7

(Total Number)

Standard by Age	Male						
	12	13	14	15	16	17	18
Excellence	31	39	40	42	44	53	53
Gold	28	35	32	37	40	46	46
Silver	18	24	24	30	30	37	37
Bronze	9	11	13	20	22	23	23

Figure 4-8 Push-up Standards

2 SHUTTLE RUN

(To nearest 1/10th of a second)

Standard by Age	Female						
	12	13	14	15	16	17	18
Excellence	12.2	11.9	11.6	11.8	11.7	11.6	11.6
Gold	12.5	12.3	12.0	12.2	12.0	11.9	11.9
Silver	13.1	19.0	12.7	12.9	12.6	12.6	12.6
Bronze	14.3	14.1	14.8	14.0	13.8	13.7	13.7

(To nearest 1/10th of a second)

Standard by Age	Male						
	12	13	14	15	16	17	18
Excellence	11.7	11.4	10.9	10.8	10.5	10.4	10.4
Gold	12.0	11.6	11.2	11.0	10.7	10.6	10.6
Silver	12.5	12.1	11.7	11.4	11.1	11.1	11.1
Bronze	13.7	13.5	12.7	12.4	12.1	11.9	11.9

Figure 4-9 Shuttle Run Standards

3 PARTIAL CURL-UPS

(Total Number)

Standard by Age	Female						
	12	13	14	15	16	17	18
Excellence	50	59	48	38	49	58	58
Gold	43	50	41	35	35	49	49
Silver	38	40	30	26	26	40	40
Bronze	19	22	20	15	16	26	26

(Total Number)

Standard by Age	Male						
	12	13	14	15	16	17	18
Excellence	64	59	62	75	73	66	66
Gold	54	51	54	87	50	58	58
Silver	32	39	40	45	37	42	42
Bronze	22	28	24	26	24	25	25

Figure 4-10 Partial Curl-up Standards

4 STANDING LONG JUMP

(Centimetres)

Standard by Age	Female						
	12	13	14	15	16	17	18
Excellence	179	184	189	188	196	198	198
Gold	171	170	181	181	187	190	190
Silver	158	163	162	185	173	174	174
Bronze	133	141	145	144	147	152	152

(Centimetres)

Standard by Age	Male						
	12	13	14	15	16	17	18
Excellence	183	200	213	223	232	238	238
Gold	176	193	206	215	224	231	231
Silver	184	177	199	202	211	220	220
Bronze	143	151	166	171	191	195	195

Figure 4-11 Standing Long Jump Standards

5 50 m RUN

(To the nearest 1/10th of a second)

Standard by Age	Female						
	12	13	14	15	16	17	18
Excellence	8.4	8.0	7.9	8.0	7.9	7.9	7.9
Gold	8.6	6.2	8.1	8.2	8.1	8.0	8.0
Silver	9.2	9.7	8.6	8.7	8.6	8.5	8.5
Bronze	10.2	9.5	9.4	9.4	9.3	9.2	9.2

(To the nearest 1/10th of a second)

Standard by Age	Male						
	12	13	14	15	16	17	18
Excellence	8.1	7.7	7.4	7.2	7.0	6.9	6.9
Gold	8.4	7.9	7.6	7.4	7.1	7.0	7.0
Silver	8.8	8.4	8.0	7.7	7.4	7.3	7.3
Bronze	9.7	9.2	8.8	8.4	8.0	8.0	8.0

Figure 4-12 50 m Run Standards

6 ENDURANCE RUN

(Minutes and Seconds)

Standard by Age	Female						
	1600 m		2400 m				
	12	13	14	15	16	17	18
Excellence	8:41	13:54	13:28	13:31	12:38	12:45	12:45
Gold	9:18	14:33	14:18	14:01	13:22	13:31	13:31
Silver	10:26	16:12	15:51	16:02	16:44	15:19	15:19
Bronze	12:46	18:59	18:51	18:58	18:37	18:53	18:53

(Minutes and Seconds)

Standard by Age	Male						
	1600 m		2400 m				
	12	13	14	15	16	17	18
Excellence	7:41	11:31	10:43	10:23	10:08	10:08	10:08
Gold	8:04	11:49	11:09	10:50	10:42	10:32	10:32
Silver	8:46	12:51	12:16	11:51	11:22	11:10	11:10
Bronze	10:31	15:35	14:40	14:46	14:08	13:33	13:33

Figure 4-13 Endurance Run Standards

406



S E N S I B L E
L I V I N G

CHAPTER 5

PERFORMANCE OBJECTIVE 406

SENSIBLE LIVING

GENERAL

1. What is sensible living? After you have completed this unit, you will have a little better understanding of just what it means to live sensibly.
2. You will complete this unit throughout the year. There will likely be several specialists invited to the squadron to talk to you about fire safety, hygiene and nutrition, drugs, alcohol and smoking. Although there is no formal test on this unit, you will have to attend the guest lecturers' presentations to complete your second year training.

NUTRITION

3. Figure 5-1 illustrates Canada's Food Guide. If you follow the guidelines set out in Canada's Food Guide, you can set up a good nutritional basis for a healthy life.

FIRE PREVENTION AND SAFETY

4. Figures 5-2 and 5-3 illustrate and explain the use of fire extinguishers. Your local fire department can provide you or your squadron with many pamphlets that contain useful information on fire prevention and safety.

Health Canada Santé Canada

CANADA'S *Food Guide* TO HEALTHY EATING FOR PEOPLE FOUR YEARS AND OVER

Enjoy a variety of foods from each group every day.

Choose lower-fat foods more often.

Grain Products
Choose whole grain and enriched products more often.

Vegetables and Fruit
Choose dark green and orange vegetables and orange fruit more often.

Milk Products
Choose lower-fat milk products more often.

Meat and Alternatives
Choose leaner meats, poultry and fish, as well as dried peas, beans and lentils more often.


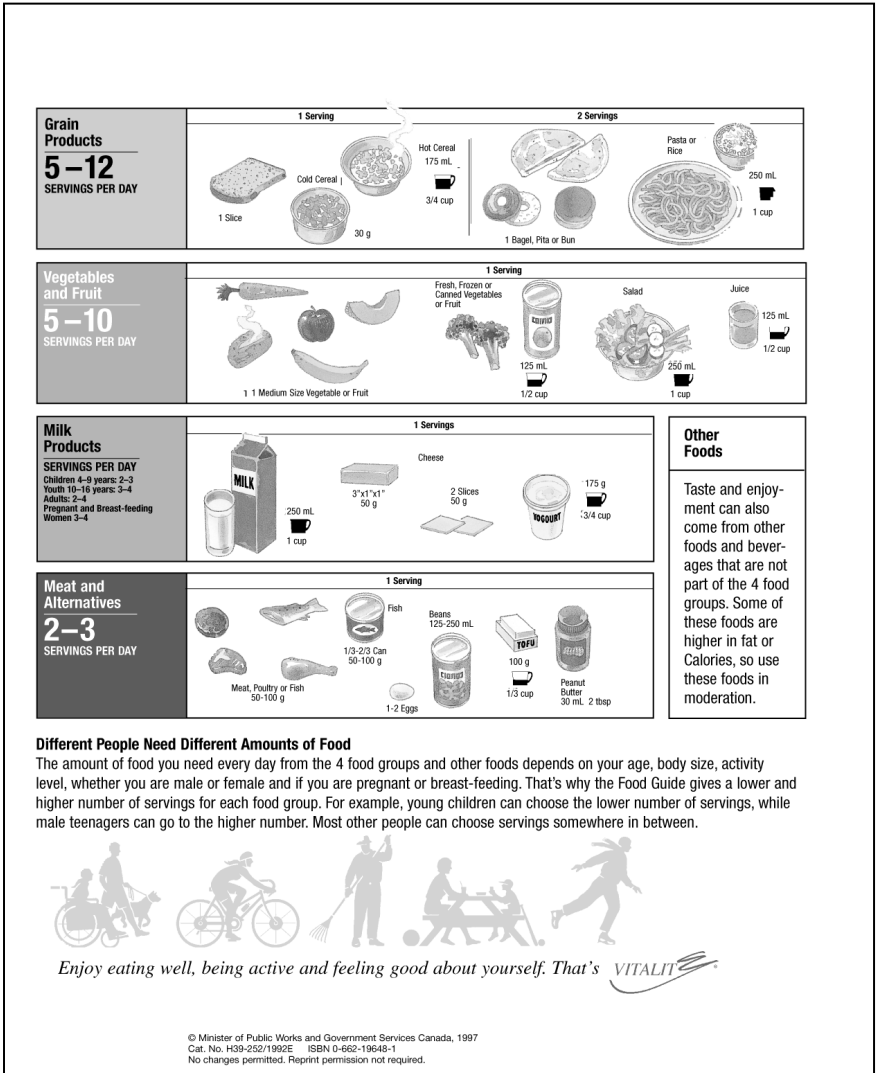
Canada 

Figure 5-1 (Sheet 1 of 12) Canada's Food Guide



Different People Need Different Amounts of Food

The amount of food you need every day from the 4 food groups and other foods depends on your age, body size, activity level, whether you are male or female and if you are pregnant or breast-feeding. That's why the Food Guide gives a lower and higher number of servings for each food group. For example, young children can choose the lower number of servings, while male teenagers can go to the higher number. Most other people can choose servings somewhere in between.



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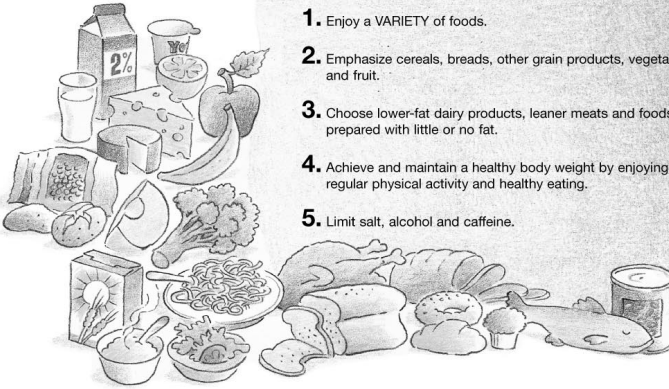
Figure 5-1 (Sheet 2 of 12) Canada's Food Guide

What is the Food Guide based on?

Canada's Food Guide to Healthy Eating is based on these guidelines from Health Canada:

Canada's Guidelines for Healthy Eating

1. Enjoy a VARIETY of foods.
2. Emphasize cereals, breads, other grain products, vegetables and fruit.
3. Choose lower-fat dairy products, leaner meats and foods prepared with little or no fat.
4. Achieve and maintain a healthy body weight by enjoying regular physical activity and healthy eating.
5. Limit salt, alcohol and caffeine.



Eating is one of the best things life has to offer. Food helps you celebrate with your family and friends. It nourishes your body. It gives you energy to get through each day. The right balance of food and activity helps you stay at a healthy body weight. You don't have to give up foods you love for the sake of your health. But you do need to aim for variety and moderation. Let **Canada's Food Guide to Healthy Eating** help you make your choices.



Figure 5-1 (Sheet 3 of 12) Canada's Food Guide

What does the Food Guide tell you?

The rainbow side of the Food Guide gives you advice on how to choose foods.

'Enjoy a variety of foods from each group every day.'

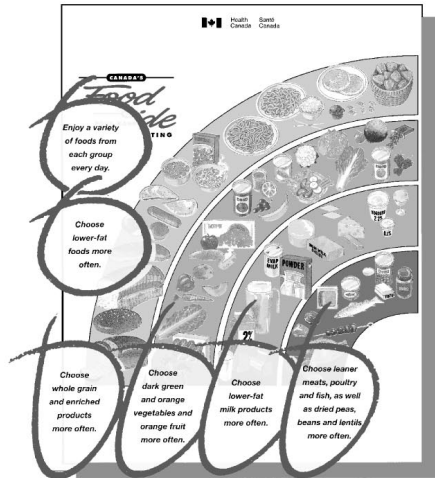
Try something new! Explore the rainbow of foods that make up the 4 food groups. Enjoy foods with different tastes, textures and colours.

The 4 food groups provide you with the nutrients you need to be healthy. You need foods from each group because each group gives you different nutrients. You also need to choose different foods from within each food group to get all the nutrients your body needs. Look at the chart on the opposite page for the key nutrients each food group offers.

'Choose lower-fat foods more often.'

Everyone needs some fat in their diet, but most people eat too much fat. Eating more breads, cereals, grains, vegetables, fruit, peas, beans and lentils will help you cut down on fat. You can also choose lower-fat dairy products and leaner meats, poultry and fish.

Each of the 4 food groups includes foods that contain fat. Eat lower-fat foods from each group every day. Choose smaller amounts of higher-fat foods. If you do, you'll be able to enjoy the foods you love and eat well at the same time.



Tips to Reduce Fat

- Spread less butter or margarine on bread, buns or bagels.
- Have salads with less dressing or with a lower-fat dressing.
- Try vegetables without butter, margarine or rich sauces.
- Try skim, partly-skim or reduced-fat milk products in recipes.
- Choose meat, poultry or fish that are baked, broiled or microwaved. Serve with light broth or herbs.
- Have fried or deep-fried foods less often.
- Have snacks such as chips and chocolate bars less often.

Figure 5-1 (Sheet 4 of 12) Canada's Food Guide

'Choose whole grain and enriched products more often.'

Whole grain products such as whole wheat, oats, barley or rye are suggested because they are high in starch and fibre. Enriched foods are recommended because they have some vitamins and minerals added back to them. Treat yourself to multi-grain breads, pumpernickel bagels, enriched pasta, brown rice, ready-to-eat bran cereals or oatmeal.

'Choose dark green and orange vegetables and orange fruit more often.'

These foods are higher than other vegetables and fruit in certain key nutrients like vitamin A and folacin. Go for salads, broccoli, spinach, squash, sweet potatoes, carrots, cantaloupes or orange juice.

'Choose lower-fat milk products more often.'

Lower-fat milk products have less fat and Calories, yet still provide the high quality protein and calcium essential to healthy eating. Whether it's milk, yogurt, cheese or milk powder, choose the lower-fat option. Look at labels and choose products with a lower % M.F. (Milk Fat) or % B.F. (Butter Fat). Then you can have the refreshing taste of milk products with less fat.

'Choose leaner meats, poultry and fish, as well as dried peas, beans and lentils more often.'

Many leaner meats, poultry, fish and seafood choices are available to help you reduce your fat intake without losing important nutrients. Be sure to trim visible fat. Try baking, broiling, roasting or microwaving instead of frying, and drain off extra fat after cooking. To lower your fat while increasing your intake of starch and fibre, choose foods like baked beans, split pea soup or lentil casserole.

Key Nutrients in Canada's Food Guide to Healthy Eating

Each food group is essential. That's because it provides its own set of nutrients.

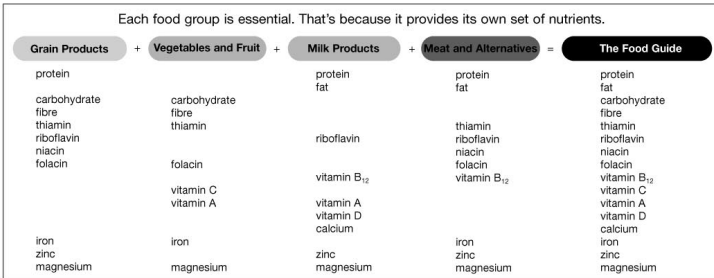


Figure 5-1 (Sheet 5 of 12) Canada's Food Guide

What does the Food Guide tell you?

The bar side of the Food Guide shows you the serving sizes for different foods. It also explains that different people need different amounts of food.

What are 'Other Foods'?

'Other Foods' are foods and beverages that are not part of any food group.

They include:

- foods that are mostly fats and oils such as butter, margarine, cooking oils and lard
- foods that are mostly sugar such as jam, honey, syrup and candies
- high-fat and/or high-salt snack foods such as chips (potato, corn, etc.) or pretzels
- beverages such as water, tea, coffee, alcohol and soft drinks
- herbs, spices and condiments such as pickles, mustard and ketchup.

These foods can be used in making meals and snacks and are often eaten with foods from the 4 food groups.

More About 'Other Foods'

Water

- Always satisfy your thirst. Choose water often and be sure to drink more in hot weather or when you are very active.

Alcohol

- For most adults, moderate drinking means no more than 1 drink a day and no more than 7 drinks a week. More than 4 drinks on one occasion, or more than 14 drinks a week is a risk to health and safety.
 - 1 drink = 1 bottle (or about 350 mL) of beer
 - 1 drink = 150 mL (or about 5 oz) of wine
 - 1 drink = 50 mL (or about 1 1/2 oz) of liquor
- If you are pregnant or breast-feeding, avoid alcohol.

Caffeine

- Use in moderation. Caffeine is found in drinks such as coffee, tea or colas and foods that contain cocoa. It's also in drugs such as cold remedies and headache medicine.

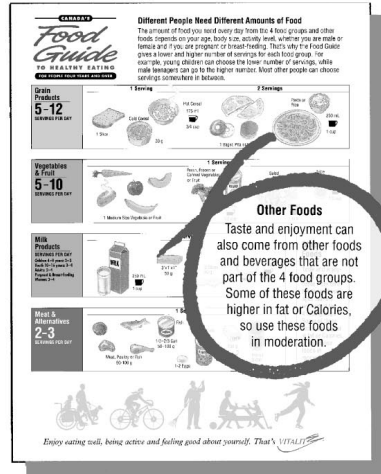


Figure 5-1 (Sheet 6 of 12) Canada's Food Guide

How many servings from each food group do I need?

Too many servings?

It may seem like a lot, so check to see how many you really need. And, you may be eating more servings than you realize. For example, a plate of pasta can count as 3-4 servings of Grain Products and a juice box as 2 servings of Vegetables and Fruit.

Because different people need different amounts of food, the bar side of the Food Guide suggests the following number of servings:

Grain Products

5-12
SERVINGS PER DAY

Milk Products

2-4
SERVINGS PER DAY

Children 4-9 years: 2-3 servings/day
Youth 10-16 years: 3-4 servings/day
Adults: 2-4 servings/day
Pregnant and Breast-feeding Women: 3-4 servings/day

Vegetables and Fruit

5-10
SERVINGS PER DAY

Meat and Alternatives

2-3
SERVINGS PER DAY

The number of servings you need every day from the 4 food groups and other foods depends on your age, body size, activity level, whether you are male or female and if you are pregnant or breast-feeding.

Most people will need to have more than the lower number of servings, especially pregnant and breast-feeding women, male teenagers and highly active people.

Different People Need Different Amounts of Food

Here are some examples of how people could choose their servings in one day.

FOOD PRODUCTS	MARIE	SERVINGS	DAVID	SERVINGS	LOUISE	SERVINGS
Grain Products	Marie is 5 years old. To meet her nutrient and energy needs, Marie has the smallest number of servings from each food group and adds 'other foods'. As she grows or is more active, Marie may choose more servings.	5	David is 17 and a competitive swimmer. To meet his nutrient and energy needs, David chooses the largest number of servings from each of the 4 food groups and adds 'other foods'. David has higher energy needs than most people and at times he may need to choose even more servings than those shown here.	12	Louise is 35 and not very active. Like most people, she eats different amounts of food from day to day to satisfy her nutrient and energy needs. As her appetite and activity level change, Louise may adjust the number of servings and amount of 'other foods' she eats.	6
Vegetables and Fruit		5		10		7
Milk Products		2		4		2
Meat and Alternatives		2		3		2
'Other Foods'						



Figure 5-1 (Sheet 7 of 12) Canada's Food Guide

Your Healthy Eating Scorecard

What are serving sizes?

The bar side of the Food Guide explains serving sizes for different foods. For example, in Grain Products, 1 slice of bread = 1 serving, while 1 bagel, pita or bun = 2 servings.

The size of servings can vary within the Meat and Alternatives group. For example, 50-100 grams (g) of meat, poultry or fish = 1 serving. That way, a child may choose a smaller portion size while an adult may choose a larger portion size to get 1 serving.

The Food Guide uses both metric and household measures. That's because you usually buy or prepare foods using either of these measures.

Check off your food choices in the boxes below as you eat them throughout the day. On the bar side of the Food Guide you'll see what makes up 1 serving from each food group. If you like, make copies of this chart and use it over a longer period of time to check your progress.

FOODS

Grain Products

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Vegetables and Fruit

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Milk Products

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Meat and Alternatives

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Other Foods (list on the line below)

If you don't eat a lot, it's important to choose your food wisely. For example, women should choose foods high in iron such as beef or game meat, whole grain and enriched cereals, peas, beans and lentils. Let the statements on the rainbow side of the Food Guide help you make your choices. People who choose the lower number of servings but are still hungry or losing weight may need more servings from the 4 food groups and 'other foods'.

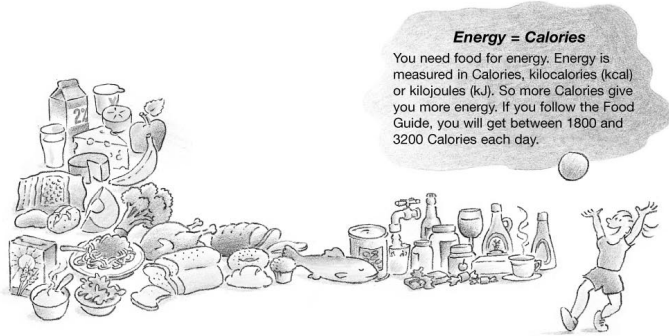
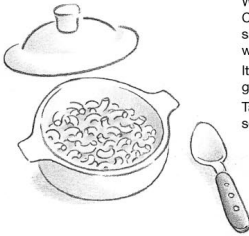


Figure 5-1 (Sheet 8 of 12) Canada's Food Guide

What about Combination Foods?



We often eat meals which have more than one kind of food in them. Casseroles, chili, moussaka, pizza, spaghetti, soups, stew and sandwiches are made from the foods of more than one food group as well as 'other foods'. These are called combination foods.

It is hard to know how many servings of each food group you are getting in foods of this kind.

Take **Tuna Noodle Casserole**, for example. One 500 mL (2 cup) serving may contain:

- 2 servings of Grain Products (250 mL or 1 cup of pasta)
- 1 serving of Meat and Alternatives (50 g or 1/3 can of tuna)
- 1/2 serving of Milk Products (125 mL or 1/2 cup of milk in white sauce)
- 1 serving of Vegetables and Fruit (125 mL or 1/2 cup of peas, celery and onions)
- 1 'other food' (5 mL or 1 tsp. butter or margarine in white sauce)

Here are 2 more examples:

One whole small (20 cm/8") **Ham, Pineapple and Cheese Pizza** may provide:

- 3 servings Grain Products (20 cm or 8" crust)
- 1 serving Vegetables and Fruit (50 mL or 1/4 cup of pineapple and 50 mL or 1/4 cup of tomato sauce)
- 1 serving Milk Products (50 g or 2 oz. of cheese)
- 1 serving Meat and Alternatives (50 g or 2 oz. of ham)

One large 400 mL (1 3/4 cup) serving of **Chili Con Carne** may contain:

- 2 servings of Vegetables and Fruit (125 mL or 1/2 cup tomato sauce and 125 mL or 1/2 cup of green peppers, onions and mushrooms)
- 2 servings of Meat and Alternatives (125 mL or 1/2 cup of kidney beans and 50 g or 2 oz. of ground beef)

To figure out the number of servings of each food group you have eaten in your combination foods:

1. List the main food items.
2. Estimate how much of each food item you ate.
3. Look at the bar side of the Food Guide to see roughly how many servings each food item provides.

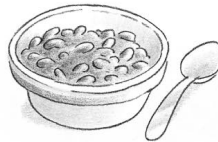


Figure 5-1 (Sheet 9 of 12) Canada's Food Guide

What about Vitamin and Mineral Supplements?

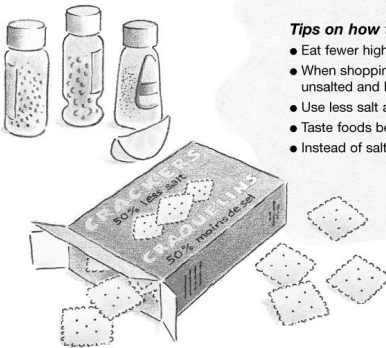


A multiple vitamin-mineral supplement can **not** replace good eating habits. You usually get all the nutrients your body needs by simply choosing a variety of foods from all 4 food groups and 'other foods'. Some people need certain supplements. Pregnant women often need extra iron and folacin. Elderly people who don't get any sun and don't consume margarine or enough milk may need extra Vitamin D. Children 12 years and under living in areas without fluoridated water may need fluoride supplements.

Consult your doctor or dietitian if you think you need to take a vitamin-mineral supplement.

WHERE DOES SALT FIT IN?

Most salt we eat comes from sodium chloride—better known as table salt. Most people get more than they need, so it's best to limit sodium and salt.



Tips on how to cut down on salt:

- Eat fewer highly salted snack foods.
- When shopping, check the labels. Choose foods that are unsalted and lower in salt or sodium.
- Use less salt at the table and when cooking.
- Taste foods before adding salt.
- Instead of salt, use spices, herbs or lemon juice.

Figure 5-1 (Sheet 10 of 12) Canada's Food Guide

Putting it all together

ENJOY:

- **Eating Well**
- **Being Active**
- **Feeling Good about Yourself**

Eating well is just one way to get the most out of life. It's also important to be active and feel good about yourself.

Eating well means following **Canada's Food Guide to Healthy Eating**. Use the ideas in this booklet to help you make wiser food choices. After all, food is one of life's great pleasures.

Being active means making physical activity a part of your everyday life. It helps you manage your weight and strengthen your heart, lungs and muscles. Find fun ways to be active in your own way. Walk part of the way to and from work. Head outdoors to skate, swim or hike. Play ball with the kids.

Feeling good about yourself means believing in yourself. The best way to do that is to accept who you are and how you look. So treat yourself well.

Healthy bodies come in a variety of shapes and sizes. A good weight is a healthy weight, not just a low weight. A healthy weight helps you stay active and lowers the risk of health problems.

Take a fresh approach to living. Enjoy eating well, being active and feeling good about yourself. That's Vitality!



VITALITY



Figure 5-1 (Sheet 11 of 12) Canada's Food Guide

Healthy Eating Checklist

After reading this booklet, ask yourself: will I choose...

- a variety of foods from each of the 4 food groups?
- foods within the suggested number of servings for all 4 food groups?
- whole grain and enriched grain products more often?
- dark green and orange vegetables and orange fruit more often?
- lower-fat milk products more often?
- leaner meats, poultry and fish, as well as peas, beans and lentils more often?
- 'other foods' wisely?
- foods prepared with little or no fat?
- to enjoy eating with my family and friends regularly?
- to be active every day?



Figure 5-1 (Sheet 12 of 12) Canada's Food Guide

How Most Fire Extinguishers Work

1. Although the majority of extinguishers work with our directions, there are exceptions. Read the instructions on your extinguisher for variations.

Fix a picture in your mind that will fit the instructions on the extinguisher you will be using.

2. If there's a fire, call the fire department first. Get everyone outside. Then fight a small fire only. If the fire gets large, get out. Close doors to slow the fire spread.

3. Make sure you don't use one type extinguisher on another type fire – it may make the fire worse. Common errors (they can be fatal) are using water (A) on a grease or on an electrical fire (B or C).

Learn How

1. Pull

Pull the pin. Some units require the releasing of a lock latch, pressing a puncture lever, inversion, or other motion

2. Aim

Aim the extinguisher nozzle (horn or hose) at the base of the fire.

3. Squeeze

Squeeze or press the handle.

4. Sweep

Sweep from side to side at the base of the fire. Watch for reflash. Discharge the contents of the extinguisher.

Foam and water extinguisher require slightly different action. Read the instructions.

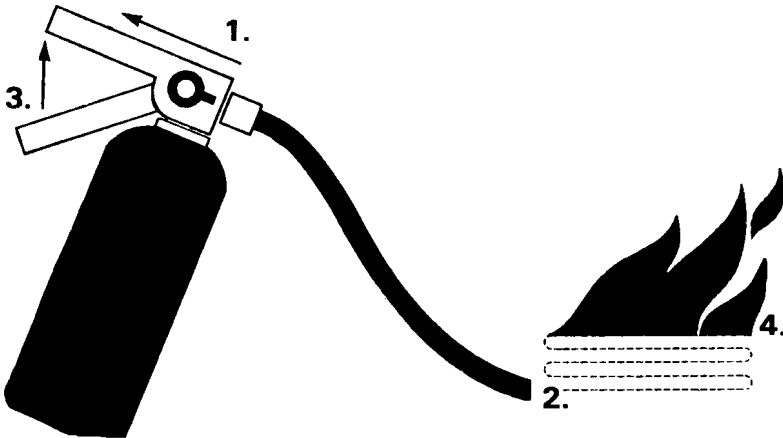


Figure 5-2 Fire Extinguisher Use

This Is Your ABCD's Of Portable Fire Extinguishers

You need an extinguisher at home

If you plan to buy one extinguisher, a multi-purpose dry chemical labeled ABC puts out most types of fires – wood, paper, and cloth, flammable liquid, or electrical fires.



If you buy more than one, you might want to get a BC for the kitchen, an A for the living room, and a ABC for the basement and garage.



Ordinary Combustibles

Fires in paper, wood, drapes and upholstery require an extinguisher labeled A.



Flammable Liquids

Fires in fuel oil, gasoline, paint, grease in a frying pan, solvent, and other flammable liquids require an extinguisher labeled B.



Electrical Equipment

Fires started in wiring, overheated fuse boxes, conductors, and other electrical sources require an extinguisher labeled C.



Metals

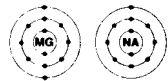


Figure 5-3 Classes of Fires

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SO ...

YOU WANT TO BE

A LEADER?

CHAPTER 6

PERFORMANCE OBJECTIVE 408

LEADERSHIP

SECTION 1

INTRODUCTION

1. There are many different definitions of leadership, each one valid and emphasizing different elements. In Proficiency Level One training you learned the CF definition of leadership:

"The art of influencing human behaviour so as to accomplish a mission in the manner desired by the leader."

2. When you think of successful and effective leaders what names come to mind? Winston Churchill, General Norman Schwarzkopf, Terry Fox, or your staff cadet at summer camp last year... What made these individuals successful leaders?

3. This chapter will provide you with some clues as to what made these leaders successful. If you follow these hints there are no guarantees that you will be the next Chief of Defence Staff for the Canadian Forces but you will certainly be on the road to being a successful NCO at you;

SECTION 2

LEADERSHIP THEORY

QUALITIES OF A LEADER

4. It is not very easy to be a leader. It takes hard work, determination and practice. Corporals work very closely with cadets and should have the best understanding of the way they behave because they themselves were recently cadets. To lead cadets effectively you must have their respect. As a leader there are certain qualities you must possess if you are to earn the respect of the cadets you lead.

5. A quality is a human characteristic or trait that can be associated with a person. The successful leaders we acknowledged in paragraph 2 possessed some, if not all, of the following qualities:

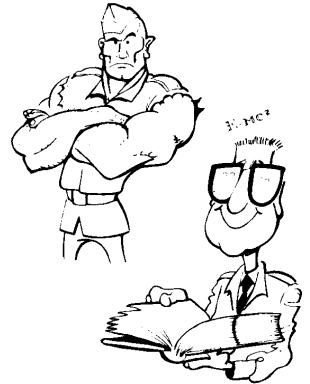
- a. **Honesty.** If your followers believe you are not honest they will not trust you and therefore will be reluctant to follow you.
- b. **A Sense of Responsibility.** Followers must be able to depend on their leader, so must a leader's superior. Everyone must be able to rely on a leader to get the job done and look after the followers at the same time.
- c. **Confidence.** You must have confidence in yourself and the power of your convictions. Also, you must have confidence in your followers and confidence in your superiors.
- d. **Enthusiasm.** Enthusiasm is infectious. If you are inspired by your task your followers will follow you with the same energy for the job at hand.
- e. **Dependability.** People have to be able to rely on you. Show that you are the one to do the jobs that need to be done.
- f. **Patience.** Take time with your cadets to show them how to do things. People will be afraid to approach you for help if you have no patience. An unapproachable leader is not a very effective one.
- g. **Decisiveness.** The confidence of your cadets will be gained if you make clear and consistent decisions. Don't delay decisions because you are not sure of the answer, seek help. This is a way of taking decisive action.
- h. **Determination.** If you are given a task, finish it to the best of your ability. Don't get put off by details or small problems, your determination to get the job done will be transferred to your followers.

- j. **Loyalty.** You must be loyal to your followers; support them when they need your help. Don't say one thing to them and do another. Always be loyal to your superiors and loyal to your task.
- k. **Courage.** Have the strength of character to stand up for what you believe in. Courage means that you do not let your emotions control your actions, you are not afraid and you have the perseverance to follow through on the job.

6. There are individuals in our society that command people's attention for the wrong reasons. In these cases people are often responding to mistaken qualities of leadership. The mistaken qualities of leadership include the following:



physical stature
toughness
drinking
quick decisions
aloofness
genius
independence
human qualities



THE PRINCIPLES OF LEADERSHIP

7. Successful leaders follow some general rules to guide them as they complete taskings. The 10 principles of leadership include the following:

- a. **Lead by Setting a Good Personal Example.** Don't ask your cadets to shine their boots if yours are not shined; your boots should be the standard of the cadets for whom you are responsible.

- b. **Know your Cadets and Look after their Welfare.** Get to know the cadets for whom you are responsible. Call them up at home and encourage them to attend extracurricular activities, Be sensitive to their needs and individual problems. Ensure all cadets are given the necessary time to meet their physical needs, such as ablutions or drinks of water during training activities.
- c. **Develop Qualities of Leadership in your Cadets.** Those cadets that are capable should be challenged and given the opportunity to excel whenever possible. Good leaders make good followers.
- d. **Make Sound and Timely Decisions.** When you have to make a decision, research when you are unsure. If an answer is required immediately make the best decision you can from the information that is provided. Be sure that when you do make the decision that you make it with confidence.
- e. **Train your Cadets to Work as a Team.** Teamwork is the key to success at the home squadron. Everyone will feel good about their job if they all feel involved. Make sure that they have fun as well.
- f. **Communicate your Ideas and Thoughts Clearly.** Unclear and confusing instructions lead to a high level of frustration among cadets that have to follow them. Clear instructions are the mark of a strong, confident leader.
- g. **Keep your Cadets Informed of all Events.** Keeping your cadets informed makes them feel a part of a team, Not keeping them informed leads to frustration and lack of motivation.
- h. **Take Good Personal Initiatives.** If you see a problem fix it, especially if it relates to safety! Don't wait until someone gets hurt.



- j. **Know your Strengths and Weaknesses.** Keep developing your skills as a leader. At the end of this chapter there are some exercises you can do that will help you identify your strengths and weaknesses. Do these often after a tasking to make you evaluate how you think you handled the leadership situation.
- k. **Treat your Cadets as you Would Like to be Treated Yourself.** Remember that old rule "do unto others as you would have them do unto you."

ROLE OF CONFIDENCE

8. One feature present in all leadership situations is confidence which is the lifeblood of leadership. Leadership is based on confidence and it cannot be improvised. Leaders must have confidence in the following things:

- a. **Aim.** The leader must be convinced that the job is worth doing. As a leader it is important to generate enthusiasm for the assigned

task and to transmit that spirit to the cadets who are assigned to completing the job. The cadets will feel more confident in the leader and the job and the task will be completed more effectively.

- b. **Superiors.** Leaders must have confidence in their superiors. A lack of confidence will lead to followers doubting instructions.
- c. **Associates.** Having confidence in your associates is an extension of teamwork. No person can get a job done well if that person is constantly wondering if every person is doing their part. Make sure you do your part and people should extend you the same courtesy.
- d. **Followers.** Good leaders build up confidence in their cadets whenever possible. This shows cadets that the leader is confident in their ability to get a job done. However, make sure your followers are capable of carrying out the tasks.
- e. **Self.** Most importantly a leader must have self-confidence. When a leader lacks confidence, it is difficult, if not impossible, to inspire confidence in the followers. You can gain self-confidence by:
 - (1) knowing and understanding your tasks;
 - (2) maintaining a good personal appearance;
 - (3) speaking clearly and concisely;
 - (4) gaining experience by volunteering to help and becoming involved; and
 - (5) knowing information about the environment you participate in and who is responsible for other activities.

DUTIES AND RESPONSIBILITIES OF A JUNIOR NCO

9. Every squadron will have a different set of duties for its junior NCOs but there are some things that must be considered by all. The difference between an officer's role at the squadron and a junior NCO's is as follows:

OFFICER	NCO
<ul style="list-style-type: none"> - An officer is primarily involved with squadron training and related activities. - An officer pays attention to the squadron's standard of performance. - An officer concentrates on training for everyone so the squadron has well trained air cadets at every level. - An officer creates the conditions and makes the time and resources available so that NCOs can do their job. 	<ul style="list-style-type: none"> - An NCO concentrates on the individual cadet and how the cadet responds to training. - An NCO concentrates on developing teamwork so every-one achieves the standard together. - An NCO concentrates on standards of performance training and development of smaller groups of cadets. - An NCO gets the job done.

10. Make sure you understand your role and function at the home squadron – if you don't, ask a senior NCO or officer to explain it to you. There are some items that are the responsibility of every NCO in the Royal Canadian Air Cadets:

- a. Observe the chain of command at your squadron. Even if you don't like Sgt Smith but he or she is your immediate superior you must report to him or her. Think how you would feel if a cadet didn't come to you first but went straight to Sgt Smith.

- b. As an NCO and leader it is your responsibility to set an example for dress and deportment. Ask no more of your cadets than you would of yourself.
- c. Be **FIRM, FAIR, and FRIENDLY** with everyone, especially new recruits. Nobody is impressed with a barking NCO, least of all the cadets. The strongest and most respected NCO is one that is consistent in approach to people and situation – **BE APPROACHABLE**.
- d. Be respectful towards your superiors, officers and senior NCOs. If you are not, your cadets will see that and it will create a poor atmosphere at the squadron.
- e. Observe duty schedules. If you are assigned a task, duty NCO, or supervision of a special activity make sure you show up and do your job. If you can't, be sure to inform the person in charge.
- f. Everyone is responsible for safety. However, when you are in a position of responsibility you have a duty to be alert to potential safety hazards at all times.

11. Many of these items are just common sense for a member of any organization, but many people do not observe them. Taking responsibility for the previously mentioned items is the key to being a professional and efficient NCO.

12. Keep doing the exercises at the end of this chapter as you develop your leadership skills. They will help you focus on the abilities you need to develop. It takes hard work to become a good leader and it will not happen overnight. The rewards are great when you know that the cadets respect you and you can get the job done.



TAKE YOUR OWN PHOTOGRAPH			
(What kind of leader are you?)			
	YES	NO	SOME WHAT
1. Are you good at developing your own level of efficiency? Do you relax as you work –			
a. by changing pace?			
b. by planning, organizing your work?			
c. by talking out your problems?			
d. by doing things for others?			
e. by laughing at yourself; with others?			
2. Do you know how much sleep you need, and assure yourself adequate rest?			
3. Are you able to increase your capacity for work –			
a. by shifting between tasks?			
b. by being strongly motivated?			
c. by associating with more efficient people?			
d. by taking on more responsibility within your recognized limits?			
4. Are you coasting on the job?			
5. Do you exercise sound judgement?			
6. Are you bored?			

Figure 6-1 Take Your Own Photograph

LEADERSHIP TRAITS CHECK-LIST			
	YES	NO	FAIRLY
Willing to accept responsibility			
Unselfish			
Cheerful			
Loyal			
Know my job			
Self-confident			
Understanding			
Patient			
In good health			
Honest			
Dependable			
Work hard at the task			
Able to concentrate attention			

Check this list only on the basis of the way in which devote yourself to your leadership responsibility. **DO NOT** mark it on the basis of your general attitude toward life. If all are "yes" re-evaluate.

Figure 6-2 Leadership Traits Check-list

STEPS TOWARD ACHIEVING LEADERSHIP					
	NO	SELDOM	NEVER		
1. Stimulate people to want to do the job.	()	...	()	...	()
2. Study subordinates – how they tick.	()	...	()	...	()
3. Practise good listening.	()	...	()	...	()
4. Use constructive criticism.	()	...	()	...	()
5. Criticize privately.	()	...	()	...	()
6. Praise publicly.	()	...	()	...	()
7. Show consideration for others.	()	...	()	...	()
8. Delegate responsibility to other.	()	...	()	...	()
9. Give credit where it is due.	()	...	()	...	()
10. Avoid a domineering attitude.	()	...	()	...	()
11. Be interested in and appreciative of others	()	...	()	...	()
12. Direct by suggestion rather than by orders.	()	...	()	...	()
13. Explain your requests.	()	...	()	...	()
14. Share plans early with subordinates.	()	...	()	...	()
15. Practise standards set for others.	()	...	()	...	()

Figure 6-3 (Sheet 1 of 2) Steps Towards Achieving Leadership

STEPS TOWARD ACHIEVING LEADERSHIP (Cont)					
	NO	SELDOM	NEVER		
16. Accent the positive.	()	...	()	...	()
17. Be consistent.	()	...	()	...	()
18. Have confidence in people.	()	...	()	...	()
19. Counsel with subordinates.	()	...	()	...	()
20. Admit your mistakes.	()	...	()	...	()
21. Explain when other's ideas are refused .	()	...	()	...	()
22. Be aware that people see things their own way.	()	...	()	...	()
23. Evaluate what you say before saying it.	()	...	()	...	()
24. Accept moderate complaining (gripping) .	()	...	()	...	()
25. Be able to tell others their importance.	()	...	()	...	()
26. Be able to offer subordinates a goal.	()	...	()	...	()
27. Efficiently communicate ideas to others.	()	...	()	...	()

Figure 6-3 (Sheet 2 of 2) Steps Towards Achieving Leadership

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CHAPTER 7

PERFORMANCE OBJECTIVE 410

EFFECTIVE SPEAKING

1. For your Proficiency Level One Qualification many of you will have given a one minute cameo, a short speech about yourself. Communication is the key to developing good relationships with the people around you. Proficiency Level Two training will give you the opportunity to develop your skills in effective speaking. You will have to deliver one impromptu speech and one 3-minute prepared speech. If you follow the guidelines in this chapter, you will have the key to successful communication.

DEVELOPING CONFIDENCE – IMPROMPTU SPEAKING

2. The first consideration in effective speaking is the attitude of the speaker. It is important to have self-confidence and prepare yourself for impromptu situations by doing one of two things:

- a. Be prepared to speak at any time or in any place on subjects you know most about and on ones you are most likely to be asked about.
- b. Condition yourself by intelligent practice to make the best use of your reasoning powers on short notice. Learn to organize your thoughts quickly and effectively in the few brief seconds allowed for preparation.

3. The main problem is how to use those few precious seconds to the best possible advantage. A good speaker will not get flustered, confused or apologetic. Train yourself to do routine things calmly.

4. If you are asked to speak, rise and proceed to the place from where the speech is to be given. Don't rush and don't show reluctance, however you may feel. Face the audience with calmness and friendliness, taking time to look around and breathe deeply. All this can be done almost mechanically while your mind is working at top speed to prepare the speech itself.

5. The following common mistakes must be avoided:
 - a. Don't try the impossible; you will only waste time and nervous energy. All thought comes from the association of ideas. If your mind goes blank it cannot be forced to bring out good ideas by straining or wishing. Usually a speaker will have some imperfect or unsatisfactory ideas floating around in his or her mind. The temptation is to put these ideas aside since they are not very promising, and to search for something better. That is where the mistake comes in. The only safe plan is to seize instantly upon whatever ideas are already in the mind, tie them together and put them in logical order.
 - b. The other tendency is to use the few precious seconds you have to prepare to work on the beginning of the speech rather than the ending. This is a natural mistake as we are often more concerned that we have something to say to begin the speech. You will feel that if you can only get started there will be some chance for one idea to lead to another and you will be able to carry on. Success in this approach is usually due to luck, not careful use of preparation time. It is important to find a good ending because that will be the last thought with which you will leave your audience. If you have a good ending and hold firmly to it, keeping it before your mind's eye as the goal of your speech, you can get started somehow, even if it is badly. Sooner or later you will begin to get your bearings; your thoughts will start to focus on your objective and the relationships between them will become clearer.

SPEECH PREPARATION

6. If you are asked to present a prepared speech there are eight steps to remember:
 - a. **Step One.** Select and limit the subject.

- b. **Step Two.** Determine the purpose of the speech.
 - c. **Step Three.** Analyze the audience and the occasion.
 - d. **Step Four.** Gather data.
 - e. **Step Five.** Outline the material.
 - f. **Step Six.** Organize and develop the speech.
 - g. **Step Seven.** Plan visual aids.
 - h. **Step Eight.** Practise aloud.
7. Some of the steps may be performed quite rapidly while others are time consuming. The first five steps can be worked on at the same time.
8. **Step One – Select And Limit The Subject.** You will usually not be lucky enough to select you own subject, but if you are, here are some points to consider. If possible, choose a topic that relates to what you know best. You will find the subject easier to prepare and you will speak with enthusiasm and conviction because it is a subject you enjoy. Consider the needs and interests of your audience as well.
9. **Step Two – Determine Your Purpose.** Your speech must have a purpose. If you establish the purpose early you will be able to direct your preparation towards accomplishing that purpose. Most speaking has one of three general purposes:

General Purpose	Expected Response
To entertain	Pleasure
To inform	Understanding
To persuade	Agreement-Action

10. Informative and persuasive speeches are usually for instructional and leadership purposes.

11. Your specific purpose states exactly what you want your audience to understand, believe or do. Record in one sentence your specific purpose and during your preparation let it dominate everything.

12. **Step Three – Analyze Your Audience.** Your subject and purpose will be influenced by whom your audience is. Find out who will be in the audience and what they might know already about your topic. It would be embarrassing to speak on the organization of the Canadian Forces to senior generals – let's hope they already know!

13. **Step Four – Gather Data.** After considering your subject, purpose and audience. start gathering data. List the main points that you feel are necessary to accomplish your purpose. Under each main point, list the minor supporting points. This tentative outline provides you with the blueprint to guide you in your research.

14. **Step Five – Outline Your Material.** The basic function of an outline is to show thought relationships. Each main point must explain, prove or support the specific purpose of your speech. Each sub-point must add more detail and offer further explanation. Outlines are flexible and as you work and develop your speech, you will be able to make adjustments.

15. **Step Six – Organize And Develop The Speech.** Since organization is vital to a good speech, organize your material so that your listeners will clearly understand it. Speeches are normally organized in three major divisions: the introduction, body and conclusion.

a. **Introduction.** It is usually prepared last and has two purposes: to catch attention and establish good will, and to state and clarify the subject. There are some recognized, successful ways to gain attention. It is important to capture the attention of your listeners – we have all had to sit through boring speeches at one time or another. Make sure yours isn't one of them. Some ways to capture attention include the following:

- (1) personal reference or greeting;
- (2) interesting story;

- (3) reference to the place or occasion;
- (4) quotation;
- (5) thought provoking question;
- (6) dramatized fact;
- (7) amusing story;
- (8) sincere expressions of pleasure; and
- (9) reference to special interests of the audience.

- b. **Body.** The body is the heart of the speech. It is suggested that, regardless of the length, the speech should usually have three to four main ideas, but never more than five. Develop your ideas using definitions and examples.
- c. **Conclusion.** The conclusion should be brief. You may wish to review the points you have covered or offer a story that dramatizes the central idea of your speech. If you are giving a persuasive speech, end by asking people for action or for belief in your ideas.

16. **Step Seven – Plan Your Visual Aids.** Have you heard the phrase, a picture is worth a thousand words? Using visual aids in a speech will help to gain the attention of the members of your audience, hold their interest, clarify points, amplify and prove what you are saying. Everybody loves a picture, so use that to your advantage.

17. **Step Eight – Practice Aloud.** Like everything else, practice makes perfect. Your chances of delivering a successful speech will be much better if you practise aloud. Practise your speech in front of your parents or a friend, and be ready to accept some constructive criticism. Isn't it better to know the problems in your speech before you have to stand up in front of your audience?

HOW WE SAY THINGS

18. Whether you are giving a prepared speech or an impromptu one it is important to be able to deliver that speech in the best way possible so everyone can understand your message. The human voice has many characteristics; knowing how to use those characteristics to your advantage can make the difference between a successful and unsuccessful speech. The factors that affect the human voice are range, pitch, volume and inflection. All of those characteristics should be employed to do the following:

- a. **Be Expressive.** Speak with emphasis. Raise your hand if you have heard a boring voice. We all have and there is nothing worse. Don't be reluctant to use expression and emphasis; we need variety and contrast. A voice should run up and down the scale to add full meaning to what we want to say.



Here is an exercise that will help you add expressiveness to your voice.

EXERCISE 1

A voice that is too high irritates the listener. A voice that is too low or soft is difficult to hear. Listen to yourself as you speak. Radio announcers and singers have a technique they use to correct their voice range before a performance. They speak or sing while they hold one ear cupped to their head. Try it. With your left hand, push your ear forward, and press it against your head so it is almost closed. Now, holding it shut, speak each of the following sentences aloud.

- * Now is the time for all good men to come to the aid of the party.
- * The only difference between a rut and a grave is that a rut is deeper.
- * The exotic executive explained exactly how x times x can equal x plus x .

Notice that the high tones can irritate and lower tones are soothing. Repeat the drill until you find voice tones which are pleasing to yourself.

- b. **Breathing.** Breath control is the secret of good voice control. Cultivate deep, abdominal breathing. Breathe deeply enough so you feel and even see your stomach stretch.

EXERCISE 2

Take a deep breath before reading each of the following sentences. Then read the entire sentence before taking another breath.

- * Now let it work! Mischief, thou art afoot! Take thou what course thou wilt!
- * Let your speech be with grace, seasoned salt, that ye may know how ye ought to answer every man.
- * A Mohammedan moon rides at midnight on the mountain tops of ancient Arabia.

- c. **Voice Speed.** An effective drill to help you slow your voice speed, enunciate words clearly, and eliminate aspirated pauses is using the whisper technique. A whisper can be heard at a great distance, if you mouth each whispered word cleanly, clearly and separately. Make exaggerated use of your mouth, lips and tongue.

EXERCISE 3

Practice whispering each of the following clearly, mouthing each word separately. Have some other person listen to you from more than 25 feet away. Say your name, your age, your home squadron. Read a sentence from a book. Perform this drill at least three full times. Keep slowing down your pace, making sure you use your jaw, lips and tongue on every word.

OTHER HINTS

19. **Be Colourful.** Being colourful means emphasizing the importance of your remarks through your delivery. Use the dramatic pause and change of pace to keep your meeting alive and interesting. Use humour where it will make a point, where it will help to clarify a situation or problem, and where it will relieve tension.

20. **Be Yourself.** But be your best.

21. **Be Enthusiastic.** Enthusiasm is infectious. If you show enthusiasm in your subject your audience will be enthusiastic listeners.

●●●●●●●●●●
● CAUTION ●
●●●●●●●●●●

ONLY READ THE NEXT PAGE IF YOU HAVE "STAGE FRIGHT"

STAGE FRIGHT

22. Don't worry about it; every speaker faces it. Expect and welcome it, for it will key you up to do the best possible job while on your feet. Here are six helpful hints you can use to be sure you will master whatever stage fright you may have:

- a. **Personal Appearance.** Satisfy yourself that your uniform is pressed, boots are shined, collar and tie look neat, hair is groomed and that you look your best; then forget about worrying about your appearance.
- b. **Breathe Deeply.** By taking a couple of deep breaths before you begin you will relax a little and relieve the tension.
- c. **Convince Yourself.** Convince yourself of the importance of the material you will be presenting.
- d. **Prepare your Speech Thoroughly.** Preparation and practice are essential tranquilizers to dispel stage fright. Practise and practise your speech. Practise in front of the mirror, by recording on tape, by asking your mother or friend to listen.
- e. **Pick out a Friendly Face.** Study the faces in the audience. Ignore the bored faces and speak to the interested ones. Very seldom can you please the whole of your audience; if you can, so much the better, but if one or two appear sleepy or bored, ignore them. It is their loss not yours.



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CHAPTER 8

PERFORMANCE OBJECTIVE 414

PRINCIPLES OF FLIGHT

SECTION 1

FOUR FORCES ACTING ON AN AIRCRAFT IN FLIGHT

GENERAL

1. Last year some of you may have been lucky enough to go on familiarization flights. Your aircraft taxied, turned onto the runway and stopped. The airport control tower gave the pilot permission to take off. The engines roared, the brakes were released and you accelerated quickly down the runway until the nose came up and the ground fell away before you. You were flying. But how?

2. However much we know about science there is something rather magnificent about an aircraft taking flight. An understanding of the principles of flight will take some of the mystery out of flying but not the magnificence.

3. Planes are heavier than air and as a result they have to rely on their engines to give them power and on their wings to provide lift. Lift is an upward force that overcomes the airplane's weight. Lift is only one of the four forces that act on aircraft in flight. A force can be defined as a strength or power acting on an object. Under normal circumstances, there are four basic forces acting on an aircraft. These include the following:

- a. **Weight.** Weight is the force created by gravity. Weight is something all objects possess on earth and it keeps us on the ground.
- b. **Thrust.** Thrust is a forward force produced by the propeller, jets or rockets.

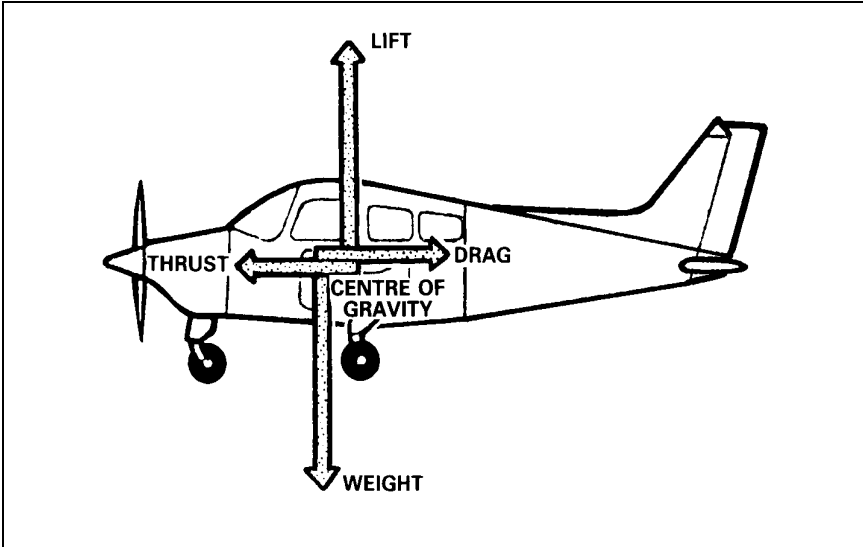


Figure 8-1 Four Forces Acting on an Aircraft in Flight

- c. **Drag.** Drag is the force that works against thrust acting to slow the aircraft down.
 - d. **Lift.** Lift is the upward force opposing weight that causes an aircraft to move upward.
4. Flight depends upon the forces being balanced. When they are balanced the plane is said to be in a state of equilibrium where lift equals weight and thrust equals drag. If lift is greater than weight the plane climbs higher. If thrust is greater than drag, the airplane's forward speed will continue to increase.

PRODUCTION OF LIFT

5. Have you ever held your hand out of the window of a moving car? What happened? Most likely your hand was lifted up. To understand how lift is created you must know what an airfoil is.

6. **Airfoils.** Wings have a shape called an airfoil. An airfoil (wing), or airfoil section, may be defined as any surface designed to obtain a reaction from the air through which it moves, that is, to obtain lift. This shape gives strength, a smooth airflow and better lift. The top half of the wing is more curved than the underside; thus air flowing over it moves faster than the air beneath. As a result, the air exerts less pressure on the wing's upper surface and the higher pressure below produces upward lift.

7. The process of the high pressure air moving into the low pressure air zone can be explained by Bernoulli's principle. It states that within a system energy cannot be lost or gained. If one element of the system is increased, another decreases to balance it. Lift is created by the high pressure moving to equalize the low pressure air. Air is forced to move faster over the top of the wing as a result of its shape. This reduces the amount of pressure, and the high pressure of stronger, stiller air underneath the wing causes the plane to move upwards.

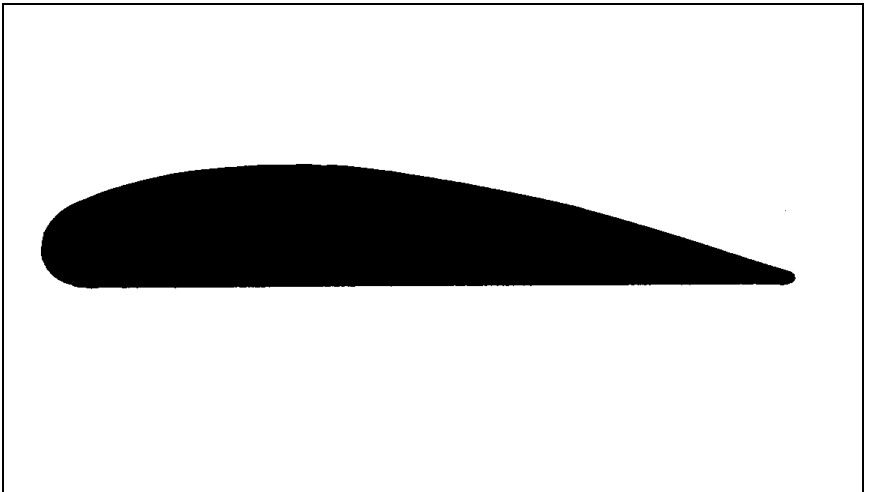


Figure 8-2 Airfoil Section

8. The amount of lift is determined by the angle of attack, the angle at which the front of the wing (leading edge) is inclined to the air. The greater the angle, the more lift is created. This is also why a plane has to rush along a runway to take off. Only in this way can the wings produce enough lift to overcome the plane's weight and rise into the air.

9. Make a wing with a sheet of paper by rolling it around a smooth stick or pencil as shown in Figure 8-3. Blow hard over the top and watch the paper rise as a result of lift being created.

DRAG

10. Drag is the force that opposes the forward motion of the aircraft. The forms of drag include the following:

- a. **Parasite Drag.** This is the drag created by all those parts of the airplane that **do not** contribute to lift, that is, the fuselage, landing gear, struts, antennae, wing tip tanks, etc. In addition, any loss of momentum of the air-stream caused by openings, such as those between the wing and the ailerons and the flaps, add to parasite drag. The following are applicable to parasite drag:

(1) Parasite drag can be divided into two classes:

- (a) **Form Drag.** This refers to the drag created by the form or shape of a body as it resists motion through the air.
- (b) **Skin Friction.** This refers to the tendency of air flowing over a body to cling to its surface.

(2) Although parasite drag can never be eliminated it can be reduced. One method is to eliminate parts of the airplane that cause it. For this reason, retractable landing gear has been developed. Wing struts have been eliminated in favour of fully cantilevered wings. Another method is to streamline those parts that cannot be eliminated. Skin friction can be reduced substantially by the removal of dust, dirt, and mud or ice that has collected on the airplane.

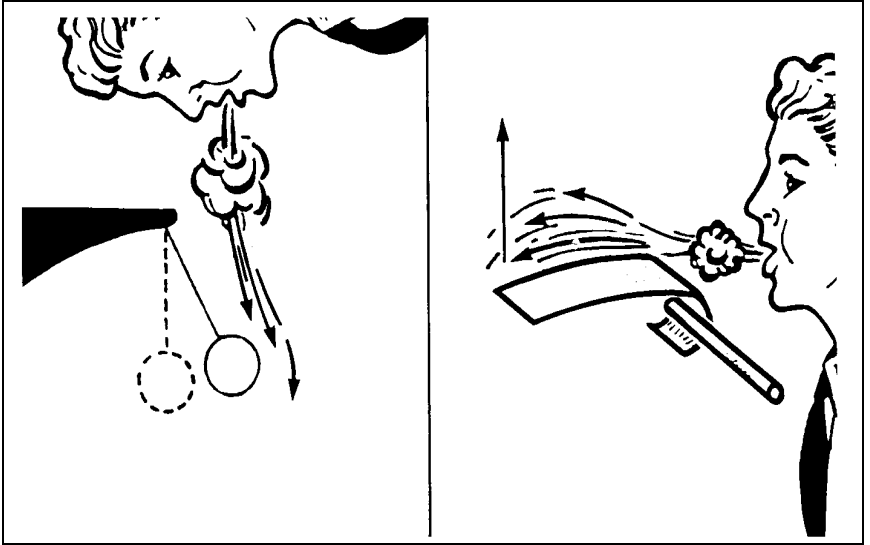


Figure 8-3 Bernoulli's Principle

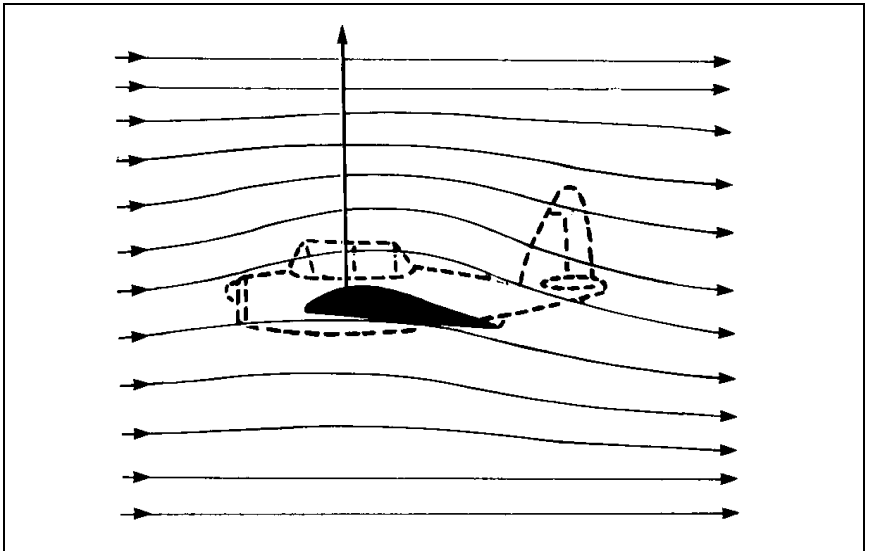


Figure 8-4 Airflow Over a Wing

- b. **Induced Drag.** This is caused by those parts of an airplane that are active in producing lift (ie, the wings). It is the result of the wing's work and is therefore a part of lift and can never be eliminated. It increases as the angle of attack increases and decreases as the angle of attack decreases.

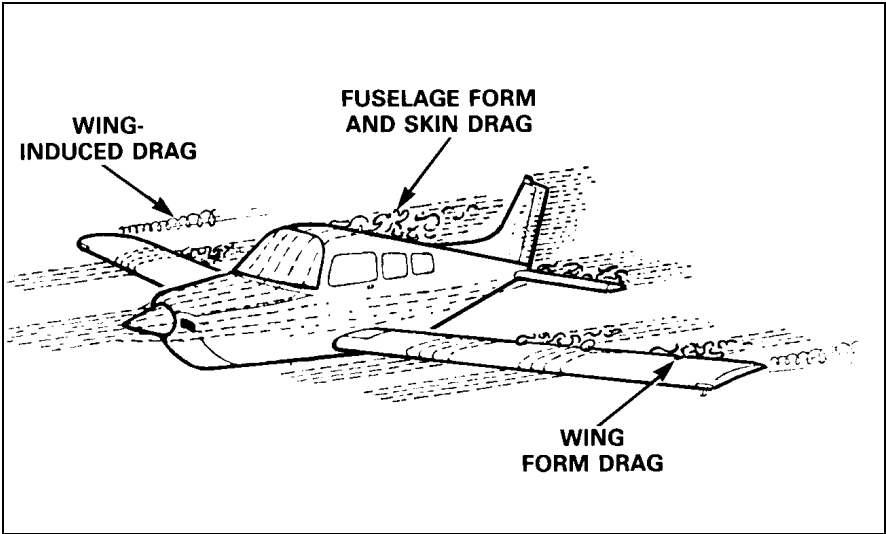


Figure 8-5 Types of Drag

SECTION 2

FLIGHT CHARACTERISTICS

AXES AND STABILITY

11. When an aircraft is airborne, it can move in almost any direction. All movement of the aircraft, however, takes place around the centre of gravity. To clarify the various attitudes (ways the plane can move) assumed in flight, the aircraft is said to move around an axis. This is an imaginary line running through the centre of gravity of the aircraft and around which the aircraft rotates. There are three such axes and the

aircraft may rotate one, two or all three axes at the same time. These include the following:

- a. **Longitudinal Axis.** This axis runs front to rear from the nose to the tail, passing through the centre of gravity.
- b. **Lateral Axis.** This axis runs from wing tip to wing tip through the centre of gravity.
- c. **Vertical Axis.** This axis is situated at right angles to the other axes and passes through the centre of gravity.

PRIMARY FLIGHT CONTROLS AND HOW THEY AFFECT STABILITY

12. A plane with only a fuselage, wings and engines would be very unstable. A tail plane consists of a small wing and a vertical tail fin and provides stability. An airplane in flight is constantly subjected to forces that disturb it from its normal horizontal flight path. Rising columns of hot air, down drafts and gusty winds make the air bumpy. Its nose and tail drop and one wing dips. How the plane reacts to a disturbance from its flight attitude depends on stability. Adjustable surfaces on both the wings and the tail control the direction of flight.

13. Movements made by an aircraft around one or the other of its axes are defined as follows:

- a. **Rolling.** Rolling is the condition of flight when an aircraft rotates around the longitudinal axis. The plane will roll if the wing tips are displaced up or down. It will also slide sideways toward the lower wing unless corrected by the rudder. Wings are designed to slope upwards from the body of the plane to improve stability, but the ailerons at the ends of the wings on their rear edge (trailing edge) give pilots control. To bank and turn the plane to the left, the left aileron is raised. The right aileron is lowered, increasing the lift on the right wing. Then the left wing tilts downward and the plane turns.

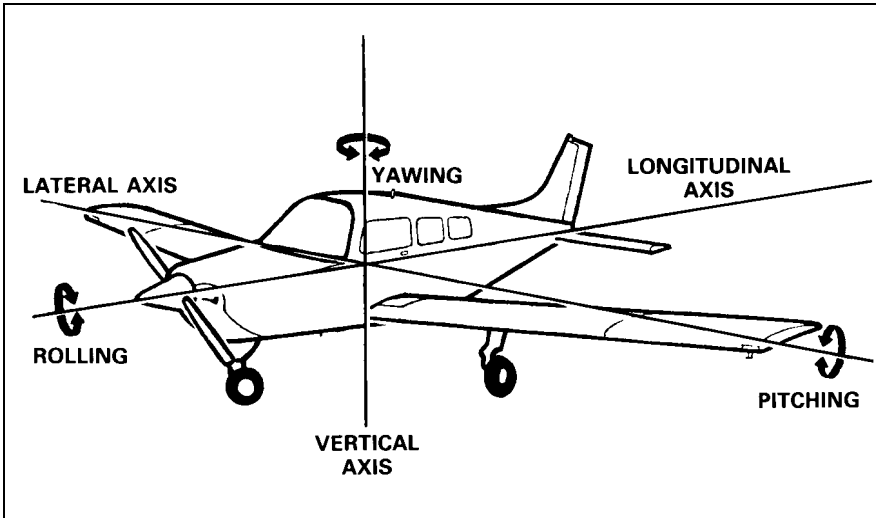


Figure 8-6 Three Axes of Rotation

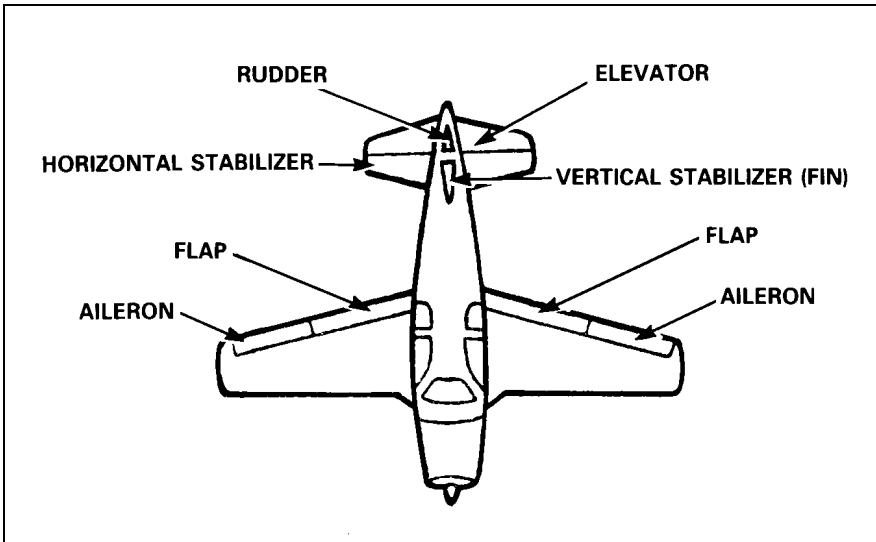


Figure 8-7 Flight Controls

- b. **Pitching.** Pitching is the condition of flight when an aircraft rotates around the lateral axis. If the nose of the plane is displaced upward by air currents, the tail will move down. The pilot makes a correction by pushing the control column forward. The elevators are moved downward, increasing the upward force on the tail. This lowers the nose and returns the plane to stable level flight, preventing the to-and-fro rocking called pitch. If the elevators remain lowered the plane will descend.
- c. **Yawing.** Yawing is the condition of flight when an aircraft rotates around the vertical or normal axis. If the plane is yawing the nose goes one way first, then the other way. The vertical tail fin helps prevent this and keeps the plane flying straight. A moveable rudder on the tail gives directional control. Turning the rudder to the left increases the force on that side and pushes the plane's nose left.

AERONAUTICAL TERMS

14. The definitions that follow are intended to help you as you read through this chapter:

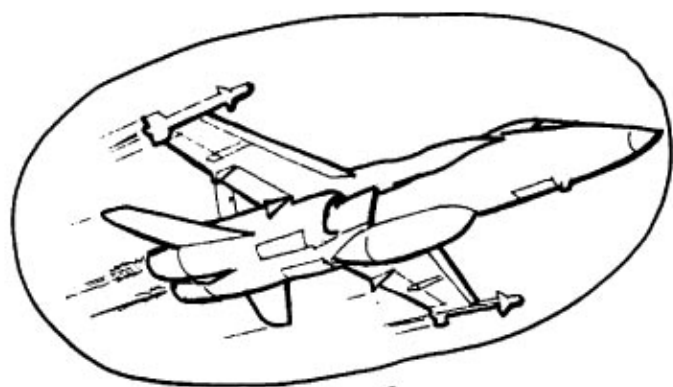
- a. **Aircraft.** Any weight-carrying device designed to be supported by air, either by buoyancy or by aerodynamic reaction.
- b. **Airfoil.** A surface so designed as to produce an aerodynamic reaction to its direction of motion.
- c. **Airspeed.** Speed of the aircraft in relation to the surrounding air.
- d. **Angle of Attack.** The angle between the relative air flow and the chord of the airfoil.
- e. **Angle of Incidence.** The angle formed between the chord and the longitudinal datum line.
- f. **Aspect Ratio.** The ratio between the span and the chord.

- g. **Camber.** The curvature of the wing.
- h. **Centre of Gravity.** The balance point. The point through which all weight acts downwards.
- j. **Centre of Pressure.** The point along the airfoil chord of the body axis through which the resultant aerodynamic force acts.
- k. **Chord.** An imaginary line from the leading edge to the trailing edge of an airfoil.
- m. **Dihedral.** The angle each wing makes with the horizontal.
- n. **Drag.** The total resistance to the aircraft in flight.
- p. **Equilibrium.** Balance between forces, when opposing forces are equal.
- q. **Fin.** Vertical stabilizer.
- r. **Groundspeed.** The relation between the speed of the aircraft and a point on the ground.
- s. **Lateral Axis.** An imaginary line running from wing tip to wing tip through the centre of gravity.
- t. **Longitudinal Axis.** An imaginary line extending through the fuselage from the nose to the tail.
- u. **Mainplane.** Main supporting airfoil (wing) of the aircraft.
- v. **Pitching.** Movement around the lateral axis.
- w. **Rolling.** Movement around the longitudinal axis.
- x. **Span.** Measurement from wing tip to wing tip.

- y. **Stable.** An object is stable if, when disturbed, it returns to its original position.
- z. **Stabilizer.** Any surface of airfoil shape whose primary function is to correct instability of an aircraft in flight.
- aa. **Stalling Angle.** The angle of attack of an airfoil where the smooth airflow breaks away and becomes turbulent.
- ab. **Sweepback.** Outward and backward angle of the leading edge of the mainplane.
- ac. **Tailplane.** Horizontal stabilizer.
- ad. **Turbulence.** Disturbed air flow.
- ae. **Unstable.** An object is unstable if, when disturbed, it continues to move farther and farther from its original position.
- af. **Venturi.** A variable section tube wider at each end than in the middle.
- ag. **Vertical Axis.** An imaginary line running at right angles to the longitudinal and lateral axes through the centre of gravity.
- ah. **Wing Tip Vortices.** Spiralling air at the wing tips caused by high-pressure air from the lower surface of the airfoil moving into the low-pressure air on top of the airfoil.
- ak. **Yawing.** Movement around the vertical axis.

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CHAPTER 9

PERFORMANCE OBJECTIVE 416

PROPULSION

INTRODUCTION

1. No aircraft can fly without the help of an engine. Cessnas and F18s use different types of engines. Even gliders need to be towed into the air by something with engine power.
2. In this chapter you will learn about some of the basic aircraft engines and how they work.

TYPES OF AIRCRAFT ENGINES

3. Most of the small aircraft you see at the local airport are powered by internal combustion engines. These engines are designed to turn propellers in front of, or sometimes behind, a plane.
4. Internal combustion engines have cylinders and pistons inside them. When the engine is running the cylinders fill with a mixture of gasoline and air. The mixture expands and then burns, which forces the pistons up and down. This reaction happens very quickly – thousands of times per minute. The up and down movement of the pistons is called reciprocating. The movement of the pistons provides power to turn the aircraft propellers.
5. Propellers are not flat but are curved like airfoils. They behave in the same way, with the blades striking the air and developing thrust in the way a wing develops lift.
6. Other types of aircraft are powered by jet engines. Modern fighter planes such as the CF-18 and airliners such as the Boeing 747 use types of jet engines. Some jet aircraft have only one engine, while larger planes can have as many as eight.

7. In the jet engine, air is drawn into the intake and compressed, with a resulting rise in pressure. Fuel is added and burned in a combustion chamber. This produces a high speed, hot gas. It flows through a turbine, which uses just enough energy from the gas to power the compressor. The rest of the energy provides thrust in the form of hot gases being blown out the back in a steady stream.

8. There is one more kind of engine, which is a combination of the first two. The turbo prop engine has propellers that when driven by a jet engine develop much more thrust at take off. This type of engine is ideal for heavy load carriers like the Hercules.

FOUR STROKE ENGINE

9. To understand how an engine works you must first know what parts make up an engine. The cylinders in an internal combustion engine have many other parts in addition to pistons.

10. Each cylinder has two valves on top. One valve opens and closes to let the mixture of gasoline and air through into the cylinder. Once this is done and the mixture is burnt, the other valve opens to release the exhaust.

11. The gasoline/air mixture is ignited by a spark plug. Most aircraft have two in every cylinder. In the cylinder you will also find the piston. The piston is driven up and down by the burning air mixture.

12. The piston is attached by a connecting rod to the crank shaft. As the piston drives up and down, the connecting rod rotates around the crankshaft, turning it. This forces the propeller to turn.

TYPES OF INTERNAL COMBUSTION ENGINES

13. The **horizontally opposed** engine is most commonly used in general aviation planes. This engine has two banks of cylinders lying flat, directly opposite each other, and working on the same crankshaft. There may be four, six or eight cylinders. The advantage of this motor type is its flat or pancake shape which generates less drag.

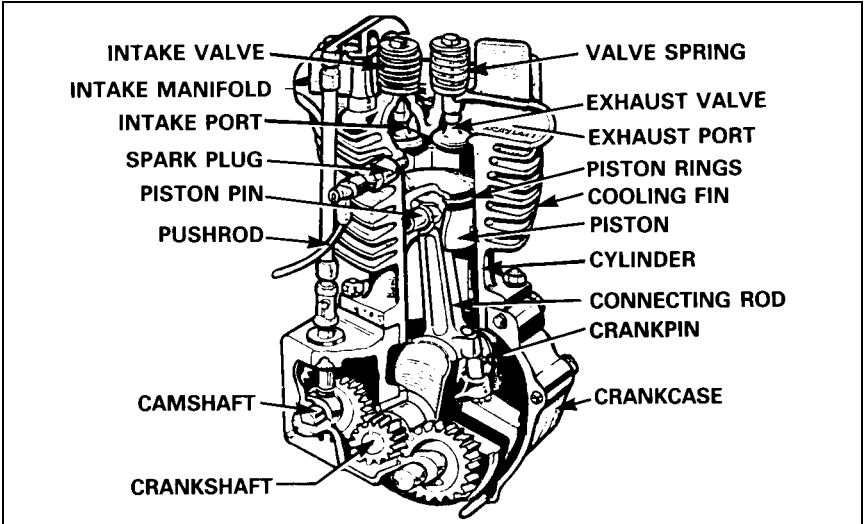


Figure 9-1 Basic Components of the Four Stroke Engine

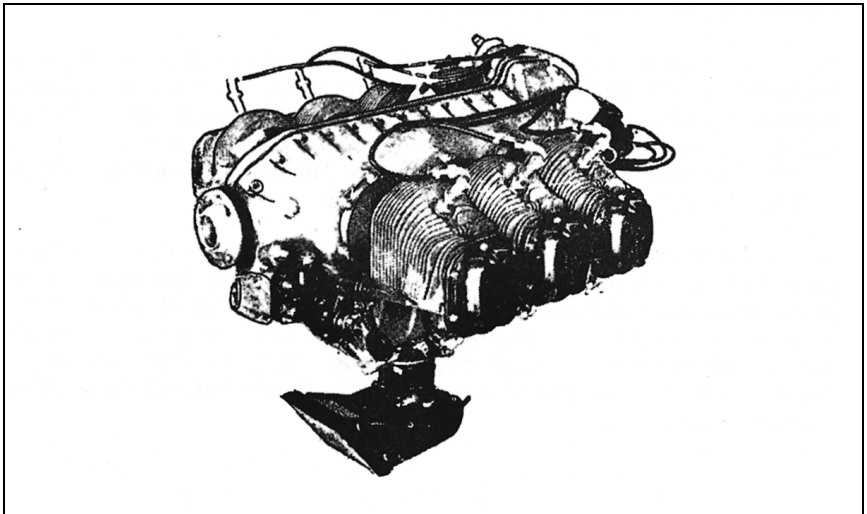


Figure 9-2 Horizontally Opposed Engine

14. Many larger, older aircraft have **radial** engines. In this arrangement the cylinders are arranged in a circle in the front of the engine with the top ends of the cylinders pointed outwards. The crankshaft runs through the middle of the cylinders to the front of the aircraft. Radial engines have many cylinders. For example, a Second World War fighter with a radial engine had 13 cylinders.

15. Some other old aircraft have **in-line** engines. This was the first type of aircraft engine used in great numbers. In an in-line engine the cylinders are lined up in a row from the front of the engine to the back, with the tops pointed up. The crankshaft runs under the cylinders to the front of the aircraft.

HOW THE FOUR STROKE ENGINE WORKS

16. In the engine the parts of the cylinder work together in a cycle to turn the aircraft's propeller. In most aircraft engines, this is the four stroke cycle.

17. In the first stroke the intake valve opens to let the gasoline/air mixture into the cylinder, and the piston moves down to draw the mixture in. The exhaust valve is closed during this stage. This is called the **intake stroke**.

18. In the second stroke both valves are closed while the piston moves up to compress the gasoline/air mixture. This is called the **compression stroke**.

19. In the third stroke both valves remain closed while the spark plug ignites the gas, which burns and expands and forces the piston down again. This is called the **power stroke**.

20. In the fourth stroke the intake valve is closed while the exhaust valve opens to let the burnt gases out. The piston moves up again to force the gases out. This is called the **exhaust stroke**.

21. The whole process repeats itself causing the crankshaft to turn the propeller on the aircraft.

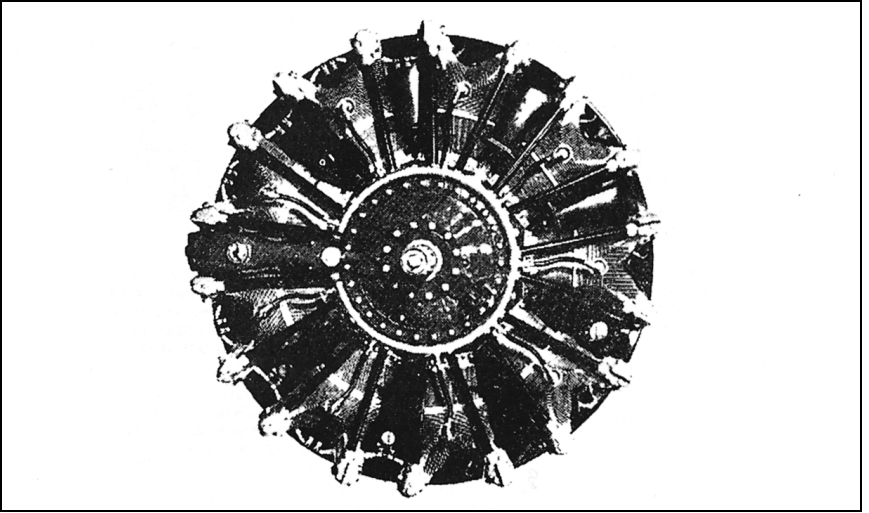


Figure 9-3 Radial Engine

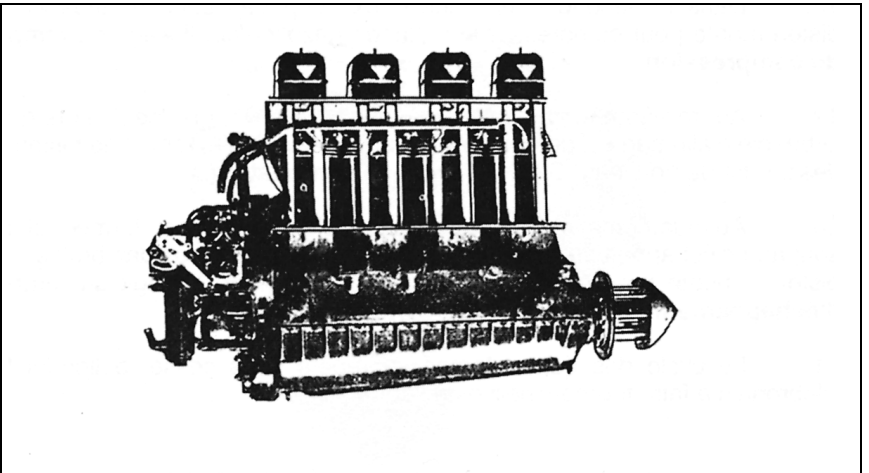


Figure 9-4 In-line Engine

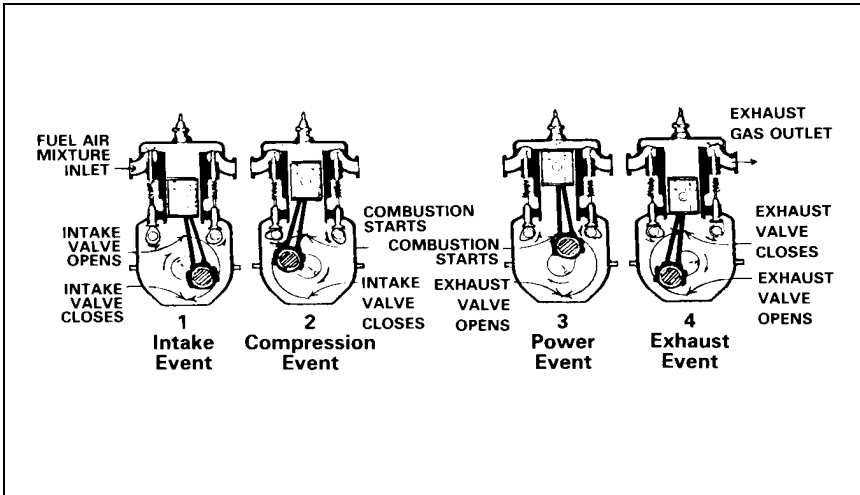


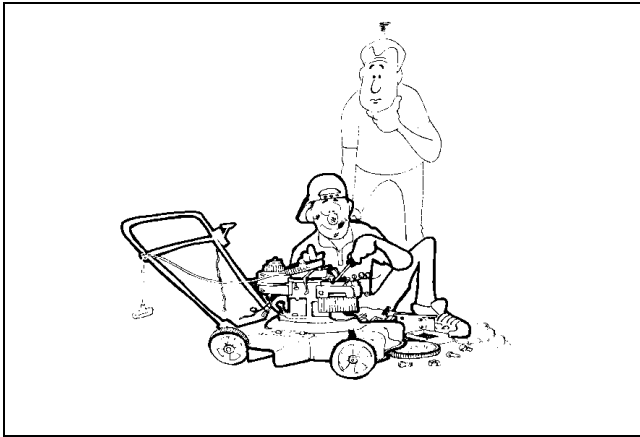
Figure 9-5 Four Stroke Cycle

THE FUNCTIONS OF OIL

22. Oil plays an important role in the functioning of an aircraft engine and many other engines. In fact, oil fulfills four important functions:

- a. Oil cools the engine by drawing heat away from hot engine parts as it flows by.
- b. Oil helps seal parts of the engine by creating a barrier between parts so that air and other gases cannot get through. This is especially important in the cylinder, so the gasoline/air mixture does not escape.
- c. Oil lubricates the engine, creating a smooth surface between parts that rub together, such as the piston when it moves up and down.
- d. Oil flushes the engine. This means the oil carries away dirt and debris from the engine as it flows through.

23. The mystery can be removed from how a car operates or how a plane flies if you learn the basics of how an engine operates. This information can be useful if your car breaks down, or your father needs the lawn-mower fixed.



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CHAPTER 10

PERFORMANCE OBJECTIVE 418

RADIO COMMUNICATIONS

1. Radios are very useful to cadets. They allow pilots to talk to ground and air traffic controllers and each other, and cadets in the bush to stay in touch with their leaders and each other. But radios make flying and other exercises safer and more efficient only if people know how to use them properly. Learning some rules of radio communication will help you understand radio procedures during flying and other exercises, and will earn your radio operator's permit in the future.

THE PHONETIC ALPHABET

2. The phonetic alphabet turns each letter into a word that can be more easily understood over the radio. Letters that sound familiar, like "B" and "C" might be confused on the radio if they were not spoken as words like "Bravo" and "Charlie". All single letters and groups of letters spoken over aircraft radios are spoken phonetically. The next time you go on a familiarization flight, notice how the pilot says the aircraft's call letters in phonetics. Figure 10-1 lists the phonetic alphabet with illustrations to help you remember the words associated with each letter.

NUMBERS

3. Numbers are used often on the radio. One example of the use of numbers occurs when pilots tell air traffic controllers their altitude; another occurs when air traffic controllers tell pilots what runways to use when taking off and landing. Numbers are always spoken as single digits, except as whole thousands. That means 5 280 would be spoken "five two eight zero" over the radio and 5 000 would be spoken "five thousand".

4. Pronounce numbers so they are easily understood. Certain pronunciations are used by all pilots to avoid confusion over the radio. Nine, for example, is pronounced "niner" to avoid confusion with "five". Numbers are pronounced as follows:

0	ZEE-RO	5	FIFE
1	WUN	6	SIX
2	TOO	7	SEVEN
3	TREE	8	AIT
4	FOW-ER	9	NIN-ER

5. Symbols are spoken out as words over the radio. The word "decimal" is used where there is a number with a decimal point. That means 4.8 would be spoken "four decimal eight" over the radio. Most other symbols are also spoken out.

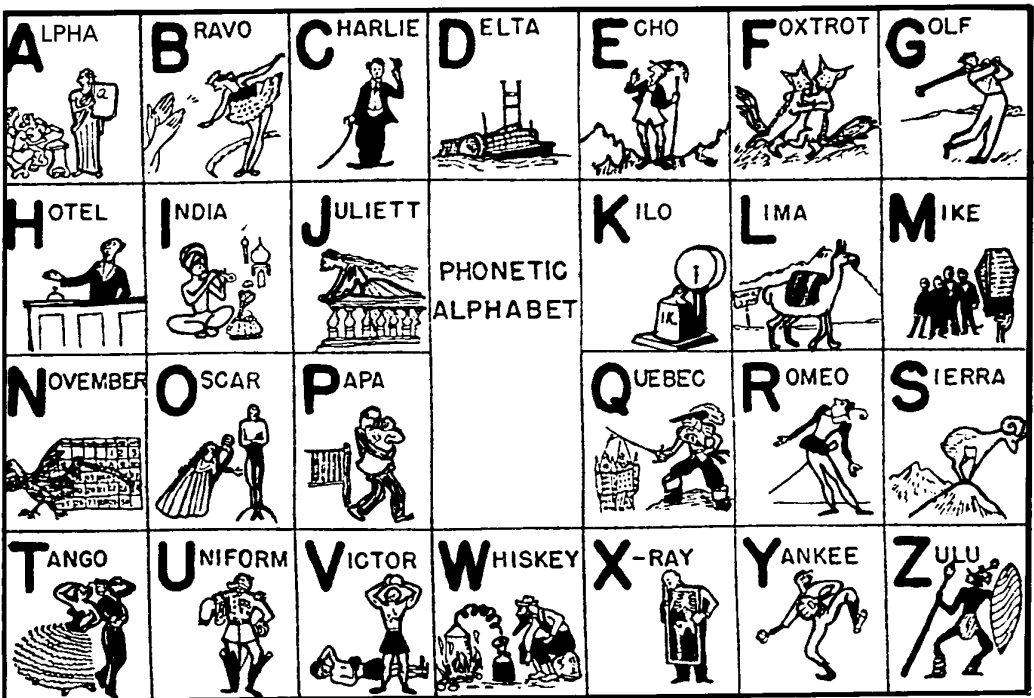
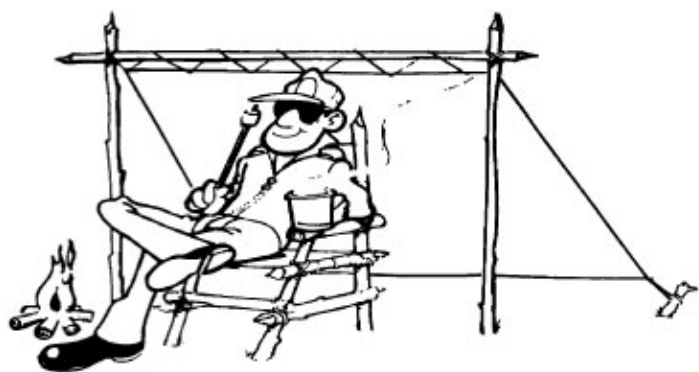


Figure 10-1 Phonetic Alphabet

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CHAPTER 11

PERFORMANCE OBJECTIVE 419

AIRCREW SURVIVAL

SECTION 1

BUILDING A SHELTER

INTRODUCTION

1. During Proficiency Level One training you learned the importance of building a fire and some of the best methods of construction. In any survival situation there is an order in which you should approach things to ensure the maximum chance of survival. The first three steps in the survival pattern are as follows:

- a. first aid should be administered to any injuries;
- b. a fire should be built; and
- c. a shelter must be constructed.

2. During Proficiency Level Two training you will be required to construct a shelter when you participate in a weekend exercise. Knowing how to build a proper shelter could mean the difference between life and death.

THE IMPORTANCE OF BUILDING A SHELTER

3. Building a place to sleep overnight under the stars can be a lot of fun when you know you have a warm bed to go home to in a night or so. However building a shelter in a real survival situation is an important activity as your shelter will not be used only as a place to put your head for the night.

4. A shelter has many important functions. Protection from the elements, wind, rain and storms, sun and heat is going to improve your chances of survival. Your shelter is also going to provide a place to store and keep equipment dry. Building a proper shelter will make you feel that you have a place that can be called home. Having a place to call home in the middle of nowhere will provide a feeling of security and warmth. Finally, a shelter can be a sign of life to any rescue and search teams looking for you.

CONSIDERATIONS WHEN CONSTRUCTING A SHELTER

5. Where is the best place to build a shelter? The shelter should be close to:

- a. firewood;
- b. building materials;
- c. water;
- d. a clear area to make signals; and
- e. food sources.

6. You should look for the following hazards when building a shelter:

- a. overhead threats;
- b. rock and landslides;
- c. trees that are unstable or rotting;
- d. swampy terrain;
- e. tides (coastal areas); and
- f. flash floods caused by river swell.

7. To make your stay comfortable and make your survival camp as effective and efficient as possible, look for a level area on which to build a shelter. The terrain should be appropriate for a good fire base as well. Consider the predominant direction of wind. The open end of your shelter should face away from the wind. If you can find an area with a pleasant view, pitch camp; it will improve your morale.

SHELTERS – LEAN-TO

8. The lean-to is an excellent shelter, even in winter, since any fire can be used in front of the opening. With a low mouth, a depth of no more than a sleeping bag, and the full length of the body exposed to the fire, a person can be surprisingly comfortable in the coldest of weather. It is possible to build a shelter of this type to house several people, but it is not nearly as comfortable sleeping with your head or feet facing the fire as it is sleeping crosswise.

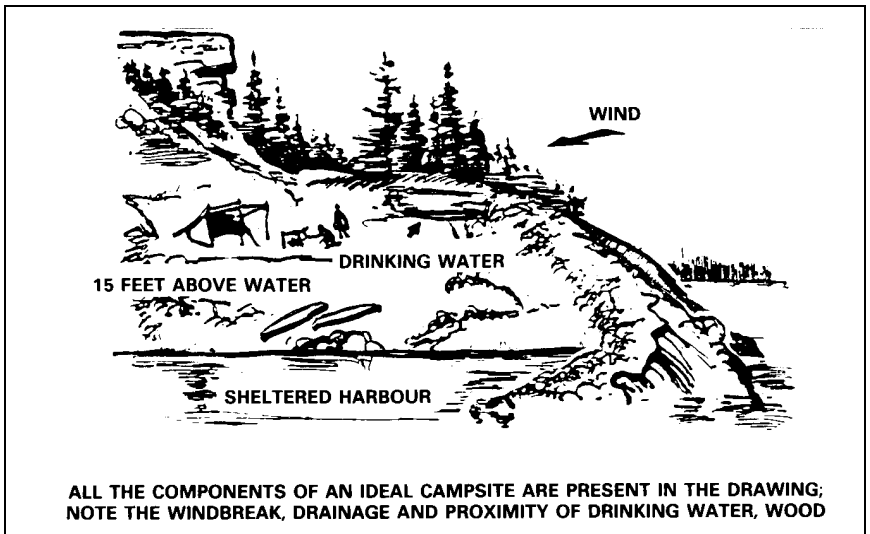
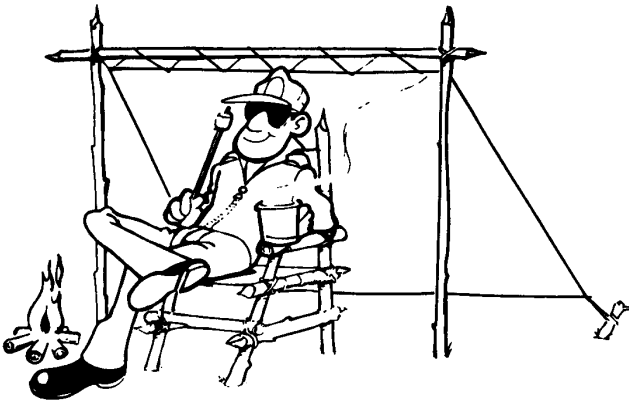


Figure 11-1 Picking a Shelter Site

9. When constructing a lean-to, find two trees 2 to 3 metres (7 to 9 feet) apart, with fairly firm, level ground between them. The distance between the trees will be the length of the opening of the lean-to, although it is possible to reduce the size of the opening by placing boughs along the edges for added protection. The number of people requiring shelter will determine the size of your lean-to. When constructing for one person, the lean-to should be long enough for the person to sleep across the open mouth of the shelter. If you have to share you should plan to sleep lengthwise.

10. Collect approximately eight branches, 5 to 7 cm (2 to 3 inches) in diameter and 2 metres (6 feet) in length to serve as the pole framework for the lean-to. Find a longer pole to serve as the crossbar for your lean-to. Lace and tie off each end at chest height between the two trees you picked out. Look for natural notches in the tree that will support the pole. Remember that the steeper the slope angle of the roof the better it will shed rain and snow and reflect heat from the fire. A 45-degree slope angle is generally considered to provide enough room inside. A 45-degree slope angle is also considered adequate to shed the rain. Lean the other poles against the crossbar spreading them evenly.



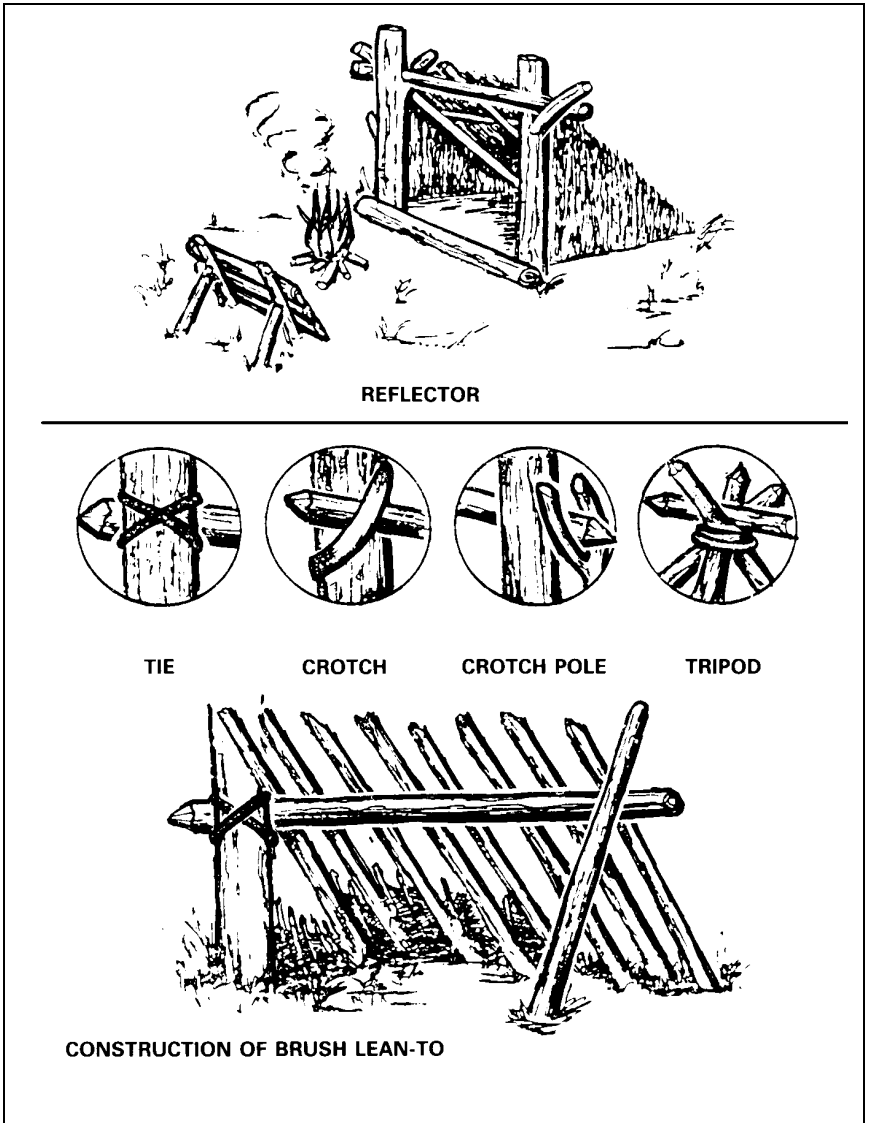
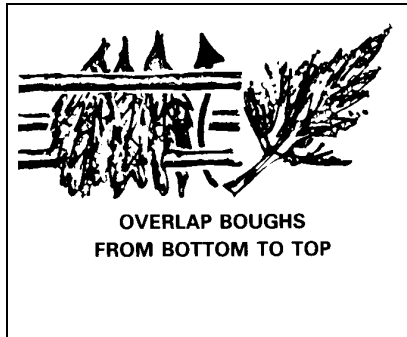


Figure 11-2 Construction of a Brush Lean-to

11. Once the framework has been completed, you can begin to cover it. Spruce boughs make an excellent natural covering, although the branches of any fir trees and some regular trees will suffice. Place the boughs in the same way you would expect shingles on a house roof would be laid. The brush ends of the boughs are laid down overlapping the butt ends of the previous rows. This method of thatching ensures that the rain will run off the roof more easily. Lay enough boughs until the top or back roof of the lean-to is covered. Repeat this method until the entire roof is covered to a depth of at least 15 cm (6 inches).

12. Fill in the triangular sides of the lean-to with large boughs, with the ends pointing up as in the roof thatching. If you have parachute silk, it makes an excellent cover for the lean-to. If it is snowing or raining heavily place the boughs first then the fabric over top. If it is really cold put the fabric on the framework first to reflect the heat from the fire and place the boughs over the fabric.



NATURAL SHELTERS

13. In Proficiency Level One you learned a formula for what to do when lost – Stop, Think, Observe, Plan. When observing your surroundings, look for natural shelters that may save you from having to build your own.

14. Caves usually can be found in hilly or mountainous areas and by the shores of rivers, lakes and seas. Caves can provide good shelter but they are often damp and already occupied! The base of a large overhanging rock can also provide enough cover from the elements.

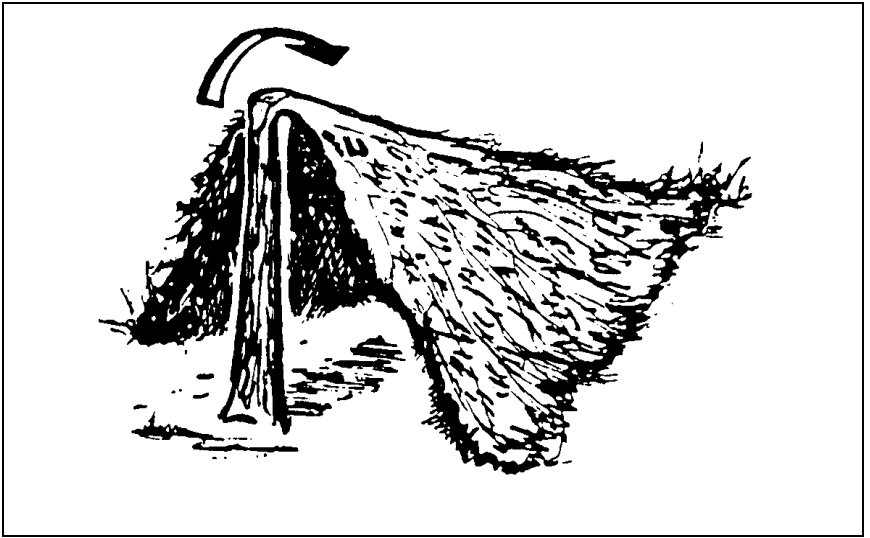


Figure 11-3 Lopped Tree Shelter

15. A large fallen tree, if lying in a secure position, can be cleared out underneath and then closed in by lying boughs along the sides and on top to make a roof. When clearing the space underneath, be careful not to remove the branches that are supporting the tree. The base of a tree with thick low, overhanging branches if built up with a few extra branches can be a snug shelter for the night.

16. If you are caught in a survival situation in the winter you have several options for shelters. A snow dugout or cave will keep you warm and out of the wind. It is easy and fast to build. Igloos are the best winter shelters but they are quite difficult to build. If you have a parachute, build some snow walls and place the parachute over top to serve as the roof.

SECTION 2

BUILDING A COMMON RABBIT SNARE

INTRODUCTION

17. If you are in a survival situation you must conserve and supplement what food you have in case rescue is delayed. The most important source of food for a survivor is small animals such as rabbits, squirrels or birds. If you can master a few techniques in fishing and trapping you should be able to survive in the wilderness for some time.

RABBIT

18. Rabbits are the most common animals that can easily be caught in a snare. There are several different species of rabbit in Canada. In woodlands they can be found in heavy thickets. Watch for rabbit runways, the trail rabbits make as they move through the woods. Rabbit runways can be identified by beaten down grass and twigs, and droppings. They usually lead to rabbit holes. Snares should be set in recently used rabbit runways.

COMMON SNARE

19. Run a cross pole across the rabbit runway using trees to suspend it above the ground. Use wire or string to make a loop about 10 cm (4 inches) in diameter that will slip tightly around the rabbit's neck when the rabbit runs into it. Suspend this knot and loop approximately 8 cm (3 inches) from the ground. Dead sticks may be inserted into the ground in line with the snare to guide the rabbit into the loop. Notches in the dead stick may also serve to hook the snare open.

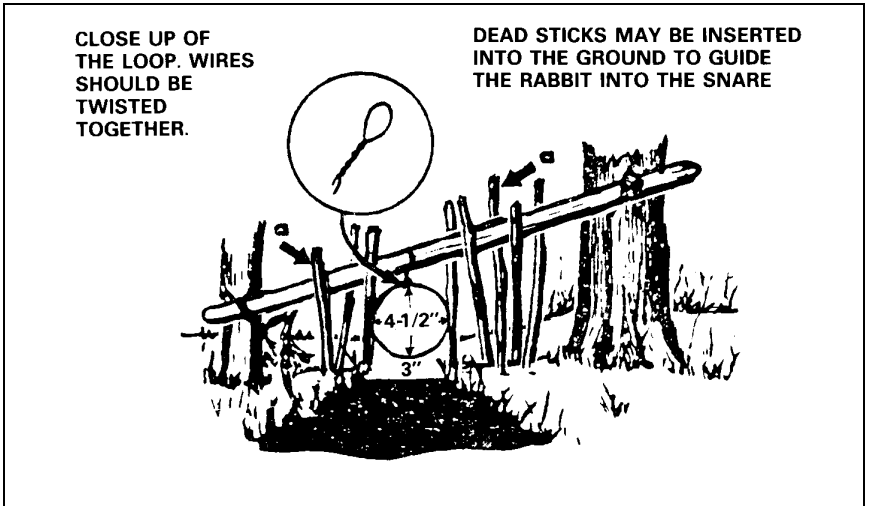


Figure 11-4 Common Rabbit Snare (Using Wire)

SQUIRREL SNARES

20. Squirrels are common throughout Canada's forests. The leaning pole snare is a simple and effective method of catching squirrels. It should be set up near where squirrels store their food in tree cavities, nests or holes in the ground. Put three or more snares on a pole, since squirrels are fond of the company of other squirrels.



21. There are many different sources of food in the wilderness. Reference books and short guides on survival techniques and camping can give you more information of methods of procuring food. The more you know and the more comfortable you feel practising hunting and fishing methods the greater your chances of survival.

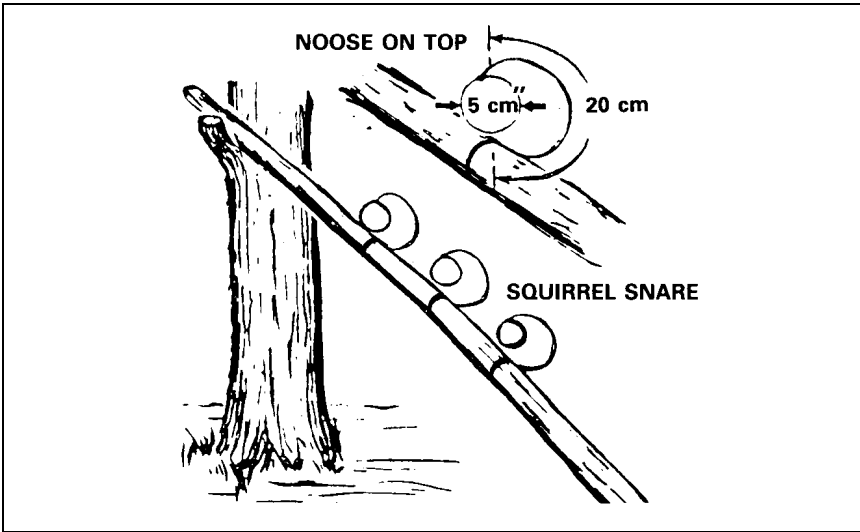


Figure 11-5 Squirrel Snare

SECTION 3

HIKING TECHNIQUES

22. Most people participate in some kind of hiking experience at one point in their lives. Hiking improves physical fitness and provides the opportunity to enjoy your natural surroundings. In a survival situation it may be necessary to hike to safety if no help comes. Hiking usually involves walking for half a day to a full day and carrying a day pack. Whether it is a walk in the local park or two days in hilly terrain there are some principles of hiking that should always be observed:

- a. Ensure that you are wearing proper footwear. What you wear on your feet should correspond with what you plan to do. If you are just going for a walk up the street or in the park, running shoes with socks will meet your needs just fine. If you are heading into the hills, the shoe you wear will require more ankle support. If the terrain is rugged and you are going to be doing a fair bit of

walking it may be a good idea to invest in some hiking boots. These do not have to be expensive, many hiking boots today are a cross between runners and boots. They provide good ankle support and a reinforced toe. The important thing is to think about what you are going to do and prepare for it. It will be hard to hike if your feet are not protected.

- b. Be sure to pace yourself as you set out. Start out slowly, ensuring that you are warming up gradually. If you start out too fast you may set a pace that you cannot maintain. Stop after 15 to 20 minutes of walking and take time to adjust your kit. Shoes sometimes need tightening or loosening. See how you feel-then plan to pace yourself accordingly. You should not be walking any faster than the slowest member of your group.
- c. If you are walking over a period of time, ensure that you drink lots of water. Don't wait until you are thirsty. If you are walking your body will need extra liquids to keep your energy high.
- d. When walking up hill, make sure the whole foot comes in contact with the ground. Take small paces so that you do not overstretch.
- e. When walking downhill, be sure not to lock your knees and take small paces so as to not pick up so much speed that you lose your balance.

23. Those of you participating in the Duke of Edinburgh Awards programme will be able to make hiking a part of your expeditions if you wish. Ensure you are properly prepared by reading up on extra information on safe hiking and trekking techniques.

