National Defence / Défense nationale

Royal Canadian Air Cadets

Squadron Training

LEVEL 1

Canada

National Défence
Defence nationale

A-CR-CCP-266/PT-001

ROYAL CANADIAN AIR CADET MANUAL

PROFICIENCY LEVEL ONE HANDBOOK

(Supersedes A-CR-CCP-266/PT-001 dated 1997-10-14.)

Issued on Authority of the Chief of the Defence Staff

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FOREWORD

1. A-CR-CCP-266/PT-001, Royal Canadian Air Cadet Manual, Profiency 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-266/PT-001 dated 1991-09-01.

3. Requests for changes to this publication are to be sent through NDHQ, Attention: D Cdts 4.

PREFACE

1. A-CR-CCP-266/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-266/PT-001 is based on the Course Training Standard and Course Training Plan for Level One found in A-CR-CCP-265/PC-001 and A-CR-CCP-266/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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INTRODUCTION

1. Welcome to the world of air cadets. In choosing to be an air cadet, you have become one of more than 25,000 air cadets in Canada involved in challenging and adventurous activities. The air cadet organization gives you opportunities for widening your interests and developing new skills.

2. This is your handbook. It was written and developed with the intention that you, the cadet, would be its prime user. You should read the appropriate section as you go through the training at your squadron.

3. Anything that is worthwhile takes hard work and self-discipline. The cadet organization will help you to develop such attributes. Undoubtedly, there will be times when you may question why you became a cadet, or whether you should remain involved. These are questions only you can answer. Most senior cadets have asked themselves the same questions. Don't be afraid to seek their advice and guidance on these or other questions that you may have.

4. You will learn most of the information in this book during squadron training time. However, if you are absent from some classes you should read the applicable material in this manual very carefully.

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DRILL

CHAPTER 1

PERFORMANCE OBJECTIVE 401

DRILL

SECTION 1

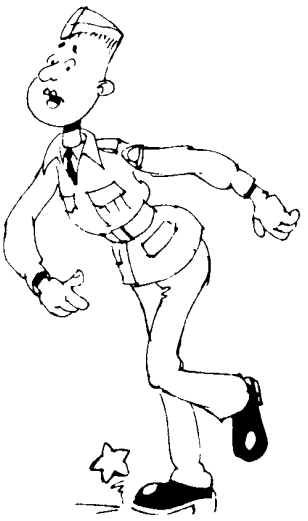
GENERAL

1. **The History of Drill.** Military drill originally developed for moving infantry during battle. Troops might have to face to a different flank to meet a new attack; to form into a compact square to repel cavalry; or to extend into a two-man line to deliver maximum fire-power on the enemy. Troops had to perform these movements rapidly and efficiently if they wanted to stay alive. If the troops practised these movements beforehand on the parade square, they could perform them reasonably well in the stress, noise and confusion of the battlefield. This practice made the troops much more effective in the field. As a result, drill developed. In the process of teaching drill, however, it was seen that other benefits were gained. Drill was also an excellent way of developing physical coordination, teamwork, and team spirit in the soldiers.

2. **The Need for Drill.** The need for drill as a part of actual warfare has long since disappeared. Drill's second value however, remains as important as ever, especially in a cadet squadron. There is no better way of developing sharpness and team spirit (esprit de corps) – both important elements of the cadet world.

3. **Drill Can Be Fun.** Amazingly, drill can be FUN. At first, you may feel awkward or uncoordinated. Don't worry, these are common feelings for a cadet who is just beginning to learn drill. Gradually, as you get the hang of it, you will begin to feel a sense of satisfaction in getting it just right. As you work with the rest of your squad to accomplish something that can only be done as a team, you will begin to feel a sense of pride, in yourself and your squadron.

4. Good drill, when it is closely supervised and when the highest precision is demanded, is an exercise in obedience and alertness. It sets the standard for the individual and the squadron, and builds a sense of confidence between the commander and the cadet.



5. **Drill Movements. The various drill movements you will learn during your first year appear in this chapter.** This information is based on A-PD-201-000/PT-000, Canadian Forces Manual of Drill and Ceremonial. If drill interests you and you would like to learn more about it, there may be a copy of A-PD-201-000/PT-000 at your squadron.

6. The information in this chapter is to be used as a reference only. Don't worry about reading it before you learn the drill in each section. If you have questions about your drill classes, be sure to ask your instructor. If you still have questions, or if you want to refresh your memory at home, you should turn to this chapter for help.

SECTION 2

SQUAD DRILL AT THE HALT

THE STANDARD PAUSE

7. Some drill movements require a standard pause to be observed. This means that while performing a drill movement you will hold your position for a precise period of time without moving. This pause allows you to perform movements precisely. The standard pause is calculated from the quick march cadence (which is .60 paces per minute). It is equivalent to two paces or 1.5 seconds. You will learn to recognize the length of the

standard pause by listening to the beat of the base drum or your instructors as they call out the time.

FORMATION OF A SQUAD

8. Soon after arrival at the squadron, new cadets will learn how to form a squad. These formations are essential to maintain control and to ensure uniformity throughout training.

9. On the command, "FORM UP IN SINGLE (TWO) (THREE) RANK(S) – MOVE", you will do the following:

a. assume the position of attention;

b. observe the standard pause (1.5 seconds);

c. step off with the left foot, march forward towards the instructor; and

d. the first cadet who approaches the instructor will halt three paces directly in front of the instructor and the remainder will cover that cadet from front to rear and/or fall in on the cadet's left at arm's length intervals.

POSITION OF ATTENTION

10. The position of attention is one of readiness in expectation of a word of command. Exactness in this position is important as the position is adopted by officers and cadets when addressing a superior.

11. The position of attention is as follows:

a. heels together and in line;

b. feet turned out to form an angle of 30 degrees;

c. body balanced and the weight evenly distributed on both feet;

d. shoulders level, square to the front;

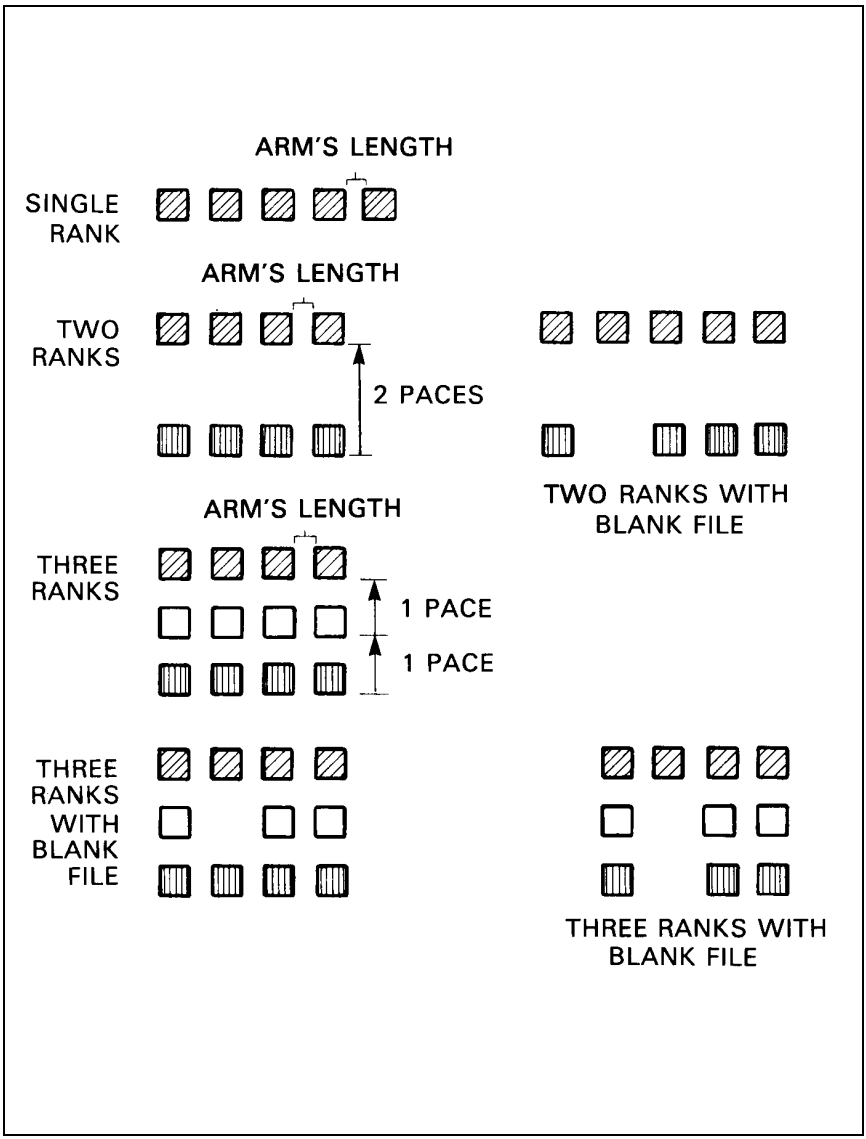


Figure 1-1 Formation of a Squad

e. arms hanging as straight as their natural bend will allow, with elbows and wrists touching the body;

f. wrists straight, the back of the hand held outwards;

g. the fingers aligned, touching the palm of the hand, thumbs placed on the side of the forefinger at the middle joint with the thumbs and back of the fingers touching the thighs lightly and the thumbs in line with the seam of the trousers; and

h. head held erect, neck touching the back of the collar, eyes straight to the front.

12. **NO** part of your body shall be strained when in the position of attention. Straining your body will only make you more uncomfortable; try to relax, while maintaining the position of attention. Muscles should not be tense, merely held in position.

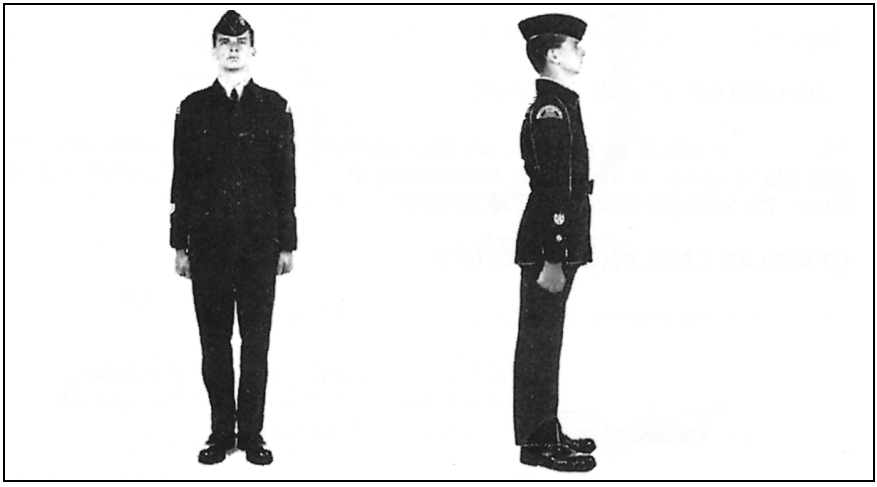


Figure 1-2 Position of Attention

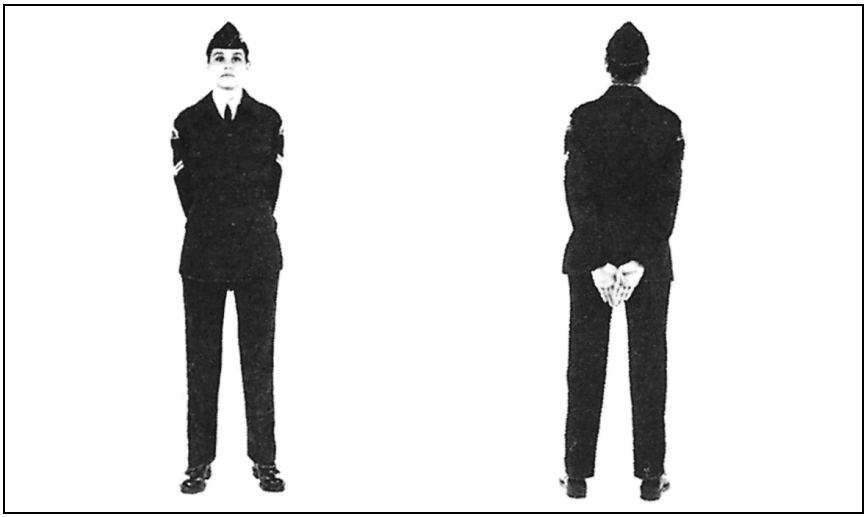


Figure 1-3 Position of Stand at Ease

POSITION OF STAND AT EASE

13. The stand at ease is an intermediate position between attention and stand easy. It allows no movement, but can be maintained, without strain, for a longer time than the position of attention.

STAND AT EASE FROM ATTENTION

14. On the command "STAND AT – EASE" you shall:

a. bend your left knee, carry your left foot to the left, straightening it in double time, and smartly place your foot flat on the ground, with the insides of your heels 25 cm (10 in.) apart;

b. at the same time, with a quick motion, bring your arms behind your back, stretched to their full extent, and place the back of your right hand in the palm of your left, with thumbs crossed right over left, the fingers together and extended; and

c. balance your body with your weight evenly distributed on both feet.

15. You will notice the term "bend the left (right) knee" is used throughout this chapter and in the drill chapters of the other manuals. The term means to bend your knee so your foot will hang at its natural angle with the toe pointed downwards 15 cm (6 in.) off the ground and directly underneath the knee.

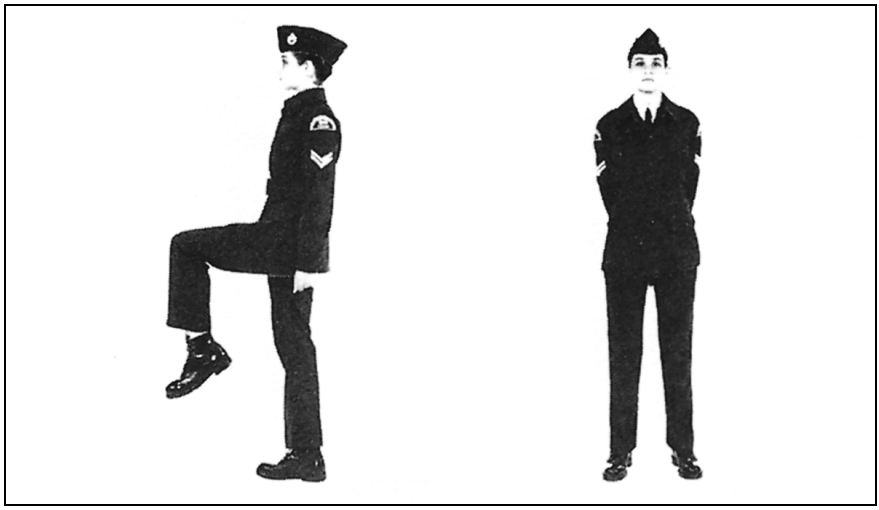


Figure 1-4 Position of Stand at Ease from Attention

STAND EASY

16. The position of stand easy is ordered when it is time for the squad to relax This command is only given when the squad is in the position of

17. On the command, "STAND – EASY", you shall:

a. close your hands and bring your arms to the position of attention;

b. observe a standard pause; and

c. relax.

18. When standing easy, you may adjust clothing and equipment but you shall not move your feet or talk.

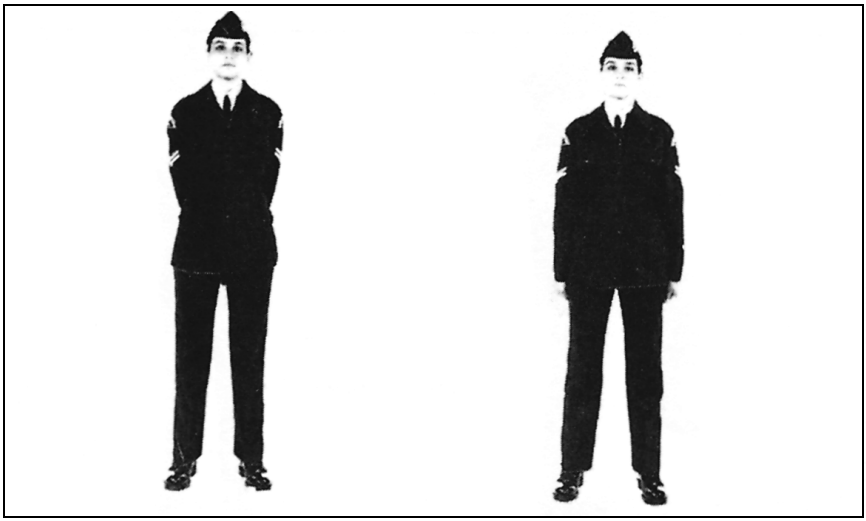


Figure 1-5 Position of Stand Easy

STAND AT EASE FROM STAND EASY

19. On the command, "SQUAD", you shall assume the position of stand at ease.

ATTENTION FROM STAND AT EASE

20. On the command, "ATTEN – TION", you will:

a. bend your left knee and straighten your left leg in double time, placing your left foot smartly beside the right, in the position of

attention, toe touching first, followed by the heel, and with heels aligned; and

b. at the same time, with a quick motion, bring your arms and hands to the position of attention.

SALUTING WITH THE HAND AT THE HALT

21. The salute is given with the right hand. When a cadet is unable to salute, due to the carrying of articles, compliments will be paid by turning the head and eyes to the left or right or standing to attention, as appropriate.

22. The salute is performed in two movements – up and down. On the command, "TO THE FRONT – SALUTE", you shall:

a. bend your right elbow and open the palm of your right hand; and

b. force your right hand by its shortest route to the outside edge of the eyebrow so that:

(1) the palm of the hand is facing down;

(2) the thumb and fingers are fully extended and close together;

(3) the tip of the second finger is just touching the outside of your right eyebrow;

(4) the hand, wrist and forearm are in a straight line;

(5) the elbow is in line with the shoulders; and

(6) the upper arm is parallel to the ground.

23. These steps complete the upward movement of the salute. The salute is held for the standard pause. The downward movement is then executed by bringing your hand sharply to the position of attention by the

shortest route, without slapping the thigh. The hand is closed after the forearm is lowered below the shoulder level.

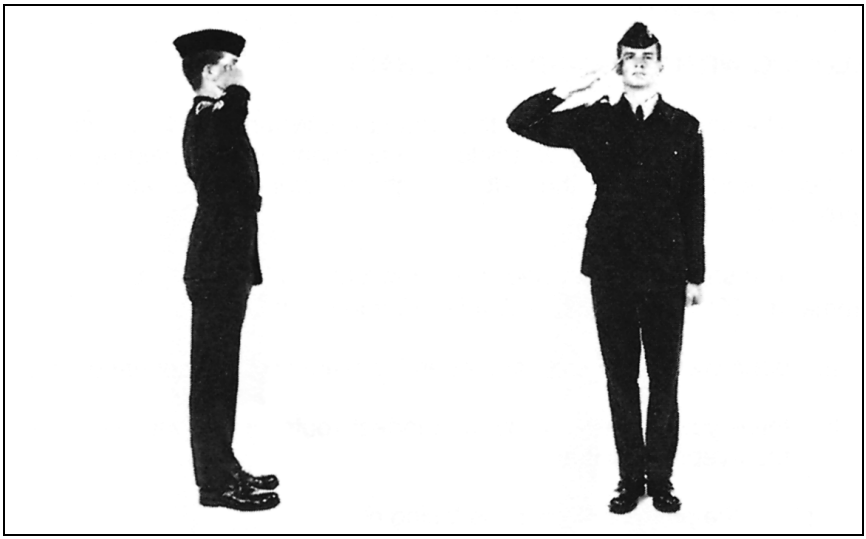


Figure 1-6 Saluting With the Hand to the Front

24. At times it is desirable to salute to the left or right. When you are given the command "TO THE RIGHT (or LEFT) – SALUTE", the salute shall be executed as explained for the Salute to the Front, except that:

a. your head and eyes shall be turned smartly to the right (left) as far as possible without straining;

b. when saluting to the left, your right hand, wrist, and arm are brought further over to the left, to the correct position in line with the outside edge of the right eyebrow; and

c. when saluting to the right, your arm is moved to the rear. The tip of the second finger remains in line with the outside edge of the right eyebrow.

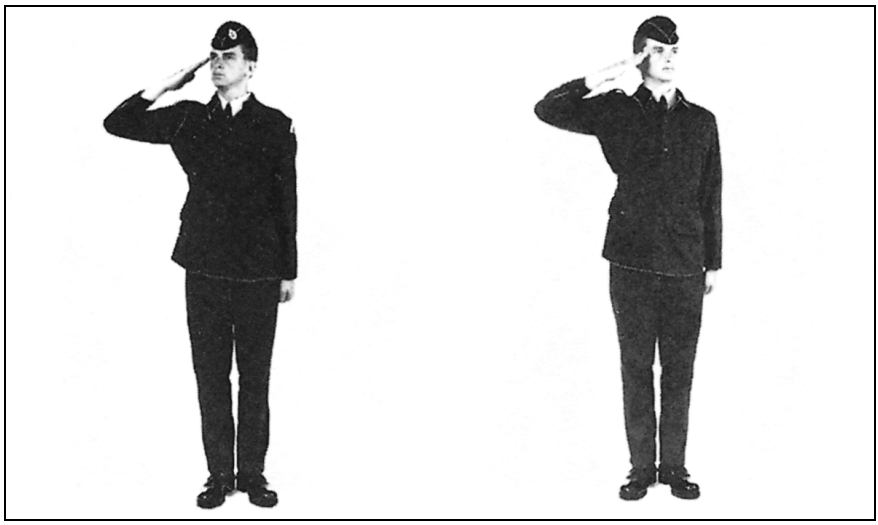


Figure 1-7 Saluting With the Hand to the Right and Left

25. When the salute is lowered, after observing the standard pause, your hand is brought sharply to the position of attention, at the same time your head and eyes are turned smartly to the front.

TURNING AND INCLINING AT THE HALT

26. Turns and inclines are performed to change direction: right or left turns by 90 degrees; about turn 180 degrees; and right and left inclines 45 degrees.

27. On the command, "RIGHT – TURN", you shall keep both knees braced, arms at your sides, maintain your body upright, and turn 90 degrees to the right by pivoting on the right heel and left toe. On the completion of this part of the movement, the weight of your body is placed on the right foot, and your left leg is braced with the heel off the ground. To perform the second part of the movement you bend your left knee, straighten it in double time, and smartly place your left foot by your right

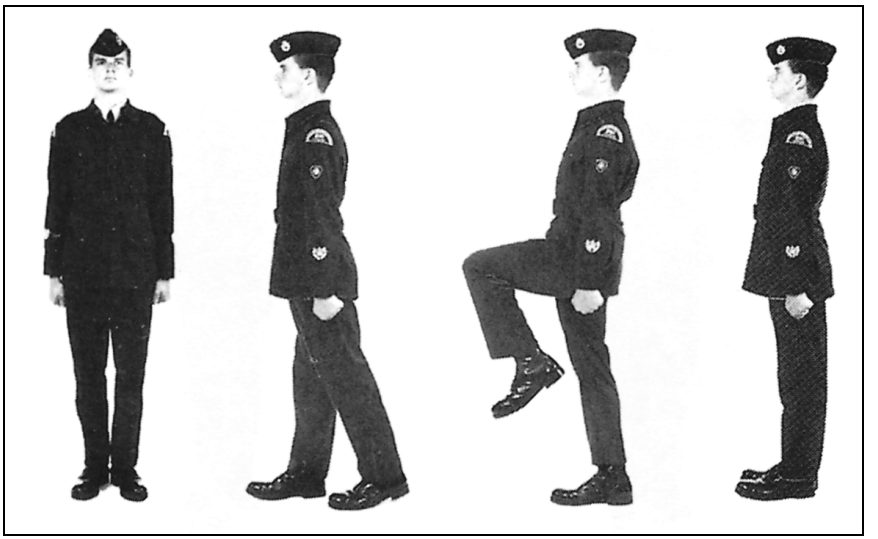


Figure 1-8 Right Turn

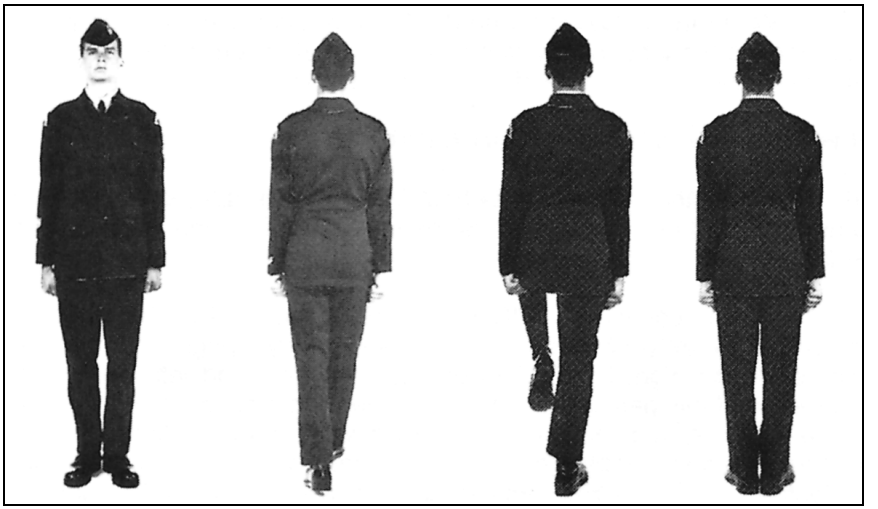


Figure 1-9 About Turn

to assume the position of attention. The standard pause is observed between the two parts of the movement.

28. On the command, "ABOUT TURN", the drill as described for the right turn is followed except that the pivot to the right is made through 180 degrees. Balance is maintained by bracing your legs and locking the thighs.

29. On the command, "RIGHT IN – CLINE", the drill as described in turning to the right is followed but the turn is only made through 45 degrees.

30. On the command, "LEFT – TURN", the drill as described for the right turn is followed except that the details of moving your feet and direction are reversed.

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

DRESSING A SQUAD

32. A squad is dressed so that it looks sharp and well ordered. Dressing ensures that there is proper spacing between members from front to rear and side to side. Two orders are used to accomplish the dressing of a squad. The first is "RIGHT DRESS", which is done in three movements, with the standard pause between each movement. The second command IS "EYES FRONT", which is one step.

33. On the command, "RIGHT – DRESS":

a. the right-hand cadet of the front rank stands fast;

b. the remainder take a 40 cm (15 in.) pace forward by shooting the left foot forward, bending the right knee, and adopting the position of attention;

c. standard pause;

d. the right file of cadets stands fast;

e. the remainder turn head and eyes to the right as far as possible without straining;

f. at the same time, members of the front rank, except the righthand cadet, shoot their right arms to their full extent behind the shoulder of the cadet on the right. The hand is closed as in the position of attention, with the back of the hand facing up, and the arm parallel to the ground;

g. standard pause;

h. the right-hand cadet of the front rank stands fast; and

j. the remainder take up correct alignment, distance and covering by taking short quick paces until the remainder are in the correct position. Movement starts with the left foot.

34. As a guide to taking up correct alignment, each cadet in the squad, except the right-hand cadet, moves to a position from which the lower portion of the face of the second cadet to the right can just be seen. Correct covering is taken up by glancing to the front without moving the head. The interval is correct when the closed hand is touching the left shoulder of the cadet on the right.

35. On the command, "EYES – FRONT", you shall snap your head and eyes to the front and cut the right arm smartly to the position of attention, without slapping the thigh.

Figure 1-10 Dressing a Squad – Arm's Length

36. On the command, "SHOULDER DRESSING, RIGHT – DRESS", dressing is carried out as for the Right Dress, except the arms are not raised and dressing is taken up without arm's length interval.

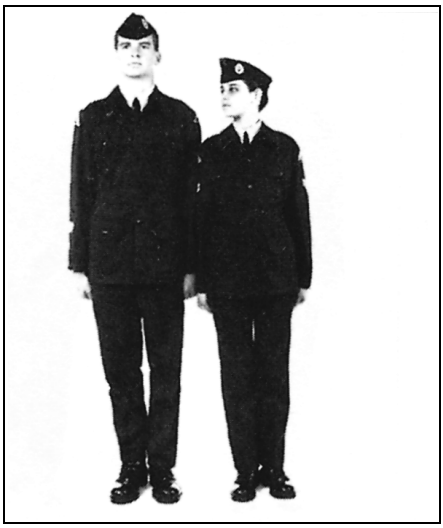


Figure 1-11 Dressing a Squad – Shoulder Dressing

37. On the command, "ELBOW DRESSING, RIGHT – DRESS", dressing is carried out as for Right Dress except:

a. the right hand is placed on the hip;

b. the fingers are closed, pointed down and extended forward;.

c. the thumbs are to the rear;

d. the elbow is straight out to the side; and

e. the point of the elbow is touching the cadet on the right.

Figure 1-12 Dressing a Squad – Elbow Dressing

38. At times a squad may be commanded to dress to the left. In such cases the same drill is followed as for right dress, except the head and eyes are turned left and the left arm is raised. The left-hand cadet stands fast.

CALLING THE ROLL

39. On the command, "ATTENTION/ANSWER TO YOUR NAME/STAND AT – EASE" you shall stand at ease. When your name is called, you shall come to attention and answer in one of the following ways:

a. "Sir" or "Ma'am" if the person calling the roll is an officer, or warrant officer;

b. "Flight Sergeant," "Sergeant" or "Corporal" if the person calling the roll is a flight sergeant, sergeant or corporal; or

c. "Present" if the person calling the roll is below the rank of corporal.

40. When the roll is supervised by a person senior in rank to the person calling the roll, you shall answer to your name with the correct response for the rank of the supervisor.

41. You shall stand at ease after answering to your name, remembering to observe the standard pause between movements.

NUMBERING

42. Numbering is used to designate individuals in the squad and determine the number of cadets on parade.

43. On the command, "SQUAD – NUMBER", the front rank only shall number off from the right to the left. The right-hand cadet shall call out ONE, the next cadet shall call out TWO and so on. The head and eyes shall remain still. There is no pause between numbers.

44. Cadets in the centre and rear ranks determine their numbers by taking the number of the front rank cadet they are behind.

45. When an error in numbering occurs, the command, "AS YOU WERE", followed by the last correct number is called out. The cadet so designated repeats the number and the drill of numbering continues. The command, "AS YOU WERE, SQUAD NUMBER", may be ordered and the squad will renumber from the beginning.

PROVING

46. Proving may be used by members of the squad to identify themselves. You should learn to prove so that the instructor will know when you need to ask a question.

47. On the command, "NUMBERS __,__,__, PROVE", the cadets so designated raise their left forearm parallel to the ground, keeping their left elbow close to the body and the hand closed as for the position of attention.

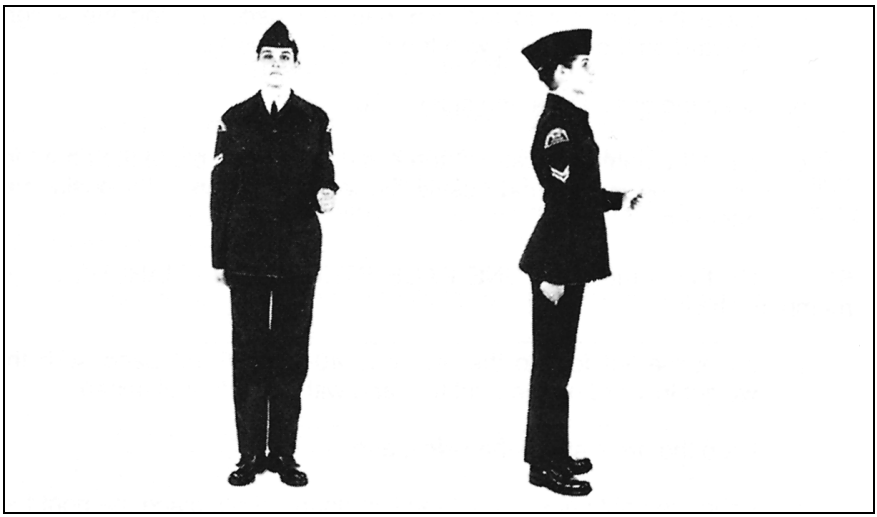


Figure 1-13 Proving

48. On the command, "ATTENTION", the cadets who proved will adopt the position of attention.

PACES FORWARD AND TO THE REAR

49. When taking paces forward and backward:

a. the cadence shall be in quick time; and

b. the arms shall be kept still at the sides

50. On the command, "ONE PACE FORWARD – MARCH", squad members shall:

a. shoot the left foot to the rear one half pace, forcing the weight forward on the left foot, with the right heel raised;

b. keep the arms still at the sides; and

c. bend the right knee, straighten it in double time, place the right foot smartly on the ground beside the left and assume the position of attention.

51. On the command, "ONE PACE STEP BACK – MARCH", squad members shall:

a. shoot the left foot to the rear one 40 cm (15 in.) pace, with the weight forward on the right foot and with the left heel raised;

b. keep the arms still at the sides; and

c. bend the right knee, straighten it in double time, place the right foot smartly on the ground beside the left and assume the position of attention.

52. The timing for the previously mentioned movements is as follows:

a. for one pace, one-two;

b. for two paces, one, one-two; and

c. for three paces, one, one, one-two.

OPEN ORDER – MARCH

53. To execute the open order the following steps are taken:

a. the front rank shall step forward three 40 cm (15 in.) paces, the rear rank shall step back three 40 cm (15 in.) paces and the centre rank shall stand fast;

b. the cadence shall be in quick time; and

c. the arms shall be kept still at the sides.

54. On the command, "OPEN ORDER – MARCH", the movements will be executed as for three paces forward and to the rear, the final movement being executed by bending the right knee, straightening it in double time and placing the right foot smartly on the ground by the left and assuming the position of attention.

55. The timing for the movements is counted one, one, one-two.

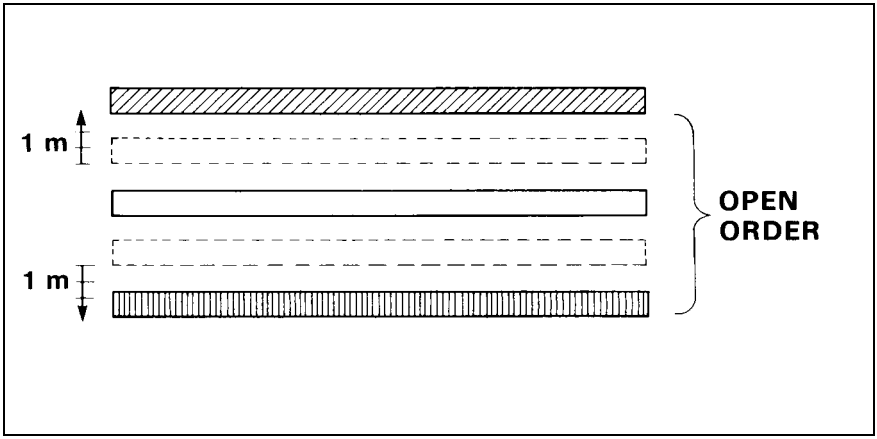


Figure 1-14 Open Order – Three Ranks

CLOSE ORDER – MARCH

56. On the command, "CLOSE ORDER – MARCH", the squad shall act in the reverse of the action for the open order.

FALLING OUT OF RANKS

57. The command, "FALL – OUT", shall be used when an individual is called out of the squad.

58. On the command, "FALL – OUT", the cadet named shall come to attention, march to the right of the flank of the squad in front of that cadet's rank, and then proceed in the required direction.

FALLING INDIVIDUALS IN

59. On the command, "FALL – IN", the individual ordered marches to the left flank of the squad and returns to position by marching in rear of the rank, wheeling into the original position, and halting. The individual shall pick up the dressing and remain at attention or stand at ease, as required.

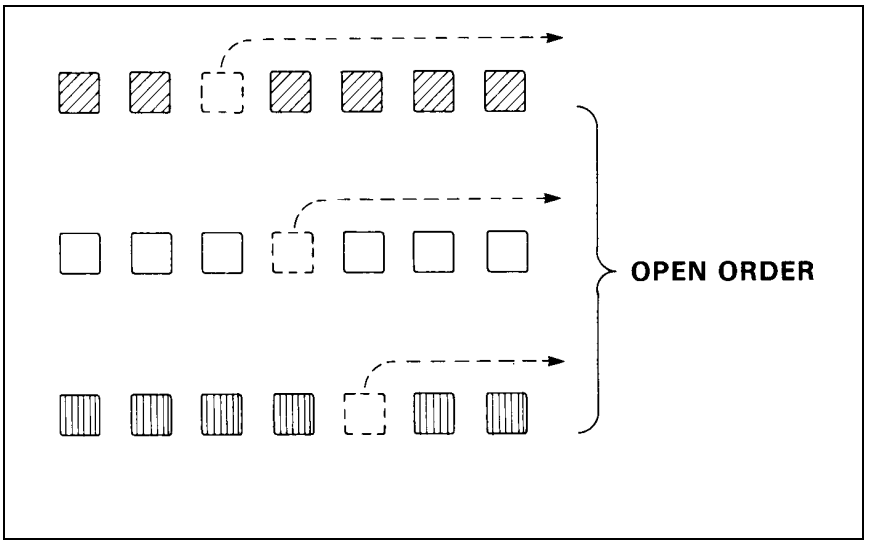


Figure 1-15 Falling Out of Ranks

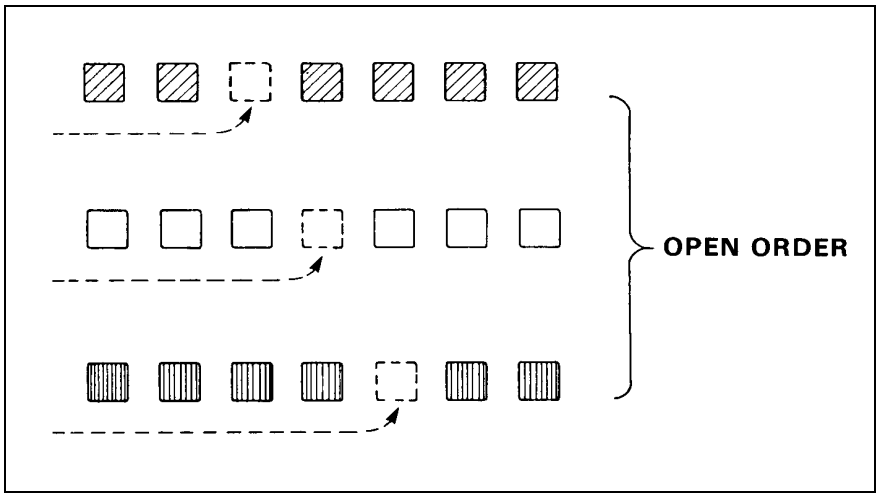


Figure 1-16 Falling Individuals In

DISMISSING A SQUAD

60. The command "DISMISS" signifies the end of a parade, period of instruction, etc. The squad shall be in line and at attention when dismissed.

61. On the command, "DIS – MISS", squad members shall:

a. turn right;

b. observe the standard pause;

c. salute, if an officer is on parade;

d. observe the standard pause; and

e. march at attention independently, in quick time, from the place of parade.

CARRYING OF ARTICLES

62. If an article is carried, it shall be carried in the left hand. If an article is carried when marching, the left arm is not swung.

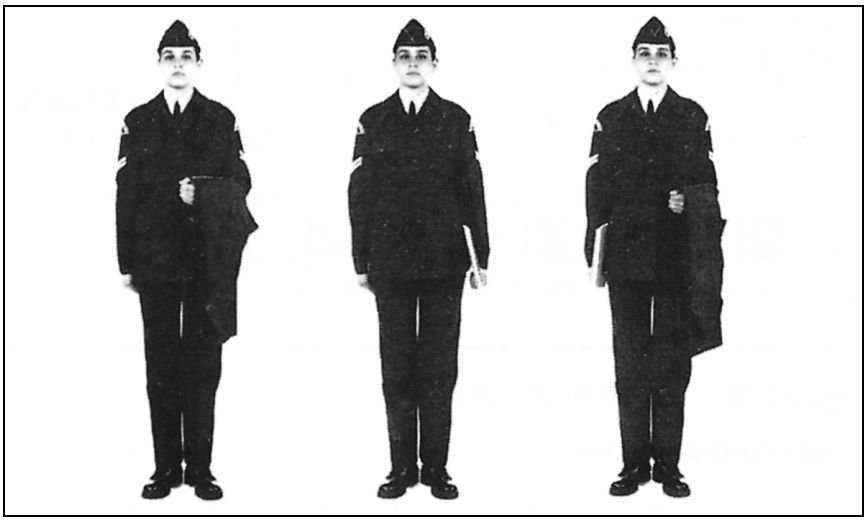


Figure 1-17 Carrying of Articles

REMOVE HEAD-DRESS

63. The order to remove head-dress may be given when it is customary, eg, at outdoor church parades, during the consecration of a squadron banner or whenever it is desirable to honour a dignitary by giving three cheers .

64. On the command, "REMOVE – HEAD-DRESS", you shall bring your right hand to the front of your wedge by the shortest route, and grasp the front at the centre between the thumb and fingers. The standard pause is then observed. Keeping the bend in the right arm, you will then cut the upper arm to the right side of the body, keep the forearm parallel to the ground and bring the right hand to the centre of the body. Maintaining the

grasp on the front of the wedge, squad members shall hold the wedge above the hand and in the centre of the body.

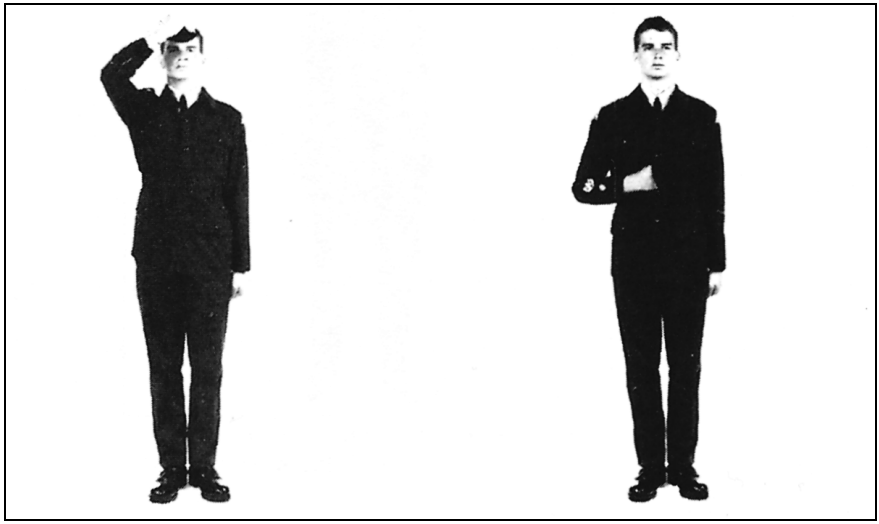


Figure 1-18 Remove Head-dress

STAND AT EASE WITH HEAD-DRESS REMOVED

65. On the command, "STAND AT – EASE" you shall assume the position for standing at ease when carrying articles, except that the right arm and hand will maintain the wedge in the position as detailed for attention.

STAND EASY WITH HEAD-DRESS REMOVED

66. On the command, "STAND – EASY", squad members shall extend the right arm down the side with the wedge held elbow the hand and, after a standard pause, relax.

Figure 1-19 Stand Easy with Head-dress Removed

REPLACE HEAD-DRESS

67. On the command, "REPLACE – HEAD-DRESS", you shall replace the wedge with the right hand, observe the standard pause, and return to the position of attention by cutting the right arm to the right side.

SECTION 3

SQUAD DRILL ON THE MARCH

DRILL COMMANDS ON THE MARCH

68. When performing drill movements on the march a drill command to execute the movement will be called as a specific foot hits the floor. It is important to know which foot commands are called on so that you can perform drill precisely as an individual and as a member of a squad. The table that follows indicates which foot the commands are given on for drill movements you are required to perform at the end of Level One training.

DRILL MOVEMENTS	FOOT
HALT FROM THE QUICK MARCH	LEFT
STEPPING OUT AND STEPPING SHORT	LEFT
RETURN TO QUICK MARCH (FROM STEPPING OUT)	RIGHT
MARK TIME	RIGHT
FORWARD	LEFT
SALUTING ON THE MARCH	LEFT
EYES RIGHT AND LEFT	LEFT
FORMING SINGLE FILE ON THE MARCH	RIGHT
RETURN TO THREE RANKS FROM SINGLE FILE	RIGHT

MARCHING AND HALTING IN QUICK TIME

69. When marching, you shall hold your body upright, keep your head and eyes to the front, and be in the position of attention.

70. On the command, "QUICK – MARCH", you shall:

a. shoot your left foot forward in one 40 cm (15 in.) pace, toe up;

b. strike the heel on the ground first and keep the toe pointed directly forward;

c. at the same time, swing your right arm straight forward and your left arm straight to the rear, waist high;

d. continue marching with paces of 80 cm (30 in.) each;

e. bring your legs forward successively in a straight line; and

f. swing your arms forward successively in a straight line from your shoulder, front to rear, with hands closed as in the position of attention.

71. You may be directed to swing your arms breast pocket high, instead of waist high.

72. Prior to the command "QUICK – MARCH", the instructor, or another person giving the command, will usually say "BY THE RIGHT (CENTRE OR LEFT)". This phrase is an instruction for you. When you hear, for example, "BY THE RIGHT" you know that the dressing for the squad is taken from the right-hand rank. In other words, you should glance out of the corner of your eye towards the person on your right to be sure that you are maintaining the proper spacing between ranks.

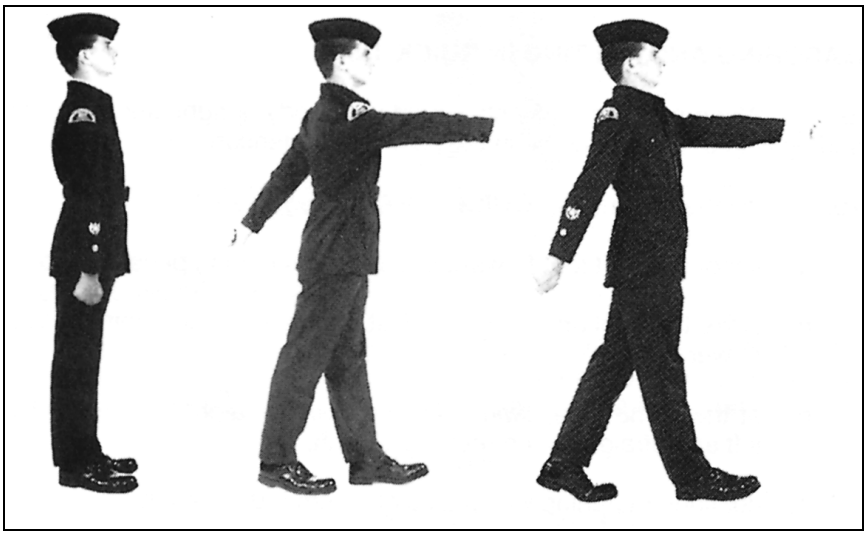


Figure 1-20 Marching in Quick Time

73. On the command, "SQUAD – HALT", you shall:

a. check the forward movement by placing your right foot on the ground using the heel as a brake;

b. swing your left arm forward and your right arm to the rear;

c. take one 40 cm (15 in.) pace with your left foot, placing it flat on

d. swing your right arm forward and your left arm to the rear;

e. bend your right knee, straightening it in double time; and

f. at the same time, cut your arms to your sides as quickly as possible and assume the position of attention.

74. The timing for the halt is called as one, one-two.

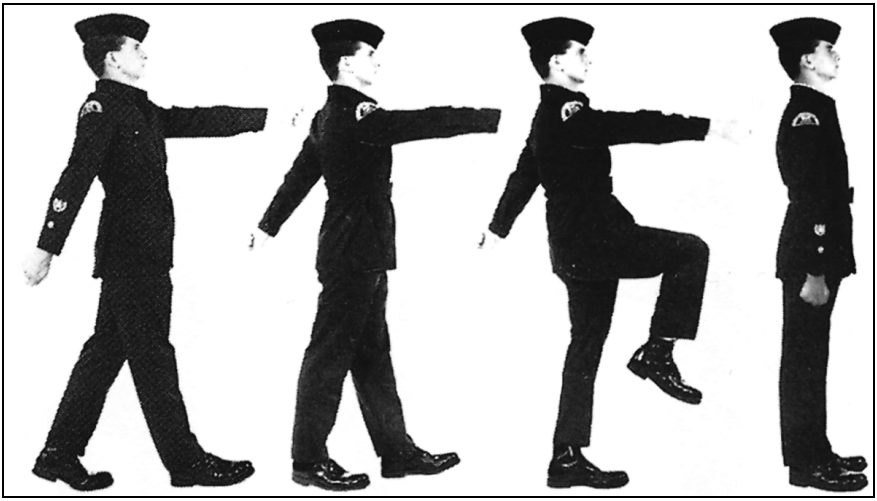


Figure 1-21 Halting in Quick Time

MARKING TIME, FORWARD AND HALT IN QUICK TIME

75. Marching in quick time is done at the same cadence as marching in quick time.

76. On the command, "MARK – TIME", you shall:

a. take one 40 cm (15 in.) pace with your left foot, placing the foot flat on the ground;

b. bring your right foot in to the left in a straight-leg manner, not scraping the ground;

c. at the same time, cut your right arm down and your left in from the rear, and assume the position of attention;

d. bend your left knee;

e. place the toe on the ground before the heel as the leg is lowered; and

f. continue to mark time until the command "FOR – WARD" or "HALT" is given.

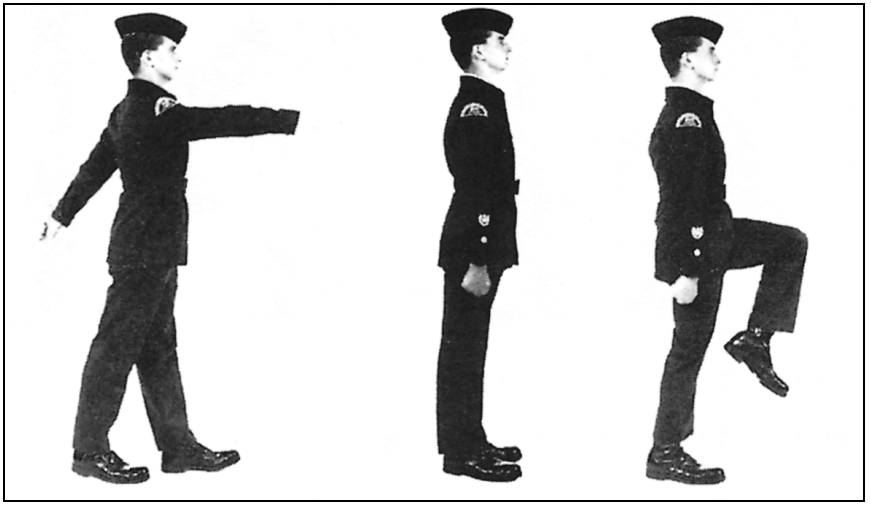


Figure 1-22 Marking Time in Quick Time

77. On the command, "FOR – WARD", you shall:

a. straighten your right leg and assume the position of attention;

b. shoot your left foot forward in a 40 cm (15 in.) pace; and

c. continue marching in quick time, swinging your right arm forward and your left arm to the rear.

78. On the command, "SQUAD – HALT", you shall:

a. take a further mark time pace with your right foot;

b. take a further mark time pace with your left foot; and

c. straighten your right leg in double time and assume the position of attention.

79. The timing for the halt is counted one, one-two.

WHEELING

80. Wheeling is the term used for the action of changing direction without using a left or right turn.

81. On the command, "RIGHT – WHEEL", the leading file of three cadets wheels around one quarter of a circle, which changes the cadets' direction by 90 degrees.

82. The inner flank of cadets shall step short, and the outside flank of cadets shall step out, without changing the speed (cadence) of their steps.

83. When the leading file has wheeled 90 degrees, it shall march in the new direction, with the normal length of pace. When the wheel is completed, the direction from which the dressing is taken is indicated by the instructor, or supervisor, ordering "BY THE RIGHT (LEFT)".

84. The remaining files shall act as described in paragraphs 80 and 81.

85. Dressing is maintained by glancing inwards when wheeling and keeping the head to the front.

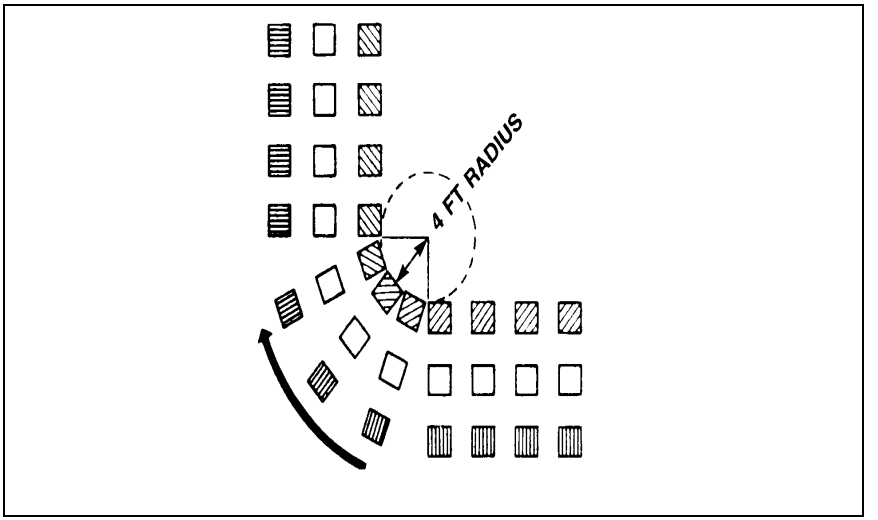


Figure 1-23 Wheeling (to the Right)

86. If the squad is ordered to halt or mark time, and only part of the squad has completed the wheel, the squad shall remain in this position unless the command, "REAR FILES – COVER", is ordered. On the command, "REAR FILES – COVER", the files at the rear cover off the files that are facing the new direction.

87. It may, at times, be desirable to wheel a squad less than 90 degrees. When this is the case, the command, "FOR – WARD", is ordered when the leading file is facing the required direction.

SALUTING ON THE MARCH WITH THE HAND

88. The movement of the salute to the front and to the left or right shall be as described in paragraphs 20 to 24 of this chapter.

89. When cadets salute on the march, they shall commence the salute five paces before reaching an officer; look directly into the officer's eyes by turning their head in the required direction on the commencement of the salute; and complete the salute one pace beyond the officer. This permits the officer to return the salute before the cadet has passed.

90. On the command, "TO THE FRONT (LEFT) (RIGHT) SALUTE", you shall:

a. complete an 80 cm (30 in.) pace with your right foot;

b. swing your left arm forward and your right arm to the rear;

c. complete an 80 cm (30 in.) pace with your left foot;

d. cut your left arm to the side;

e. bring your right arm to the side, executing the salute in one continuous movement. While saluting, the head is turned right (left) as far as possible without straining;

f. complete four 80 cm (30 in.) paces in quick time, ending with your left foot forward;

g. complete an 80 cm (30 in.) pace with your right foot;

h. cut your right arm to the side; and

j. continue marching.

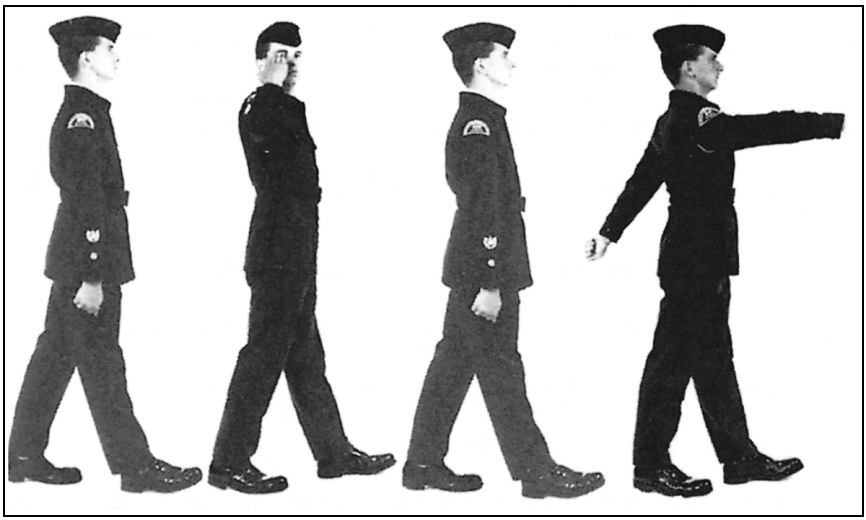


Figure 1-24 Saluting on the March

PAYING COMPLIMENTS WITH A SQUAD ON THE MARCH

91. On the command, "EYES – RIGHT (LEFT)", you shall do the following:

a. complete a full pace forward with your right foot and, as your left foot comes forward and strikes the ground, turn your head and eyes to the right (left) as far as possible without straining and look directly into the eyes of the person being saluted;

b. continue swinging your arms; and

c. if you are the leading cadet on the direction flank, you must look to the front to keep direction.

92. On the command, "EYES – FRONT", you shall complete a full pace forward with your right foot and, as your left foot comes forward and strikes the ground, cut your head and eyes smartly to the front.

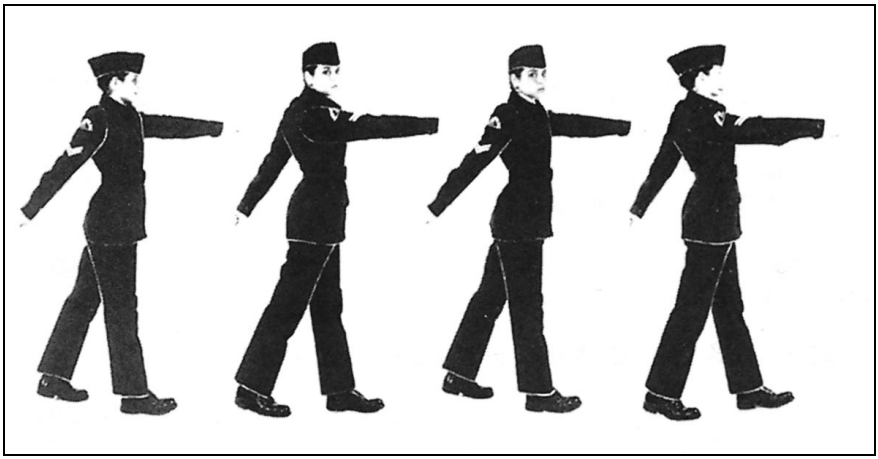


Figure 1-25 Eyes Right on the March

STEPPING OUT AND STEPPING SHORT

93. Stepping out is used to increase the distance to be covered without altering the cadence. To decrease the distance to be covered without altering the cadence, stepping short is used.

94. On the command, "STEP – OUT":

a. the pace shall be lengthened by 7.5 cm (3 in.) on the next left foot; and

b. the squad shall continue to step out until the command "QUICK – MARCH", is ordered.

95. On the command, "QUICK – MARCH", the pace is shortened by 7.5 cm (3 In.) on the next left foot.

96. On the command, "STEP – SHORT":

a. the pace shall be shortened by 23 cm (9 in.) on the next left foot; and

b. the squad shall continue to step short until the command, "QUICK – MARCH", is ordered.

97. On the command, "QUICK – MARCH", the pace is lengthened by 23 cm (9 in.) on the next left foot.

SQUAD IN THREES FORMING SINGLE FILE FROM THE HALT

98. At times a squad may be given a command to proceed in single file. This is often done when a squad is moving into an instructional area or into a mess.

99. On the command, "SINGLE FILE FROM THE LEFT (RIGHT), QUICK – MARCH":

a. the flank indicated in the command marches off in single file in quick time; and

b. the remainder marks time. The leading cadets of the other two files execute a left (right) incline and lead off in single file when the file on their left (right) is clear.

SQUAD IN THREES FORMING SINGLE FILE ON THE MARCH

100. On the command, "SINGLE FILE FROM THE LEFT (RIGHT), REMAINDER MARK":

a. the directing flank continues marching forward;

b. the remainder marks time; and

c. the leading cadets of the other two files execute a left (right) incline and lead off in single file when the file on their left (right) is clear.

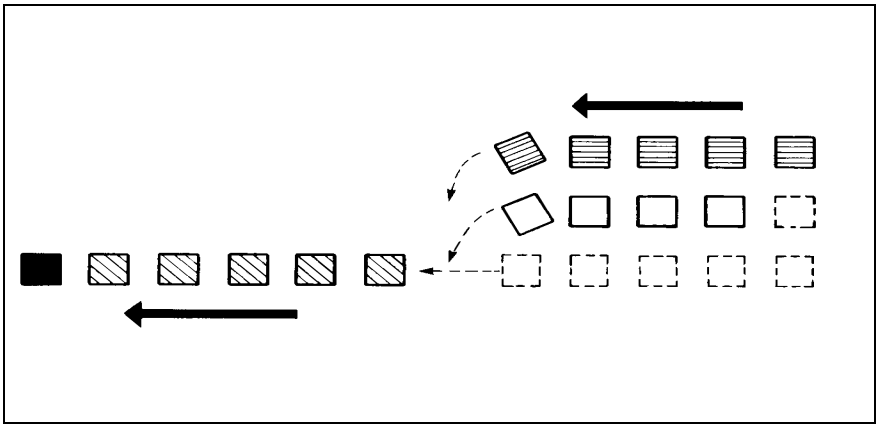


Figure 1-26 Squad in Threes Forming Single File

SQUAD IN SINGLE FILE REFORMING THREES FROM THE HALT

101. On the command, "ON THE RIGHT (LEFT) REFORM THREES, REMAINDER QUICK – MARCH":

a. the rank leading the single file stands fast; and

b. the remainder steps off, reforms three ranks and halts.

SQUAD IN SINGLE FILE REFORMING THREES ON THE MARCH

102. On the command, "ON THE RIGHT (LEFT), REFORM THREES, FRONT RANK MARK – TIME":

a. the rank leading marks time; and

b. the remainder reforms threes and marks time.

103. On the command, "FOR – WARD" or "SQUAD – HALT", the squad acts as ordered.

403

GENERAL CADET KNOWLEDGE

CHAPTER 2

PERFORMANCE OBJECTIVE 403

GENERAL CADET KNOWLEDGE

SECTION 1

INTRODUCTION

1. In this chapter you will learn about a variety of topics. You will learn most of this information to make your transition into cadets easier and to make you a better cadet. You will learn some basic facts about your squadron, the Department of National Defence (DND) and the Air Cadet League of Canada. You will also learn about some of the opportunities available to you through the air cadets.

SECTION 2

SQUADRON ORDERS AND REGULATIONS

2. Cadets shall:

   a. make themselves acquainted with all regulations, orders and instructions necessary for the performance of their duties; and

   b. conform to the established customs of the air cadet organization.

3. When you read paragraph 2 you may think that as a first year cadet you do not have any duties. Most first year cadets would think that way. However, it is not true. You do have duties, such as maintaining your uniform and, as paragraph 2 states, obeying various orders and regulations.

4. Some of these orders and regulations are in your squadron's Standing Orders. Standing Orders are a set of orders and instructions for each squadron.

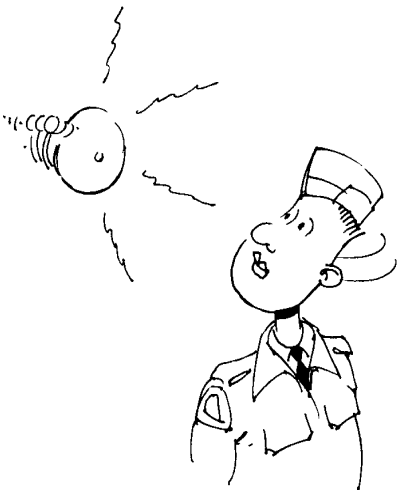
Standing Orders detail regulations that remain fairly constant and apply to your squadron specifically. You will learn more about your squadron's Standing Orders shortly after you enrol as a cadet.

EXAMPLES OF ITEMS THAT MAY BE IN SQUADRON STANDING ORDERS
Terms of Reference Chain of Command Cadet Protocol Out of Bounds Areas Squadron Procedures Conduct and Discipline Dress Regulations

5. Range Orders and Fire Orders may also be in the Standing Orders or they may be separate documents. You will learn about Range Orders in Chapter 11. You should familiarize yourself with Fire Orders as soon as possible. Like fire drills in school, you may think it is a waste of time to read Fire Orders. The information they contain, however, may help to save your life in case of a fire.

6. Fire Orders contain the procedure to follow in case you find a fire. They also explain how to evacuate the building, or buildings, in which you train, and, exactly where to go once you have evacuated the building.

7. As you can see, it is your duty to be familiar with the Fire Orders not only for your



safety, but for the safety of others. Fires are not planned. You might be the first person to discover one. What would you do?

8. Weekly Routine Orders are posted each week. Weekly Routine Orders should contain information about promotions and appointments the training for the upcoming week, duty personnel, and other notices. In order for you to be informed about your squadron's activities you should read the Weekly Routine Orders each week.

SECTION 3

YOUR SQUADRON AND SPONSOR

9. The Air Cadet Organization is composed of a partnership between DND and the Air Cadet League of Canada. On 9 April 1941, the Air Cadet League received a Dominion Charter. This Charter officially established the Air Cadet League. The cadet organizations were originally started to train young men for World War ll.

10. The Air Cadet Squadron you have chosen to join has a history. If your squadron is new, it may have a very short history. If you are a member of one of the older squadrons in Canada your squadron may have over 45 years of history. Whether your squadron is old or new, a knowledge of its history will form the basis of pride in your squadron. This pride will grow throughout your cadet career.

11. Every squadron has a sponsor. Your squadron's sponsor helps the squadron in many ways, some of which include financial support and help in getting training locations. Find out about your sponsor.

SQUADRON ORGANIZATION

12. Figure 2-1 shows the organization of a small squadron.

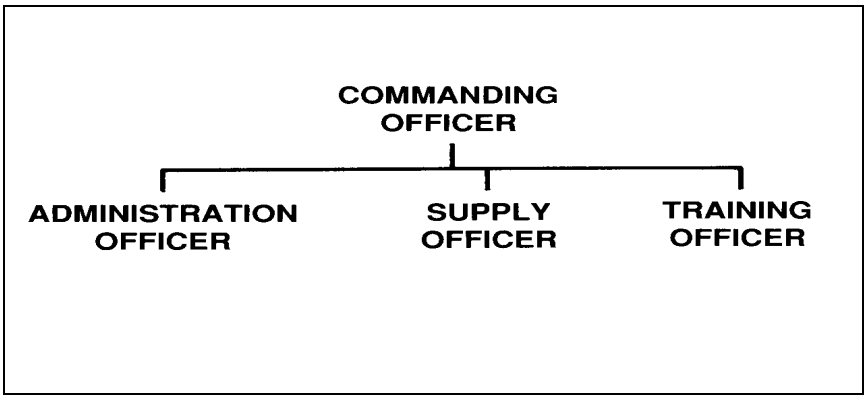


Figure 2-1 Sample Squadron Organization Chart – Small Squadron

13. Usually every squadron will have at least four positions. These positions are:

a. Commanding Officer,

b. Training Officer,

c. Administration Officer, and

d. Supply Officer.

14. These four positions are filled by officers of the Cadet Instructors List (CIL). The CIL is a part of the Canadian Forces Reserve.

In addition to these four positions, squadrons may have other positions depending on the size of the squadron and its staff requirements. It is quite possible that one person may fill more than one position in a squadron. You will learn about the positions in your squadron and the names of the people who fill each position.

15. It is very important to know and follow the chain of command in a squadron. The chain of command is the order of responsibility or people in charge. You will learn the chain of command within your squadron.

SECTION 4

CADET AIMS, MOTTO AND PROMISE

AIMS OF THE AIR CADET PROGRAMME
• To develop in youth the attributes of good citizenship and leadership. • To promote physical fitness. • To stimulate an interest in the air element of the Canadian Forces.

16. Cadet activities are designed so the interests of most cadets are satisfied. You may find that some activities interest you and others do not. if you do not find any activities that are of interest to you, you should ask to speak to an officer to make your concerns known.

MOTTO OF THE AIR CADETS
To Learn – To Serve – To Advance

17. The motto of the Air Cadets briefly describes the benefits you may get from Air Cadets. Air cadets can learn from many very qualified people in various fields of knowledge. They learn to serve the community as Canadian citizens, and can advance through the programme and pass their knowledge and experience on to other cadets.

PROMISE OF LOYALTY
"I (name in full), hereby affirm my loyalty to Her Majesty the Queen, her heirs and successors."

18. If you are a Canadian Citizen or other British subject you will take the Promise of Loyalty when you join an Air Cadet squadron. Landed immigrants will not take the Promise of Loyalty that is stated previously.

SECTION 5

RECOGNITION OF RANK AND QUALIFICATION

CADET RANK

19. In the Air Cadet programme, you can advance both in rank and qualification. As a first year cadet, you should be able to recognize the rank and qualifications of other Air Cadets. Figure 2-2 illustrates the rank badges worn by air cadets. Cadets of Warrant Officer First Class, Warrant Officer Second Class, Flight Sergeant, and Sergeant rank are senior non-commissioned officers (NCOs). Cadets of Corporal rank are junior NCOs.

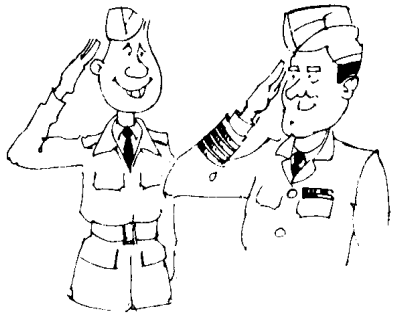
OFFICERS' RANK

20. It is equally important to recognize the ranks of officers, as it is to recognize the ranks of fellow air cadets. Each officer has a job to do and has received a rank that is equivalent to the responsibilities of that job. If a squadron is to function smoothly, everyone in that squadron must recognize the rank of supervising staff and their equivalent authority. As well, recognition of rank is important as a courtesy. Everyone likes to be

addressed by their correct name and everyone likes to be addressed by their correct rank.

21. There are four groups of officers' ranks. These four groups include the following:

a. **General Officers.** These are officers who have the rank to command regions, divisions or commands in the Canadian Forces. The following apply to these officers:



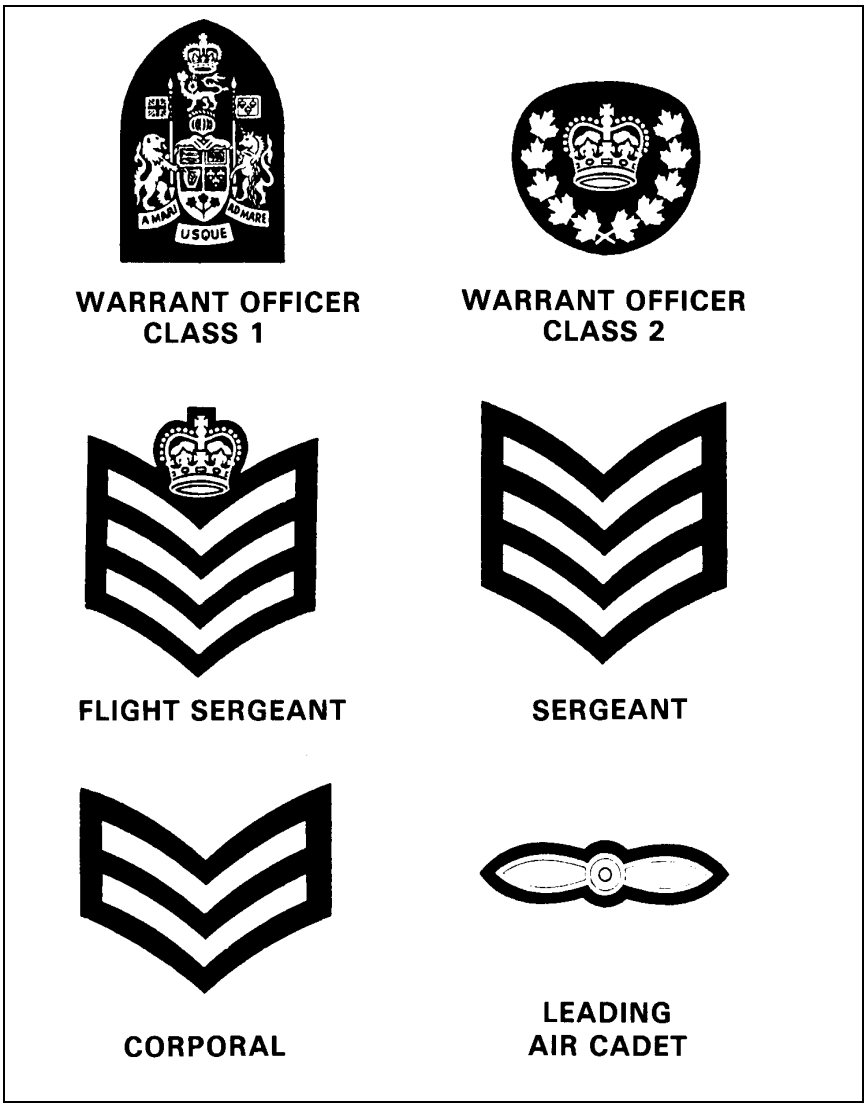


Figure 2-2 Air Cadet Rank Badges

(1) These officers have the word "General" in their rank title. They are –

(a) General,

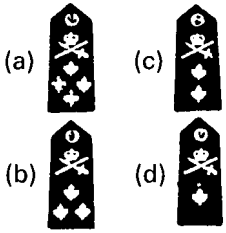
(b) Lieutenant-General,

(c) Major-General, and

(d) Brigadier-General.

(2) All Generals wear one wide, gold band on their lower sleeves.

(3) Generals wear shoulder straps that show their rank. On the shoulder straps are a crossed sword and baton, with the applicable number of maple leaves as follows –



(a) General – four,

(b) Lieutenant-General – three,

(c) Major-General – two, and

(d) Brigadier-General – one.

b. **Senior Officers.** These are officers who have the rank to command a base, regiment, ship or squadron. They are:

(1) Colonel – four wide, gold bands worn on the lower sleeves,

(2) Lieutenant-Colonel – three wide gold bands worn on the lower sleeves, and

(3) Major – two wide and one narrow gold band worn on the lower sleeves.

c. **Junior Officers.** These are officers who usually fill staff positions and help the senior officers to do their job. Most of the flying in the air element of the Canadian Forces is done by junior officers. They are:

(1) Captain – two gold bands worn on the lower sleeves,

(2) Lieutenant – one wide and one narrow gold band worn on the lower sleeves, and

(3) Second Lieutenant – one wide gold band worn on the lower sleeves.

d. **Subordinate Officers.** These are officer cadets who are undergoing training as candidates for commissions. They wear one narrow gold band on the lower sleeves.

CADET QUALIFICATION

22. For each training level you successfully complete, you are entitled to a Proficiency Badge. As well, cadets may receive qualification badges upon completion of some specialist courses. Figure 2-3 illustrates the Proficiency Badges. Figures 2-4 to 2-11 illustrate Qualification Badges.

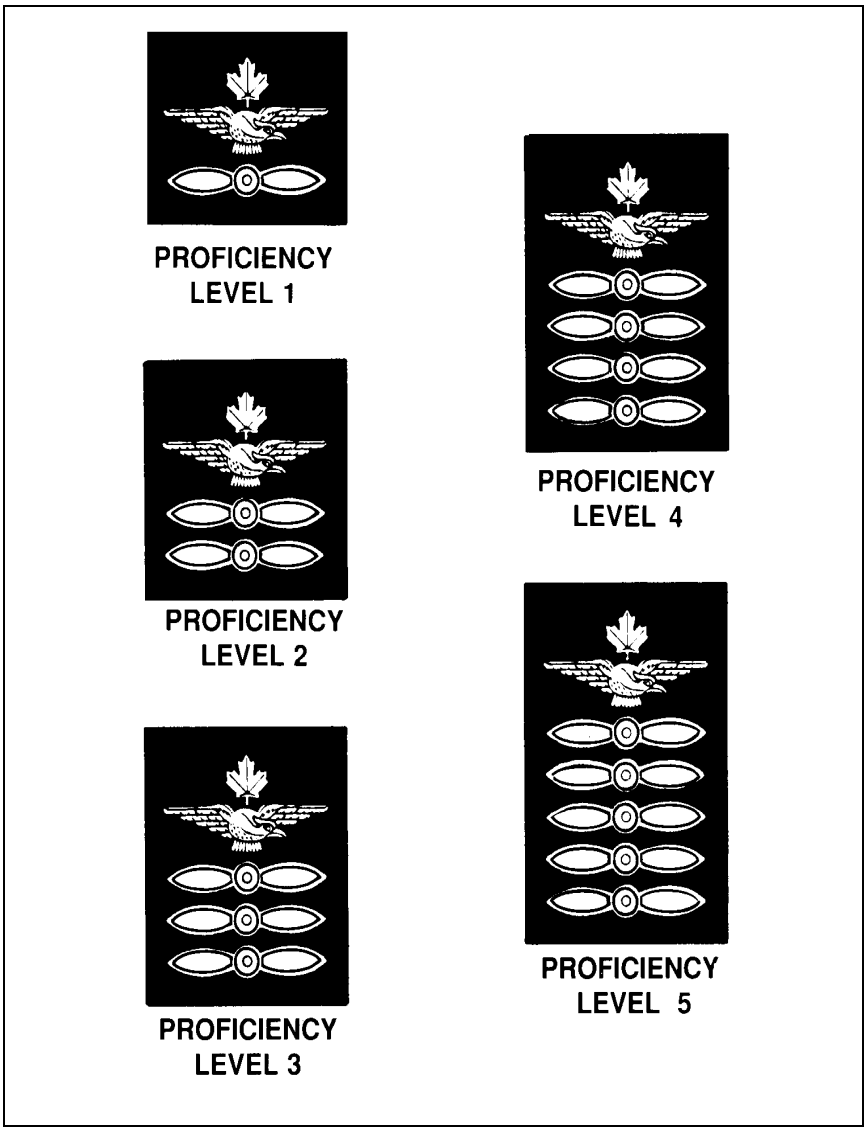


Figure 2-3 Air Cadet Proficiency Badges

AIR TRAFFIC CONTROL

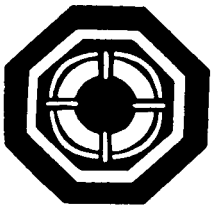
Worn by graduates of the six-week Air Traffic Control Course. Cadets on this course are introduced to basic air traffic control procedures and situations.

ATHLETIC SUPERVISOR

Worn by graduates of the six-week Athletic Supervisor Course. Cadets on this course learn the basics of coaching, officiating, and organizing athletic events.

EXCHANGE VISIT

Worn by cadets who have participated in the Air Cadet International Exchange programme.



LIFEGUARD

Worn by graduates of the six-week Lifeguard Course. Cadets on this course become qualified to Bronze Cross standard.

Figure 2-4 (Sheet 1 of 2) Qualification Badges

SENIOR LEADER

Worn by graduates of the six-week Senior Leadership Course. This course is the junior "staff college" of Air Cadet training.

SURVIVAL INSTRUCTOR

Worn by graduates of the six-week Survival Instructors Course. Cadets on this course become qualified as instructors in survival subjects and will be able to assist in developing a squadron survival training programme.

TECHNICAL TRAINING

Worn by graduates of one of the six-week Technical Training Courses. The courses include photography, basic electronics, airframes and engines.

Figure 2-4 (Sheet 2 of 2) Qualification Badges

GLIDING BADGE

Worn by cadets who have qualified as Glider Pilots and have also obtained their Private Pilot Licence on a Flying Scholarship.

FLYING WINGS

Worn by graduates of the seven-week Flying Scholarship Course in which cadets obtain a Private Pilot Licence.

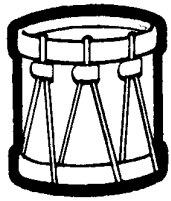
GLIDING WINGS

Worn by graduates of the six-week Glider Pilot Course in which cadets obtain a Glider Pilot Licence.

Figure 2-5 Flying Badges

MUSICIAN

PIPER



DRUMMER

MUSIC LEVELS

AWARDED TO CADETS WHO HAVE
ATTENDED AT LEAST ONE
SIX-WEEK SUMMER MUSIC COURSE.

Figure 2-6 Music Badges

AWARDED TO CADETS WHO HAVE SUCCESSFULLY COMPLETED ONE MUSIC INSTRUCTOR'S COURSE.

Figure 2-7 Music Instructor Badge

PIPE MAJOR

DRUM MAJOR

Figure 2-8 Music Appointments

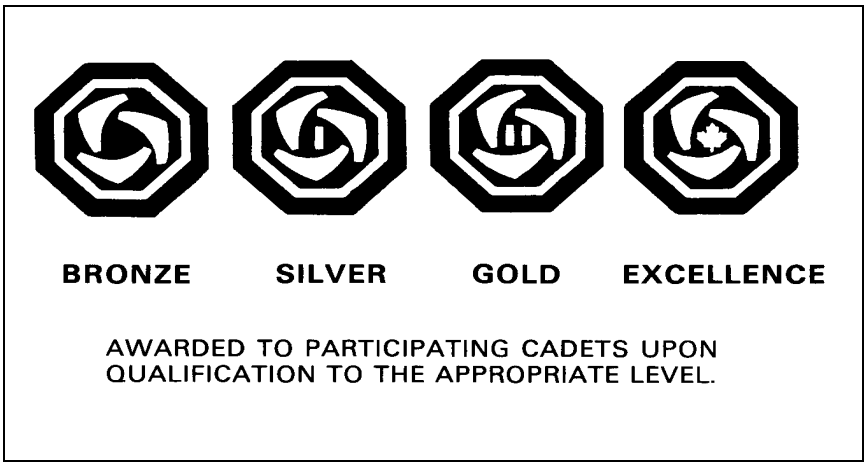


Figure 2-9 Air Cadet Fitness Programme

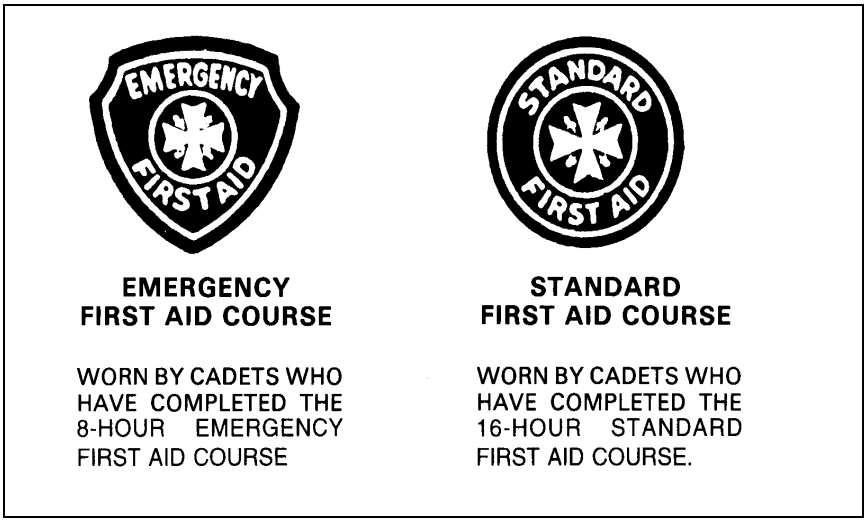


Figure 2-10 First Aid Badges

BRONZE

SILVER

GOLD

AWARDED TO CADETS WHO HAVE COMPLETED THE REQUIREMENTS FOR THE SPECIFIC LEVEL OF THE DUKE OF EDINBURG AWARD. REQUIREMENTS INCLUDE ACTIVITY IN COMMUNITY SERVICE, HOBBIES, OUTDOOR EXPEDITIONS AND PHYSICAL FITNESS.

Figure 2-11 Duke of Edinburgh Scheme Badges

SECTION 6

PAYING OF COMPLIMENTS

23. We usually think of a compliment as a pleasing comment. In the military, compliments are somewhat similar. The reason for saluting is, in one word, **respect**. The air cadets salute because they have respect for the organization in which they serve. A salute between an officer and Service person is a sign of mutual trust and respect. It is a privilege granted to members of a service to use this form of greeting. For the same reason, the cadet organization follows this custom.

ORIGINS OF SALUTING

24. **Civilian Saluting.** In civilian life when we meet friends, we greet them with a cheery hello. If you haven't seen them for a while, you may add a handshake to the greeting. In doing so we pay them a compliment or token of respect. The extension of the open hand to the other person is a sign of trust. This practice dates from early days when it

was important to know that the person you were meeting did not conceal a knife.

25. **Military Saluting.** Military saluting has an interesting history. It dates back several hundred years to days when fighting men wore armour. In those days, when outside the safety of walled castles, people often had to defend themselves. Therefore, as the knight rode through the forest, he rode with his hand near his sword. When he met someone he recognized as a friend, he raised his empty hand to show he was not challenging the person. This action was a sign of trust and respect. Military saluting may have started in this way.

26. **Development of Modern Saluting.** As time went on, the uniforms of fighting men changed. They no longer wore armour. The raising of the hand alone changed to the raising of the hat. (This is still the custom when meeting ladies.) From this raising of the hat, our present salute developed .

ORIGINS OF OTHER FORMS OF MILITARY SALUTING

27. Aside from saluting with the hand, there are other forms of salute. Eyes right (or left), the firing of guns and presenting arms (weapons), are other forms of compliments.

28. **Eyes Right.** When knights passed serfs in the old days, the serfs lowered their heads as a token of respect. However, if they were the fighting men of the castle who followed the knights in war, they were allowed to look their superior in the face. This was the honour due to the fighting men. Eyes right is a continuation of this privilege.

29. **Firing of Guns.** The firing of gun salutes in honour of distinguished people or to mark a special occasion is a very old custom. This custom first developed in ships at sea. In the days of sail, the guns of a ship rested at ports along the length of the gun decks. The guns were often kept fully loaded and ready for action. Firing them in salute meant that for the length of time it took to reload the guns the ship was virtually defenceless. This action showed friendly intent.

30. **Present Arms.** The rifle is held in a friendly position that leaves the arms bearer defenceless. Like the hand salute, Present Arms shows there is no challenge to the person receiving the salute.

HOW TO SALUTE

31. You will learn the correct hand salute, eyes right and left, and the position of attention during your drill instruction classes. Chapter 1, Drill, describes these movements.

WHEN TO SALUTE

32. The rules governing saluting by air cadets include the following:

a. Cadets shall salute all commissioned officers, including those not in uniform.

b. Warrant officers shall not be saluted.

c. When a cadet addresses or is addressed by a commissioned officer, the cadet shall salute. The cadet shall salute again when the conversation has ended.

d. Cadets do not salute cadets at any time.

33. When our National Anthem or a foreign national anthem plays:

a. An officer or cadet in uniform and wearing head-dress will come to attention and salute.

b. With head-dress removed, eg, in a theatre, all ranks will stand at attention.

c. On parade, officers and cadets in certain positions of responsibility will salute; cadets will stand at attention.

d. In civilian clothes, all ranks will remove head-dress and stand at attention.

34. When the ensign is being lowered or raised, cadets shall halt, face the ensign, stand at attention and salute.

35. Cadets shall salute the quarter-deck when boarding and upon leaving any of Her Majesty's ships or those of a foreign service.

36. Officers or cadets shall not ordinarily pay compliments in buildings, or on any public transport, except in the following circumstances:

a. the playing of our National Anthem;

b. when addressing or being addressed by an officer entitled to a salute; and

c. when given permission to enter an officer's office or when leaving an officer's office.

37. The procedure for saluting when entering an officer's office is as follows:

a. march forward and halt two paces in front of the officer;

b. salute and remain at attention; and

c. when the business is complete, salute, turn in the direction of the doorway and march out.

38. When you are not wearing your head-dress you do not salute. In such a case you should use an eyes left or right or come to attention.

39. Figure 2-12 illustrates specific situations when you salute and describes the action you should take in each case.

RANK/SITUATIONS	ACTION TAKEN
Officers.	Salute all officers of higher rank.
Cadets.	Salute all commissioned officers except officer cadets.
Two or more officers together.	The superior returns salutes and ALL salute superior officers.
Officers accompanied by cadets.	The superior officer returns all salutes. ALL salute officers of higher rank.
Officers approach formed group of cadets.	The first cadet to recognize an officer will call group to attention.
Cadets passing formed unit under command of an officer.	Cadets shall halt, turn to face unit and maintain a salute until the entire unit has passed.
Civilian dress.	Proper compliments shall be paid to ALL commissioned officers recognized in civilian dress. When cadet in civilian dress passes an officer, the cadet shall turn head and eyes to the direction of salute; at the halt, cadets shall stand at attention when an officer passes.

Figure 2-12 Saluting Situations

Note – An officer accompanying a senior officer, will not salute officers equal or junior in rank to the accompanied officer. The foregoing applies to cadets accompanying an officer.

ADDRESSING AN OFFICER OR NCO

40. Air cadets shall address officers by their rank followed by the officer's surname, eg, Lieutenant Brown. In speaking to an officer, it is common practice to use the expression "Sir" or "Ma'am," and not the rank and surname. When referring to officers by the position they hold, use the full title, eg, commanding officer.

41. Warrant officers are addressed by their rank and surname, eg, Warrant Officer Smith. NCOs are addressed as sergeant or corporal, or by their rank and surname.

SECTION 7

UNIFORM AND DRESS REGULATIONS

ORIGIN OF THE UNIFORM

42. In early wars, during the heat of battle, the fighting men could not recognize each other and often fought their own friends. In those days, people wore whatever they pleased and no one knew by sight alone who was friend and who was foe. Clever generals dressed their men all the same, or in a "uniform dress," and scored many victories before this new development in warfare became widely known.

43. The story of the origin of the Air Force Blue uniform is interesting. At one time, England was a major supplier of uniforms and the materiel for them. At the time of the October Revolution in Russia, there was a large quantity of clothing in England that was originally ordered for the old Russian Army. The cloth remained unused until at the end of the First World War, the Royal Air Force (RAF) came into existence and required uniforms. The result was that the RAF and original Royal Canadian Air Force (RCAF) uniforms were the same colour as the old Tsarist Russian uniform.

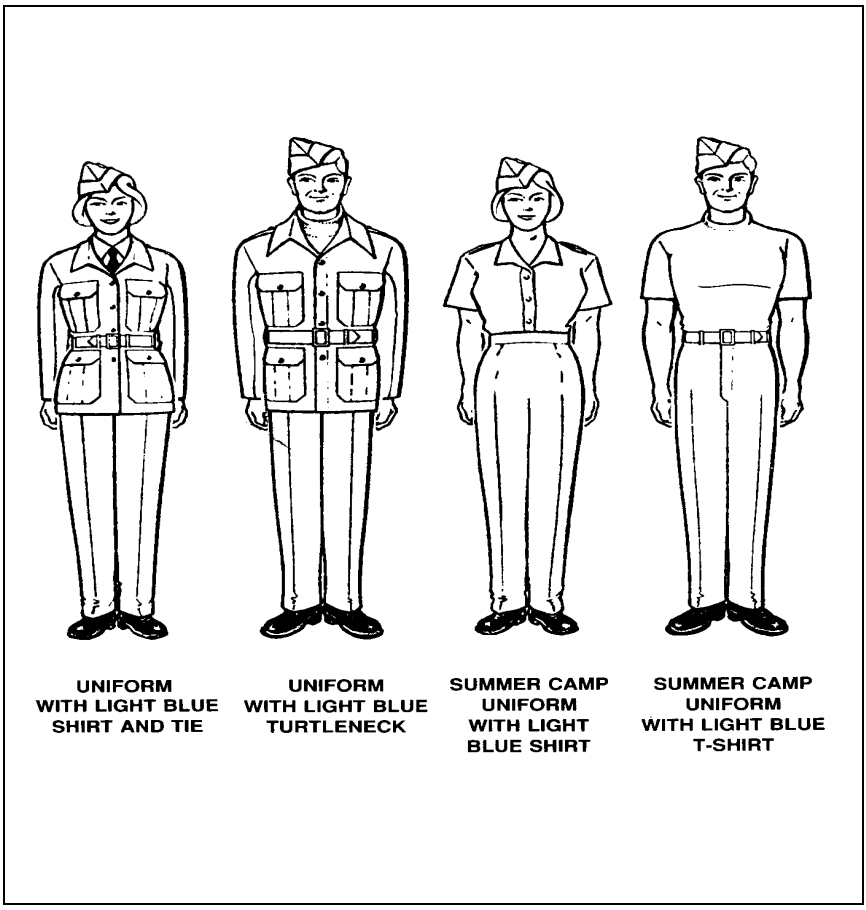


Figure 2-13 Air Cadet Uniform – Winter/Summer

44. The original cadet uniform was also blue. In 1968 the Army, Navy and Air Force unified into the Canadian Armed Forces. At that time the Canadian Forces adopted a single green uniform that remained for almost 20 years. In 1994, the Air Cadet uniform changed once again to the present traditional air force blue style.

DRESS REGULATIONS

45. Cadet Administrative and Training Order (CATO) 55-04, Dress Regulations for Air Cadets, details the items of wear and the uniforms that you are allowed to wear. Your squadron has a copy of this book.

46. DND approves and issues on loan, the uniform worn by air cadets. The care and custody of all items of clothing issued are the responsibility of individual cadets and their parents or guardians during the cadet's service with the organization.

47. The dress and appearance of air cadets in uniform shall, on all occasions, be such to reflect credit to their unit and the Royal Canadian Air Cadets. The uniform is to be worn only when attending authorized parades or activities. When cadets appear in uniform in public, it is their duty to be sure that their uniforms are properly maintained and correctly worn.

CARE AND WEARING OF THE UNIFORM

48. You shall only wear your uniform when:

a. you are attending training or proceeding to or from the place where you train; or

b. you are attending ceremonies or functions at which the wearing of the uniform is appropriate and authorized.

49. The following paragraphs give you some regulations and hints about how to wear your uniform.

50. **Wedge Cap.** You wear your wedge on the right side of your head. The lower point of the front crease of the wedge is to be in the centre of your forehead. The front edge of the cap is to be 2.5 cm (1 in.) above your right eyebrow. If you remember that the bird on the cap badge should look toward the sky, you will always have the cap on the right side of your head. To be sure the cap is 2.5 cm (1 in.) above the right eyebrow, you can use the measurement of the width of two fingers. If your hair hangs down on your forehead you should be sure to tuck it under your wedge when in uniform. See Figure 2-14.

51. **Turban.** If you are a member of the Sikh religion you may wear a turban and associated personal items. The turban will be air force blue. The hat badge is centered midway on the front of the turban. See Figure 2-14.

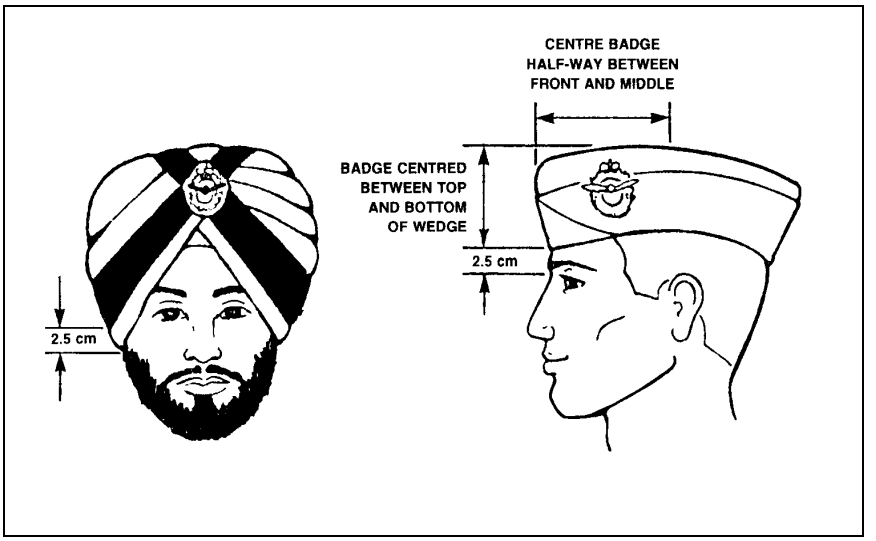


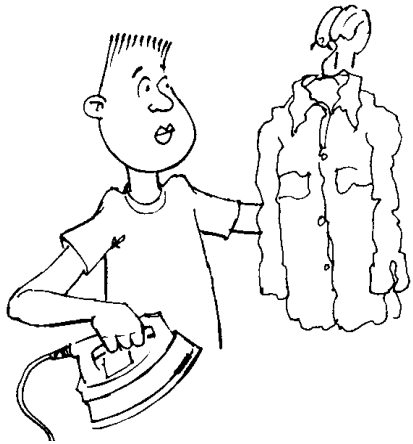
Figure 2-14 Air Cadet Head-dress and Brass

52. **Tunic.** When wearing the tunic you shall always keep all pockets buttoned. Be sure all front buttons (except the top) are also fastened. You should keep your tunic well pressed. The sleeves of the jacket shall be roll-pressed with no creases. Be sure your belt is even with no twists. The black buckle of your tunic belt is to be centered. The pockets of your tunic should not bulge.

53. **Trousers/Slacks.** Your trousers/slacks should be well pressed. Creases should be sharp. Creases in male pants go up the front centre of each leg and extend to the waist, inside the first belt-loops. Creases in female slacks go up the front centre of each leg and extend to the corner of the pocket. Rear creases extend up the centre of the pant leg and meet in the back at the waistband, forming a "V." Your trousers/slacks should reach the point where the creases will be slightly broken on the top of the boots. Males trousers are held up by a belt.

Note – When ironing your pants and tunic you should use a pressing cloth. A pressing cloth may be a towel, pillowcase or other piece of cloth. Some people also use an open brown paper bag. The pressing cloth will prevent your tunic and pants from becoming shiny due to ironing. You should also use a pressing cloth when ironing your wedge and necktie. The creases in your trousers/slacks sharpen with the use of a moist pressing cloth or by wetting the crease itself.

54. **Shirt.** Your shirt should be neatly pressed when worn. The only crease in the shirt should be down the centre of each arm beginning at the centre of each epaulette. It may be helpful to starch the collar of the shirt to prevent it from becoming limp.



55. **Necktie.** Your necktie should be ironed and tidy. The knot should be compact and the tie done up to the collar when worn. Figure 2-15 illustrates two methods of tying a necktie.

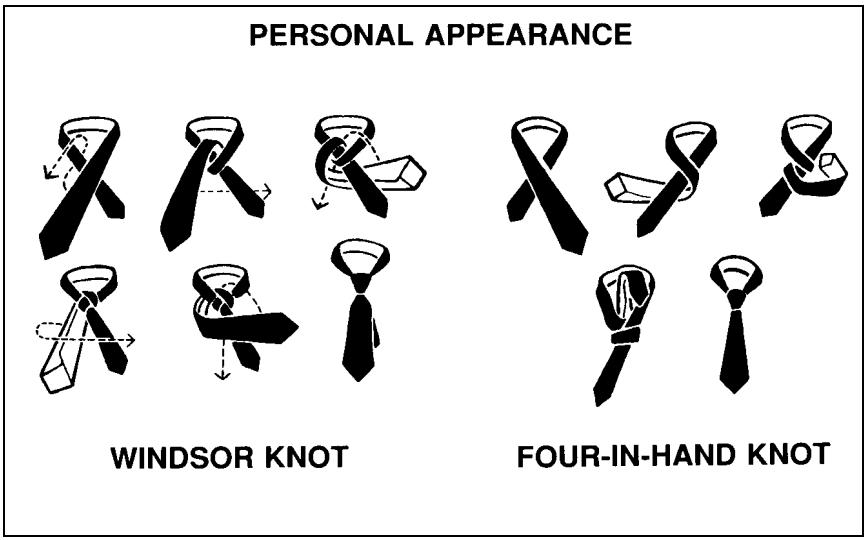


Figure 2-15 Knotting of the Necktie

56. **T-Shirt (Light Blue).** The light blue T-shirt is worn at summer camp. You will keep your T-shirt well pressed with creases down the centre of each arm beginning at the shoulder seam.

57. **Turtleneck.** You will wear your turtleneck during the winter. It is worn with the neck band neatly folded down. The turtleneck is ironed with no creases.

58. **Socks.** You will wear the grey wool socks that are issued to you by your squadron. If you are allergic to the material in the socks, you

may wear other socks made of a suitable material and colour. Another option is to place sports socks under your issue grey socks.

59. **Overcoat.** Your overcoat may be worn when the weather is appropriate. You may turn up and button the collar in severe weather. No rank Insignia or other badges are to be worn on the overcoat. Your overcoat is to be kept buttoned **whenever** it is worn.

60. **Boots.** Your black issue boots are laced straight across, as illustrated in Figure 2-16. You shall keep them in good repair and well shined. The following is one method used to get a good shine on boots:

a. remove dust and dirt from the boot with a soft damp cloth (do not use this cloth for polishing);

b. use an old toothbrush to remove dirt from the welts;

c. use the toothbrush, with polish, to blacken the welts; and

d. apply a moderate amount of polish to the area of the boot you will polish first. Use a polish cloth or other soft cloth wrapped around your index finger and dampened in cool water. You should work one section of the boot at a time. Apply the polish in a circular motion. Start with larger circles to cover the area with polish. Use smaller circles as the polish works into the boot. Continue with the circular motion until you can no longer see the circles formed by the polish.

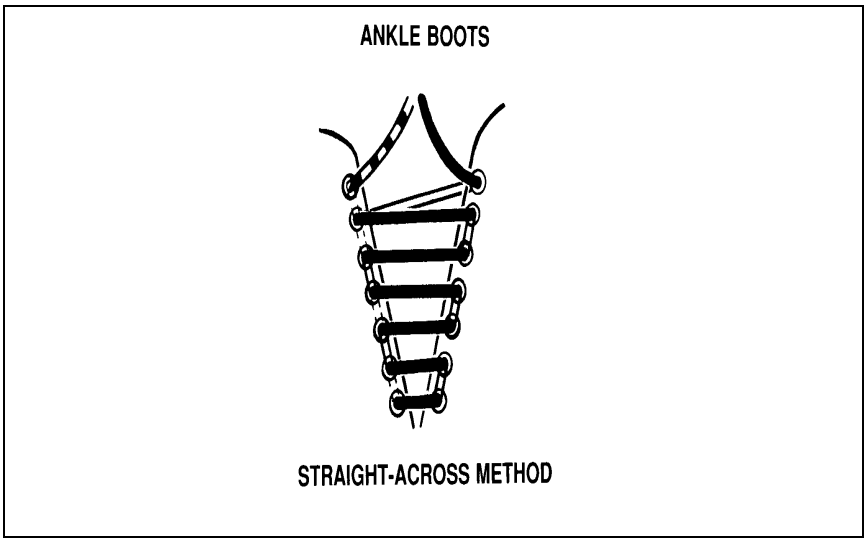


Figure 2-16 Lacing Footwear

61. You will have to continue applying coats of polish in this way until the boots have a high gloss. Considerable patience is required with new or previously unpolished boots.

RESPONSIBILITY FOR THE UNIFORM

62. Your uniform is Government property. When you joined cadets your parents signed your enrolment form. By signing the enrolment form your parents have taken responsibility for all parts of your uniform. As a result, you are **always** responsible for all parts of your uniform. You should follow these rules:

a. Do not leave your uniform lying around.

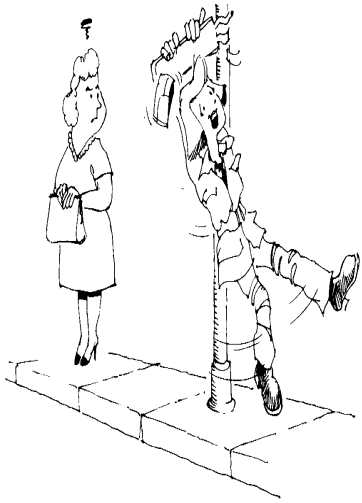
b. Mark your name in every piece of your uniform.

c. Return damaged or poorly fitting parts of your uniform to your squadron supply and get new parts.

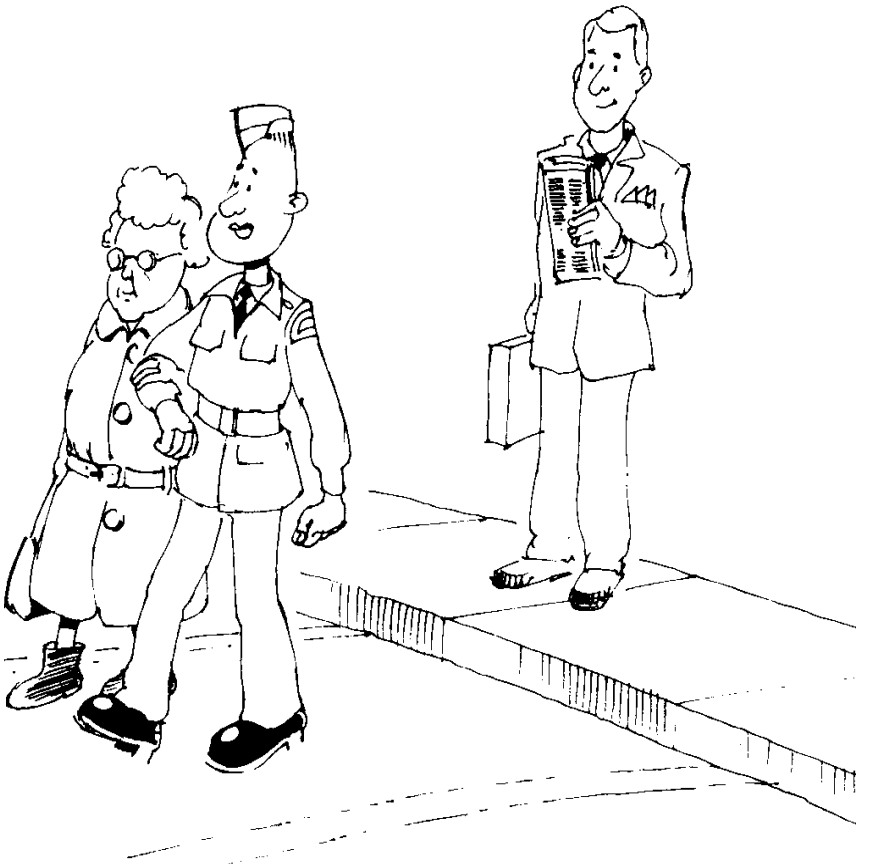
d. Be sure that any parts of your uniform that you return are signed off when you return them. You have a right to insist on this, even to an officer or senior cadet.

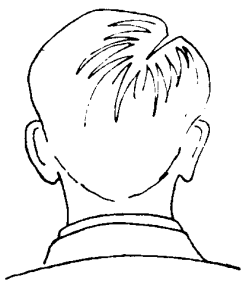
e. You must return your uniform promptly if you leave the squadron.

PERSONAL APPEARANCE

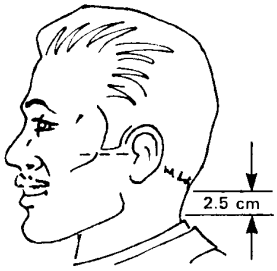


63. **Deportment.** When you are in uniform you should present a good appearance. Chewing gum, slouching, hands in pockets, walking arm in arm, and similar actions do not look good for a cadet in uniform. The way you behave in uniform will affect what people think of all cadets. The pride you show in your uniform is a reflection of the pride you have in yourself and your squadron.

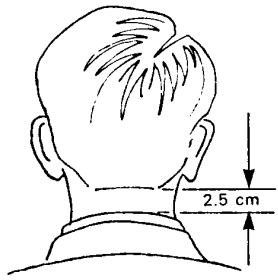




TAPER TRIM HAIRCUT WITH CONVENTIONAL MOUSTACHE



TAPER TRIM HAIRCUT CONVENTIONAL



TAPER TRIM HAIRCUT STRAIGHT-CUT APPEARANCE

Figure 2-17 Hair – Males

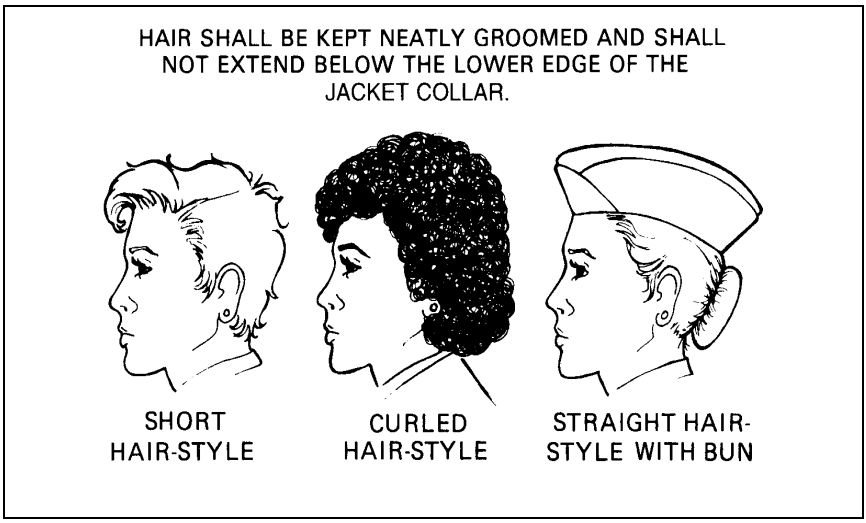


Figure 2-18 Hair – Females

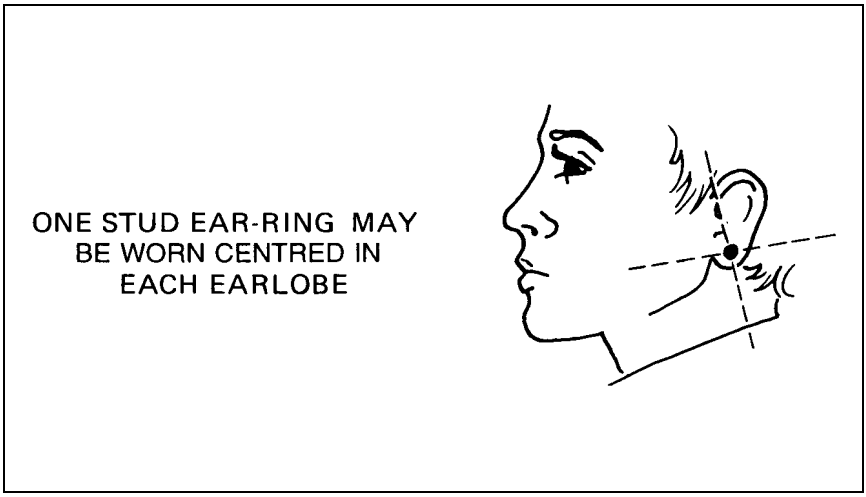


Figure 2-19 Wearing of Earring

64. **Hair-style.** Figure 2-17 illustrates hair-styles for males and Figure 2-18 illustrates hair-styles for females.

65. **Make-up – Females.** When you are wearing your uniform, you shall wear a limited amount of make-up. You cannot wear false eyelashes, heavy eyeliner brightly coloured eye shadow or coloured nail polish.

66. **Jewelry.** You shall not wear jewelry when you are in uniform, except wrist watches, ID or Medic Alert bracelets. You can also wear rings as long as they are not costume jewelry. Female cadets may wear plain gold stud earrings in pierced ears. The ear-rings shall be round and not more than 7 mm (1/4 in.) in diameter. (Male cadets are not permitted to wear ear-rings.) You cannot wear other types of ear-rings, but you may wear sleepers while your ears are healing after piercing. Only one pair of ear-rings/sleepers may be worn at a time. (See Figure 2-19.)

67. When you are outside you will always keep your head-dress on, even when you are seated. You will also keep your head-dress on in a mall or store unless you are seated. Remove your head-dress in a restaurant or church.

PLACEMENT OF BADGES AND INSIGNIA

68. As a first year cadet you will not need to know where all badges belong on the uniform. This section will explain the placement of the badges you may wear as a first year cadet or after completing Proficiency Level One training.

69. **Shoulder Badge (Shoulder Flash).** The shoulder badge is worn on both sleeves of the tunic only. The top of the badge is to be 2 cm below the shoulder seam. See Figure 2-20.

70. **Cap Badge.** Your cap badge is worn on the left side of the wedge. The centre of the badge is positioned half-way between the front and middle of the wedge and it is centred between the top and bottom of the wedge. See Figure 2-14.

71. **Leading Air Cadet (LAC) Props.** Your LAC props belong half-way between the shoulder seam and elbow. See Figure 2-20.

72. **Proficiency Badge.** Your first year proficiency badge is centred on the left sleeve of the tunic. The bottom edge of the badge should be 7.0 cm above the bottom of the sleeve. See Figure 2-20.

73. **Name Tag.** If you have a name tag it is worn on the flap of the right breast pocket of the tunic. The name tag is placed half-way between the button and the top of the flap.

74. **First Aid Badge.** If you have Emergency or Standard First Aid qualifications, your badges should be on the left-sleeve, centred, 7.0 cm from the bottom of the sleeve, or 1.0 cm above the proficiency badge, if one is worn. See Figure 2-20.

75. The placement of all other badges is described in CATO 55-04.

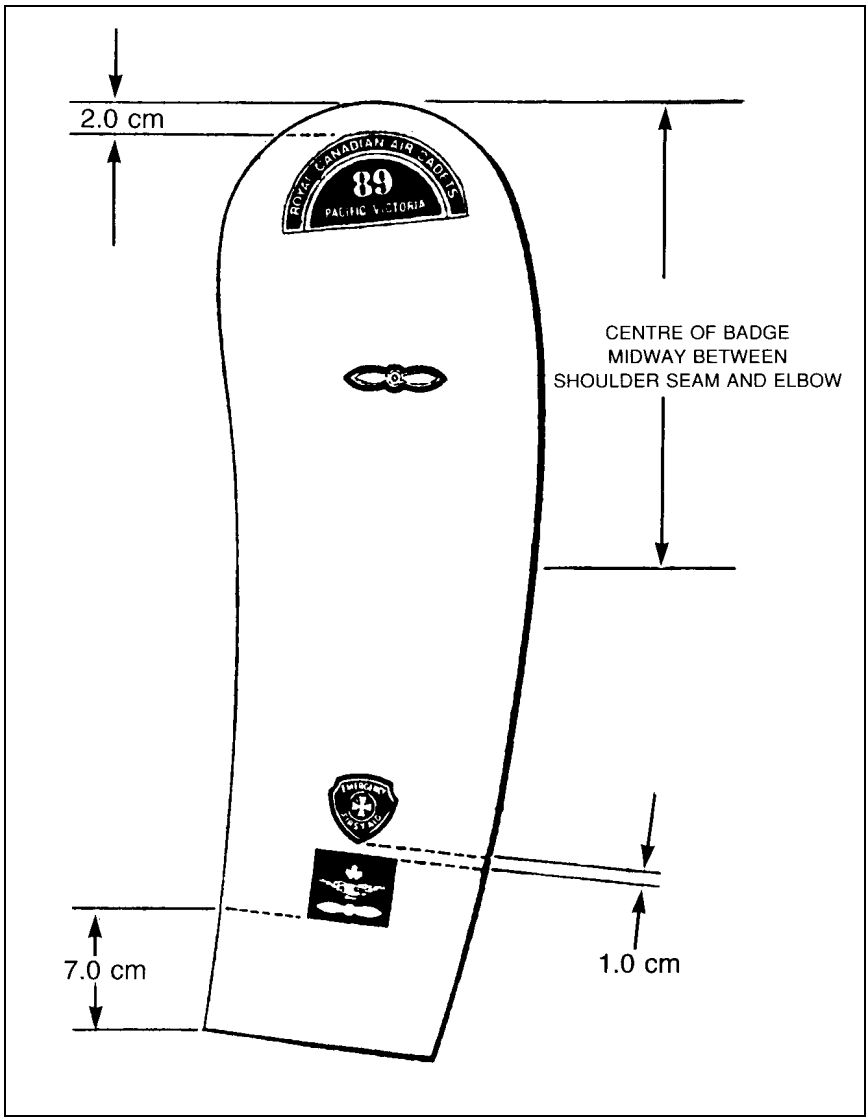


Figure 2-20 Insignia – Left Sleeve

SECTION 8

DUTIES OF A FOLLOWER

76. **What is a Leader?** A leader is anyone who directs and influences others in a manner that gets their willing obedience, confidence, respect, and loyal cooperation to accomplish a task.

77. **What is Leadership?** Leadership is the art of influencing human behaviour to accomplish a task in the manner described by the leader.

78. **What is a Follower?** At this point, as a first year cadet, you are largely a follower. As a follower, your leaders want you to be able to act in a certain way. The following are 13 commonly accepted duties of a follower:

a. Know the job.

b. Correctly apply your knowledge.

c. Tell the truth.

d. Act with honesty.

e. Admit mistakes.

f. Accept constructive criticism.

g. Learn from experience.

h. Assume responsibility.

j. Follow rules and orders.

k. Support your leaders.

m. Make an effort to cooperate with others and work as a member of a team.

n. Maintain a high standard of appearance and hygiene.

p. Maintain good personal habits and manners.

79. Please note that the duties of a follower include many that are also the duties of a leader. As a first year cadet, or follower, you are an apprentice leader.

SECTION 9

TRAINING OPPORTUNITIES IN THE AIR CADETS

80. The Air Cadet training programme consists of five levels. The first four levels of training consist of mandatory training subjects. Figure 221 lists the mandatory subjects and the years in which you will take the subject.

81. If you successfully finish your first level of training, you will qualify for appointment to corporal. This qualification does not mean that you will be appointed to the rank of corporal. Many factors are considered by the squadron staff before your appointment to any rank.

82. If you are appointed to corporal you are expected to perform the duties of a corporal. As a result, you may be responsible for contacting certain individuals on a phone list or acting as duty corporal at times.

83. With the successful completion of each level, and after meeting other prerequisites, such as successful completion of certain summer camps, you may become qualified for the next rank. With each appointment to a higher rank you will have more responsibility within the squadron. As you become a senior NCO, you will become more involved in the operation and administration of the squadron.

84. The fifth level of the training programme is On-the-Job-Training (OJT). In this level you will expand the knowledge you learned during "Staff Duties" in level four. You will become very familiar with the various squadron sections. You will plan and organize squadron activities and will be able to carry out squadron procedures in Level Five.

Subject	Proficiency Levels			
	1	2	3	4
401 Drill	X	X	X	X
402 Drill Instruction			X	X
403 General Cadet Knowledge	X	X	X	X
404 Citizenship	X	X	X	X
405 Physical Fitness	X	X	X	X
406 Sensible Living	X	X	X	X
408 Leadership			X	X
409 Instructional Technique			X	X
410 Effective Speaking	X	X		
411 Aircraft Identification	X			
412 Aeronautical Facilities	X			
413 Meteorology				X
414 Principles of Flight		X		
415 Airframe Structures	X			
416 Propulsion		X	X	
417 Navigation			X	X
418 Radio Communications		X	X	X
419 Aircrew Survival	X	X	X	X
420 Staff Duties				X
421 Range/Shooting	X			

Figure 2-21 Proficiency Level Programme

85. Table 2-3 lists the summer camps available after each level of training.

FAMILIARIZATION COURSES		
Level 1	Basic Air Cadet Training	2 weeks
Level 1	Basic Band	3 weeks
Level 1	Musician Level 1	6 weeks
INTRODUCTORY SPECIALTY COURSES		
Level 2	Junior Leaders Course	3 weeks
Level 2	Aircrew Survival Course	2 weeks
Level 2	Air Studies	3 weeks
Level 2	Physical and Recreational Training	3 weeks
Level 2	Musician Levels 2 and 3	6 weeks
ADVANCED SPECIALTY COURSES		
Level 3	Air Cadet Instructors Course	3 weeks
Level 3	Glider Pilot Course	6 weeks
Level 3	Survival Instructors Course	6 weeks
Level 3	Athletic Instructors Course	6 weeks
Level 3	Air Traffic Control	6 weeks
Level 3	Technical Training Course	6 weeks
Level 3	Lifeguard	6 weeks
Level 3	Musician Levels 4 and 5	6 weeks
Level 3	Service Band	6 weeks
Level 4	Flying Scholarship	7 weeks
Level 4	Senior Leaders Course	6 weeks
INTERNATIONAL AIR CADET EXCHANGE PROGRAMME		
Level 5	International Exchange	3 weeks

Figure 2-22 Table of Summer Course Requirements

86. The courses listed in Figure 2-22 may change from time to time due to review and amendment.

SECTION 10

AIR CADET FLAGS

THE AIR CADET ENSIGN

87. There is only one design of Air Cadet Ensign for all squadrons of the Royal Canadian Air Cadets. The approved design consists of the Canadian Flag on field of air force blue with an albatross and maple leaf, both in gold, in a circle of royal blue. The Air Cadet Ensign is senior to the Air Cadet Squadron Banner.

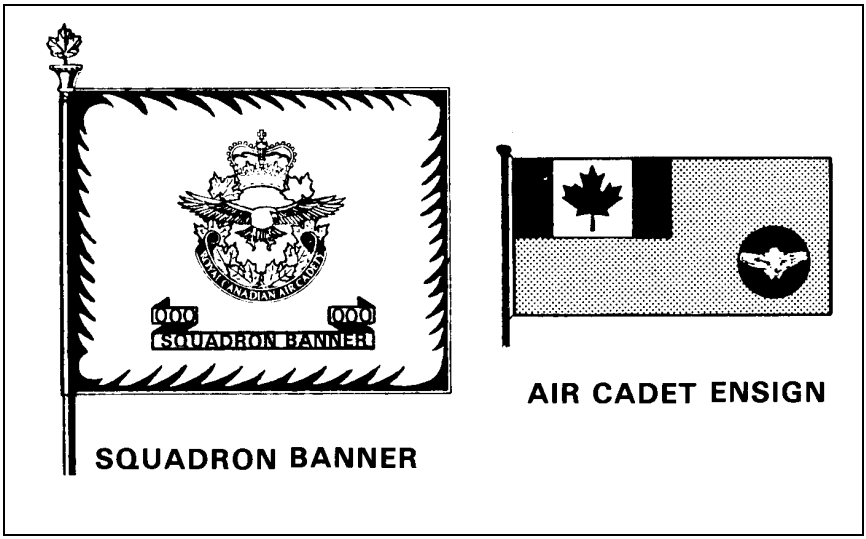


Figure 2-23 Air Cadet Flags

THE AIR CADET SQUADRON BANNER

88. The Air Cadet Squadron Banner was approved for use in air cadet squadrons by the Air Cadet League in 1963. The official design of the banner consists of a field of air force blue on both sides that is embroidered

with the official badge of the Royal Canadian Air Cadets. Beneath the badge is an embroidered scroll incorporating the name and number of the individual squadron. The Air Cadet Banner is displayed and carried only by members of the squadron to which it is presented.

CHECK YOURSELF

Here are some questions that will help you to review this chapter. You should answer these questions in your notebooks. The answers to the questions will serve as a quick and permanent reference for you, as well as a good review

1. In Section 2 you learned that you have the duty to be familiar with various orders and regulations. What other duties do you have as a first year Cadet?

2. You have learned about your squadron's Fire Orders. What should you do (according to the Fire Orders) if you find a fire?

3. Who is your sponsor?

4. How old is your squadron?

5. Is your squadron named for someone or something? For example is it named 999 Lord Dufferin or 777 Phantom. If it is for whom or what is it named and why?

6. Who fills the following positions in your squadron?

   a. Commanding Officer

   b. Supply Officer,

   c. Administration Officer, and

   d. Training Officer.

404

CITIZENSHIP

CHAPTER 3

PERFORMANCE OBJECTIVE 404

CITIZENSHIP

CANADA – YOUR COUNTRY

1. **Citizenship**. What does citizenship mean to you? Most of us especially if we are born in Canada, take our citizenship for granted. As citizens of Canada, we have certain rights and privileges, as well as certain responsibilities.

2. "The Canadian Charter of Rights and Freedoms" guarantees to all Canadian citizens:

   a. the right to vote in federal and provincial elections;

   b. the right to be a candidate in federal and provincial elections; and

   c. the right to enter, remain in or leave Canada.

3. The most important rights and privileges for a Canadian citizen are to vote and to run for office. Only a Canadian citizen can vote and run for office in a federal election. The law does allow certain non-Canadian residents to vote and run for office in provincial, territorial and municipal elections in some areas. These privileges are also a responsibility. No one is forced to vote or run for office, but our democracy depends on people taking part.

4. A person who becomes a Canadian citizen takes this oath:

   "I, (name in full), swear/affirm that I will be faithful and bear true allegiance to Her Majesty Queen Elizabeth the Second, Queen of Canada, Her Heirs and Successors, according to law and that I will faithfully observe the laws of Canada and fulfil my duties as a Canadian citizen."

5. This oath sums up some of the responsibilities of every Canadian citizen. These responsibilities include the following:

a. to be loyal to Canada,

b. to be loyal to the Queen of Canada and her representative, the Governor-General,

c. to obey Canada's laws,

d. to respect the rights of others,

e. to respect private and public property,

f. to care for Canada's heritage, and

g. to support Canada's ideals.

6. You may be born as a Canadian citizen, or you may become a Canadian citizen after moving to Canada from another country. In either case, you must become a good citizen. Being a good citizen is not just a matter of knowing how the government operates, it is a matter of maturity and responsibility.

7. A citizen has many roles to play in society. A good citizen will:

a. be a good neighbour,

b. know the difference between right and wrong,

c. be mindful of other nationalities and differences, and

d. participate in community activities.

8. In Canada, we live in a democratic society. A democracy is a government by the people. The citizens of Canada influence the decision making process in the government through our elected representatives.

9. One of the aims of the cadet organizations is to develop in youth the attributes of good citizenship. What can you do, as a cadet, to be a good citizen?

10. Your squadron probably takes part in events such as Remembrance Day and Canada Day ceremonies. As a good citizen, you should be aware of the purpose of such events when you participate in them. In what other citizenship events can you participate?

11. You can also do volunteer work in the community. Hospitals and senior citizen homes welcome volunteers to help make the lives of residents a bit more pleasant. What other volunteer work can you do to be a good citizen?

12. A very important part of being a good citizen is tolerance for other people. As good citizens we must be tolerant of people who are mentally or physically challenged; people of minority races; people of other religions and beliefs; and those less fortunate than ourselves.

13. As you can see, citizenship is complex. To become a good citizen, you have to make an effort. Realizing that your actions affect many people, you must act in accordance with your responsibilities toward others. You must care not only for yourself, but for your family and for society. Good citizenship demands participation, involvement, and contribution. Good citizens strive to make a worthwhile contribution that will benefit the country as a whole and not just benefit themselves as individuals.

THE NATIONAL FLAG

14. In the 15th century, the flag of Britain was the St. George's Cross. This flag was probably the first one flown in Canada. It was carried here by the explorer John Cabot who reached North America in 1496.

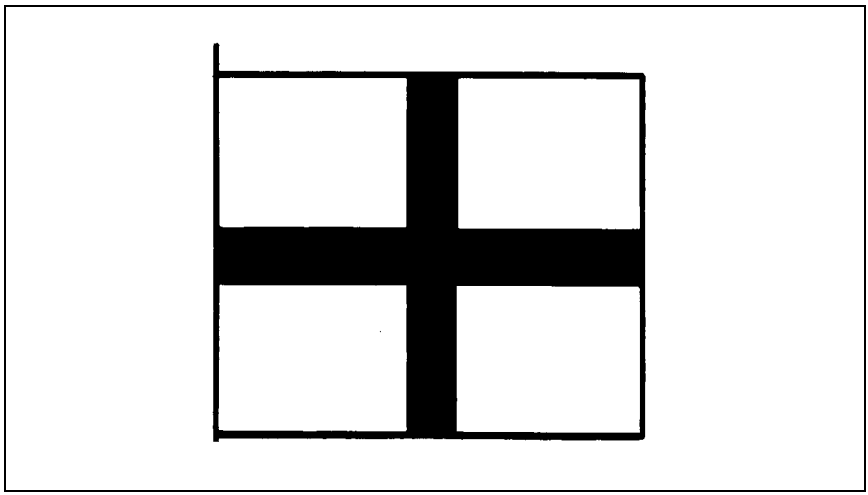


Figure 3-1 St. George's Cross

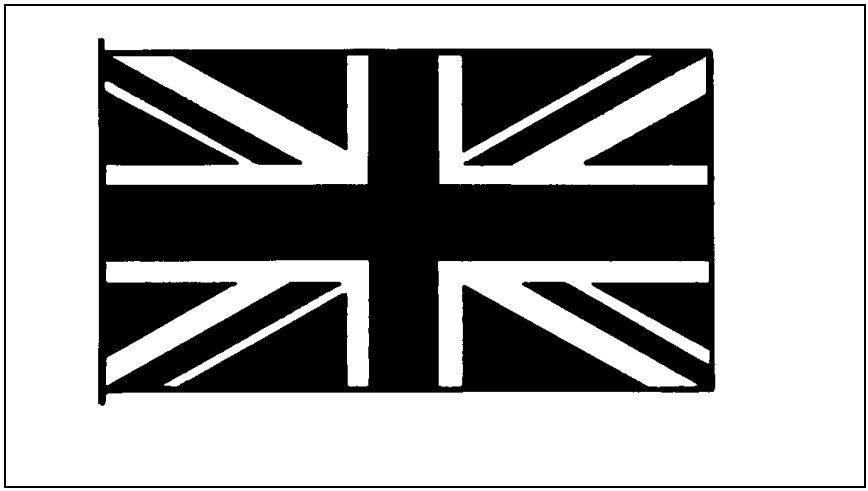


Figure 3-2 Union Jack

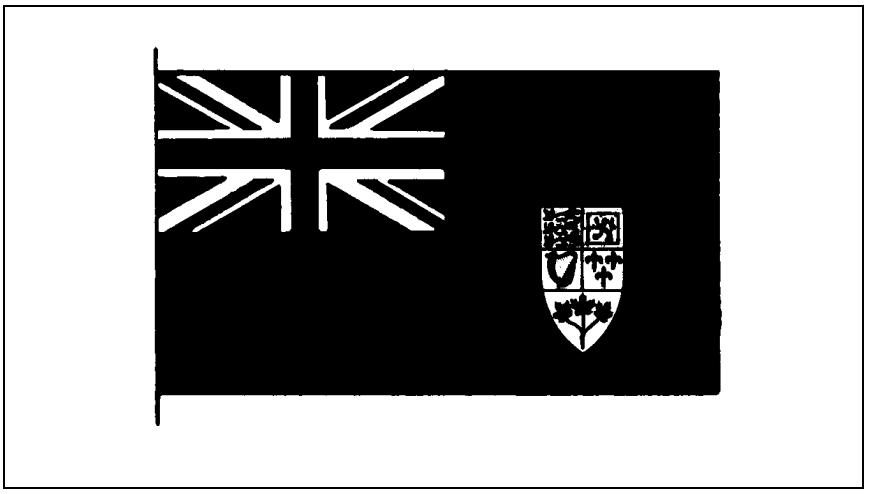


Figure 3-3 Red Ensign

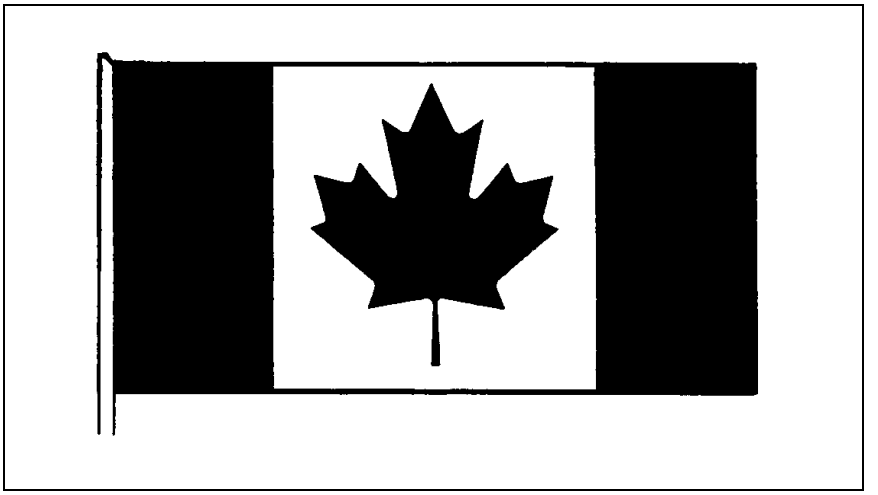


Figure 3-4 Present Day National Flag

15. One flag to fly over settlements in Canada was the Flag of Royal France. This flag was raised by Jacques Cartier when he first landed at Gaspe Harbour in 1534.

16. After its creation in 1606, the Union Jack was flown over British settlements in Newfoundland and later in Nova Scotia.

17. The Red Ensign was created in 1707. Its use in Canada was first authorized in 1892 for use on Canadian merchant ships at sea. In 1924, a Canadian order-in-council provided that the Canadian Red Ensign could be displayed at Canadian Government buildings abroad. Another order-in-council, in 1945, authorized the use of that flag on federal buildings inside and outside Canada until Parliament took action for formal adoption of a National Flag.

18. The present National Flag adopted by Parliament was proclaimed by Her Majesty the Queen on 15 February 1965. The flag is red. In its centre is a white square that contains a maple leaf with 11 points.

19. It is appropriate for the National Flag to be flown or displayed by individuals and organizations, but at all times the flag should be treated with dignity and respect and flown or displayed properly. The flag is flown daily, from sunrise to sunset, at all Government buildings, airports, and military bases and establishments inside and outside Canada.

20. The flag shall be saluted, but shall not be dipped or lowered as a means of salute or compliment.

THE NATIONAL ANTHEM

21. Canada's National Anthem is "O Canada!". The anthem was originally written in French by Adolphe Routier. The official version was proclaimed by the Canadian Government on 1 July 1980 by Bill C36. The words for the National Anthem, in both official languages, follow this paragraph. Every cadet should know the words of the National Anthem in at least one language.

O CANADA!

O Canada! Our home and native land!
True patriot-love in all thy sons command.
With glowing hearts we see thee rise
The true North strong and free;
From far and wide, O Canada,
We stand on guard for thee.
God keep our land glorious and free!
O Canada, we stand on guard for thee.
O Canada, we stand on guard for thee.

O CANADA!

O Canada! terre de nos aïeux,
Ton front est ceint de fleurons glorieux!
Car ton bras sait porter l'épée,
Il sait porter la croix
Ton histoire est une épopée
Des plus brillants exploits
Et la valeur de foi trempé,
Protègera nos foyers et nos droits. Protègera
nos foyers et nos droits.

CHECK YOURSELF

Here are some questions that will help you to think about citizenship as it applies to you.

1. In what citizenship activities does your squadron participate?

2. In what non-cadet activities do you participate that help you to be a good citizen?

3. In what other ways do you try to be a good citizen?

405

PHYSICAL FITNESS

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:

a. participant appears to be experiencing severe discomfort and/or pain;
b. participant is unable to maintain a rhythmic movement and must rest (stop test after participant falls behind more than three repititions); and/or
c. 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.

Adminstrative 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.

Figure 4-1 Push-Ups

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.

Figure 4-2 Shuttle Run

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:

a. appears to be experiencing severe discomfort and/or pain;
b. is unable to maintain correct rhythm and must rest (stop test after participant falls behind more than three repetitions); and/or
c. 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.

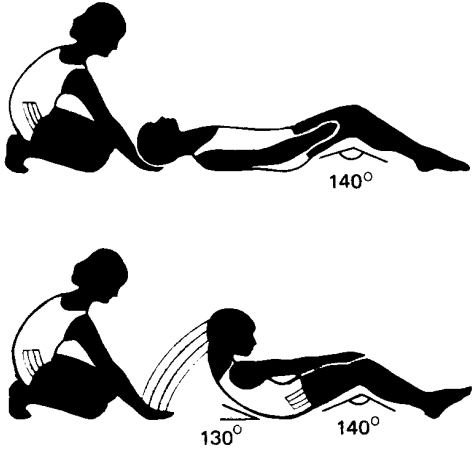


Figure 4-3 Partial Curl-Ups

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

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.

Figure 4-5 50 m Run

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.

Figure 4-6 Endurance Run

Your Personal Progress Chart

TESTS	Push-ups	Shuttle Run	Partial Curl-ups	Standing Long Jump	50 m Run	Endur-ance 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

SENSIBLE LIVING

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.

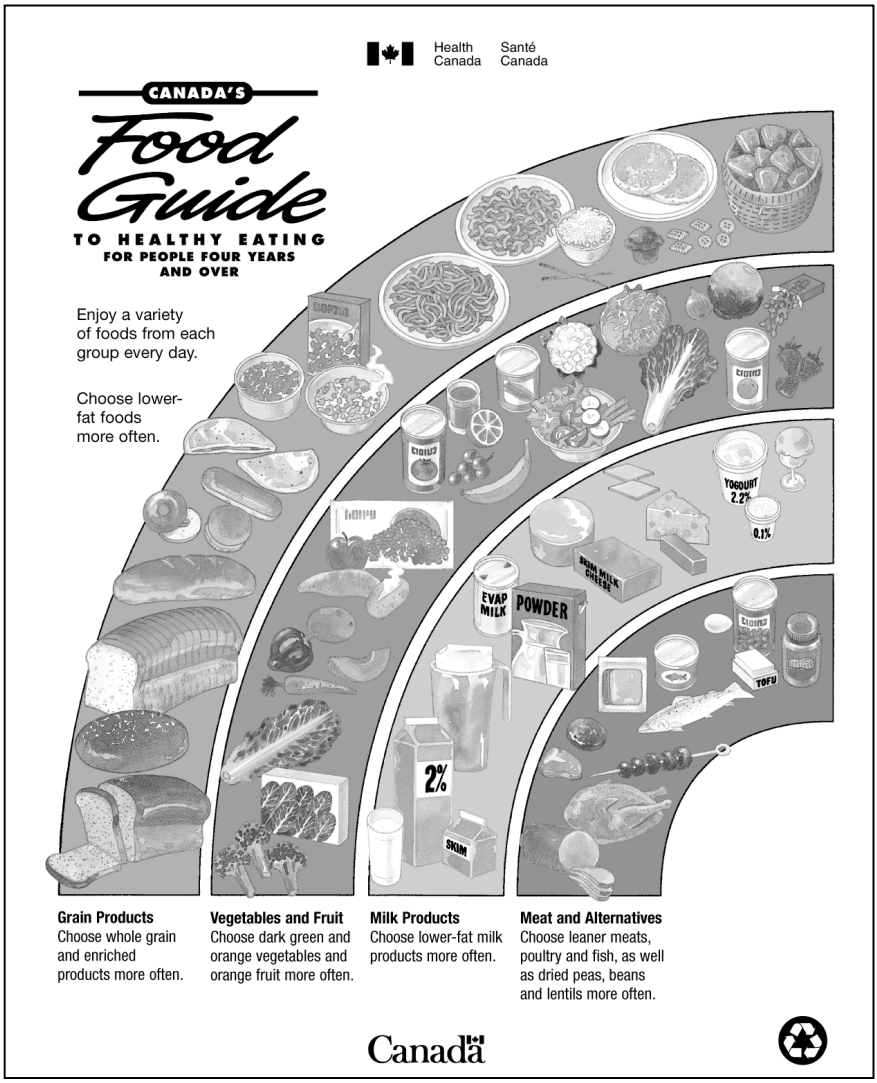
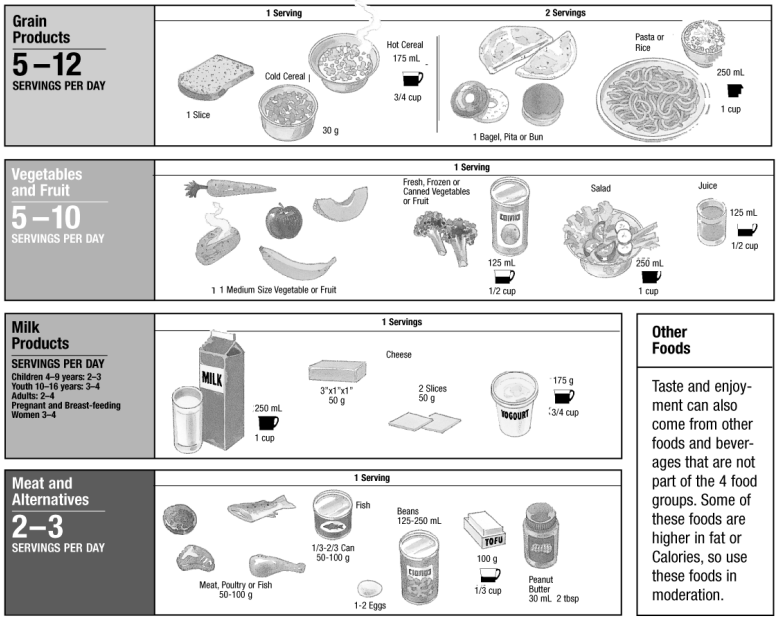


Figure 5-1 (Sheet 1 of 12) Canada's Food Guide



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.

Enjoy eating well, being active and feeling good about yourself. That's VITALITÉ

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

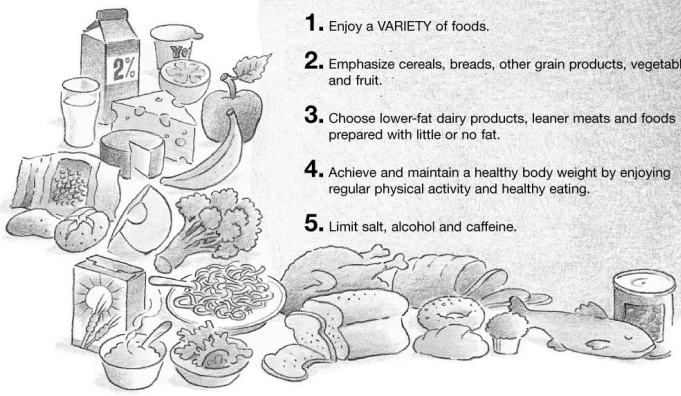
1. Enjoy a VARIETY of foods.

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.'

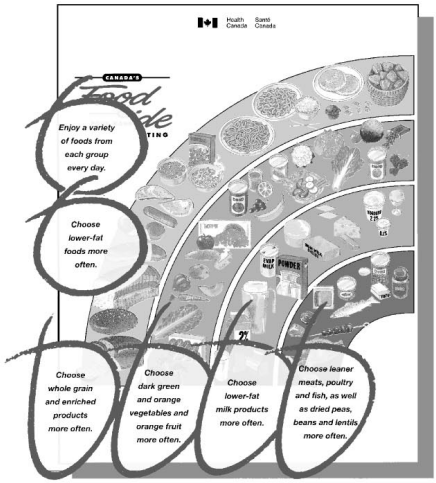
Try something new! Explore the rainbow of foods that make up the 4 food groups. Enjoy foods with different tastes, textures and colours.

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, yogourt, 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.

Grain Products	+ Vegetables and Fruit	+ Milk Products	+ Meat and Alternatives	= The Food Guide
protein		protein	protein	protein
		fat	fat	fat
carbohydrate	carbohydrate			carbohydrate
fibre	fibre			fibre
thiamin	thiamin		thiamin	thiamin
riboflavin		riboflavin	riboflavin	riboflavin
niacin			niacin	niacin
folacin	folacin		folacin	folacin
		vitamin B_{12}	vitamin B_{12}	vitamin B_{12}
	vitamin C			vitamin C
	vitamin A	vitamin A		vitamin A
		vitamin D		vitamin D
		calcium		calcium
iron	iron		iron	iron
zinc		zinc	zinc	zinc
magnesium	magnesium	magnesium	magnesium	magnesium

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.

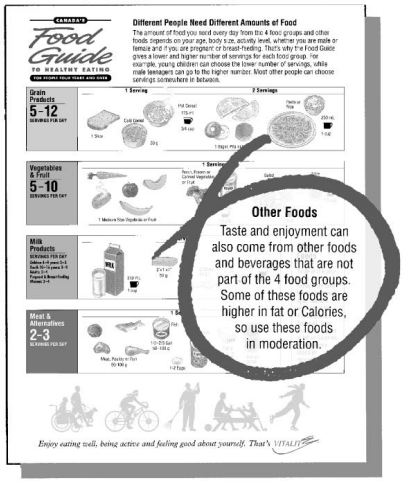


Figure 5-1 (Sheet 6 of 12) Canada's Food Guide

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

Vegetables and Fruit
5-10
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

Meat and Alternatives
2-3
SERVINGS PER DAY

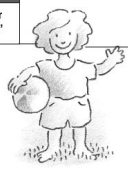
The number of servings you need every day from the 4 food groups and other foods depends on your age, body size, activity level, whether you are male or female and if you are pregnant or breast-feeding.

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'						



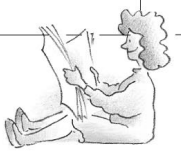


Figure 5-1 (Sheet 7 of 12) Canada's Food Guide

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

Vegetables and Fruit

Milk Products

Meat and Alternatives

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'.

Energy = Calories

You need food for energy. Energy is measured in Calories, kilocalories (kcal) or kilojoules (kJ). So more Calories give you more energy. If you follow the Food Guide, you will get between 1800 and 3200 Calories each day.

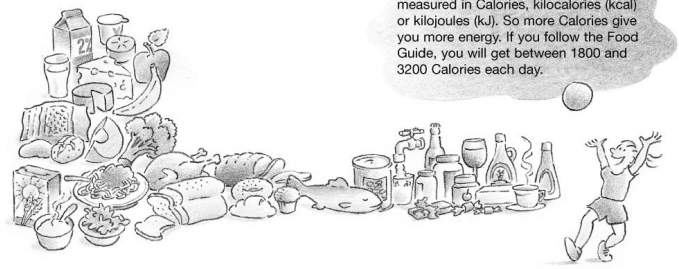
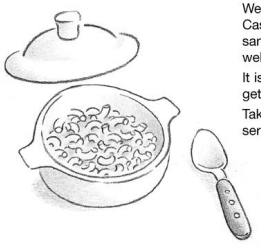


Figure 5-1 (Sheet 8 of 12) Canada's Food Guide

What about Combination Foods?

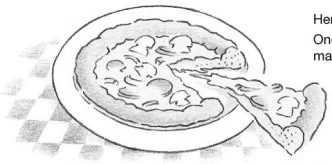


We often eat meals which have more than one kind of food in them. Casseroles, chili, moussaka, pizza, spaghetti, soups, stew and sandwiches are made from the foods of more than one food group as well as 'other foods'. These are called combination foods.

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.

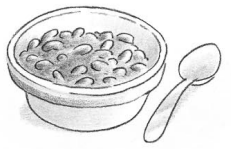


Figure 5-1 (Sheet 9 of 12) Canada's Food Guide

What about Vitamin and Mineral Supplements?

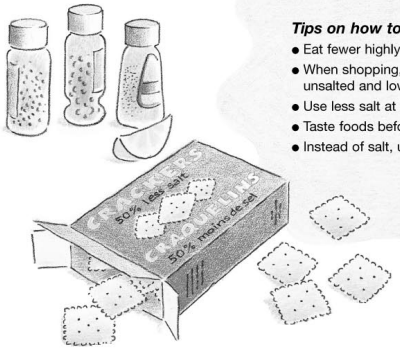
A multiple vitamin-mineral supplement can **not** replace good eating habits. You usually get all the nutrients your body needs by simply choosing a variety of foods from all 4 food groups and 'other foods'.

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!

VITALITÉ®

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.

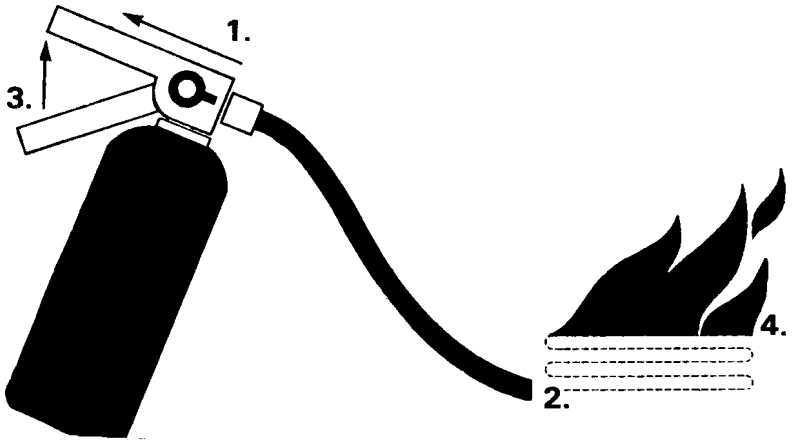


Figure 5-2 Fire Extinguisher Use

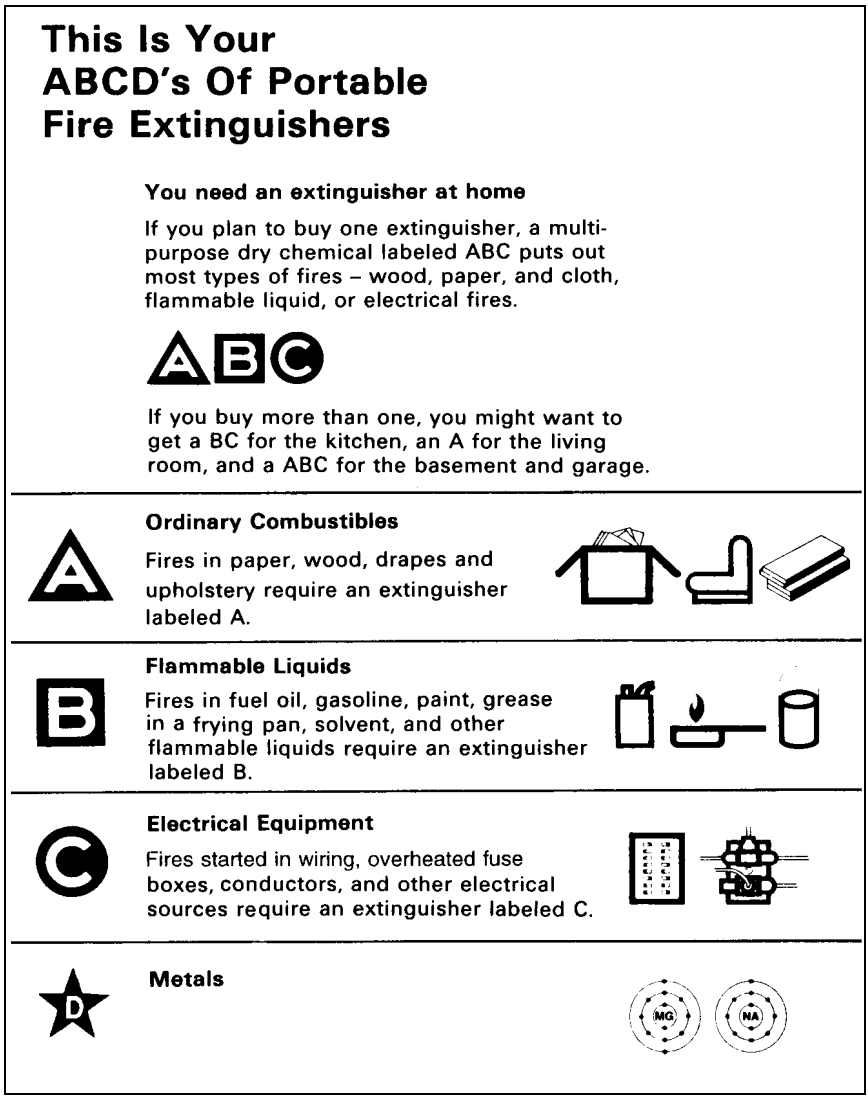


Figure 5-3 Classes of Fires

410

EFFECTIVE SPEAKING

CHAPTER 6

PERFORMANCE OBJECTIVE 410

EFFECTIVE SPEAKING

1. In this chapter you will learn the basis of effective speaking. Many times during your life it will be helpful for you to be able to speak effectively.

2. The principles of effective speaking are considered under three headings: personality, preparation and presentation. These are called the three P's.

PERSONALITY

3. It has been stated that one's personality is really made up of attitude, appearance and voice. Attitude, appearance and voice are dealt with in the subparagraphs that follow:

a. **Attitude.** The following apply:

(1) Your approach to a subordinate, an equal, or a superior must be different in each case. Remember that subordinates judge you by how you address yourself to them. Treat your equals on the basis of your acquaintance with them. That is, do not force yourself on anyone who is obviously not interested in your company. Your superior must be approached with courtesy and respect. This applies regardless of your own private or personal feelings about the person. Do not use familiarity with a superior unless the superior so requests and never in the presence of your subordinates.

(2) Most speakers are nervous before an audience, but the more experienced ones have learned to control their fears. The best insurance against failure is careful preparation. A confident, poised, enthusiastic attitude is required. This attitude is reflected in your willingness to establish eye contact and to speak to your audience, not simply at them, or in front of them.

b. **Appearance.** Appearance can be one of the determining factors in your success or failure on a job since first impressions are often lasting impressions. You should always be correct in your dress and appear well groomed. Your gestures should be natural and contribute to, not detract from, what you are saying.

c. **Voice.** As a speaker your should develop a good speaking voice. You must pay particular attention to the following:

(1) **Pitch.** Vary the speaking level.

(2) **Volume.** Vary the force with which you speak and adjust to the condition.

(3) **Rate.** Vary the speed at which you speak. Consider the size of the audience, the audience's ability, and that difficult material requires a slower rate.

(4) **Quality.** A pleasant voice will be clear, resonant and reasonably pitched. You should think about, and be responsive to, what you are saying – it will add to the quality of your voice.

(5) **Articulation.** Articulation is distinct speech, or the clarity with which you speak the parts of each word. You must open your mouth when you speak and be instantly intelligible to everyone in the audience.

(6) **Pauses.** They should be definite and planned. Clear breaks bring variety and interest. Pauses should punctuate, not mutilate.

(7) **Pronunciation.** Learn to pronounce words correctly to win confidence and to avoid the unwanted attention a mistake attracts.

PREPARATION

4. For impromptu speeches, you will not have any time to prepare but you can decide what the main point is to be, then think of an effective introduction and effective conclusion. Prepare yourself mentally for your presentation. Review your main points in your head, take a deep breath and try to relax.

PRESENTATION

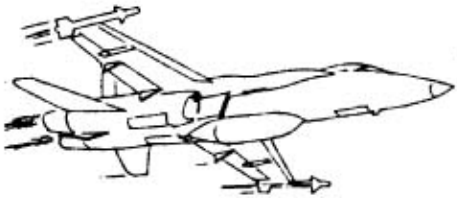
5. Mannerisms can often be very effective but they should not be set movements. Act naturally and do not be a robot. Do not shift your feet or juggle items such as chalk as you address people. Distractions of this nature are very annoying. Give an objective at the beginning of your speech and make the body of the speech purposeful. The most effective way to end an address is to summarize the talk you have just given. This refreshes the entire speech in the minds of the audience and rounds out your talk satisfactorily.

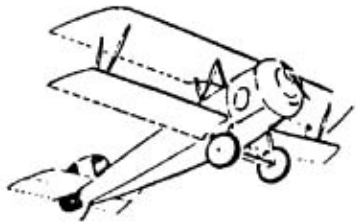
CHECK YOURSELF

As a check on this chapter you will be required to present a oneminute speech to the class. The speech will be about the subject you know best – yourself. Do not be too nervous. Remember the points you learned during the class on effective speaking.

411

AIRCRAFT IDENTIFICATION





CHAPTER 7

PERFORMANCE OBJECTIVE 411

AIRCRAFT IDENTIFICATION

GENERAL

1. For thousands of years the ability to fly has intrigued the human race. In ancient Greek mythology Daedalus and his son, Icarus, built wings of wax and feathers in the hope that they would be able to fly. The myth states that Icarus did fly and in fact flew too close to the sun which melted the wax. As a result, Icarus came tumbling back to earth and fell into the ocean. Of course, the story of Icarus is a myth, but it does show you that humans have been trying to fly for centuries.

2. Organized thought about the design of a machine capable of flight began in the early 1500s. Leonardo da Vinci studied bird flight in detail and produced a toy "helicopter". As a matter of fact, we have admired and tried to imitate birds for thousands of years. Da Vinci's notebooks were full of flying machines that never flew, but they anticipated the invention of the modern helicopter by over 500 years!

3. An aircraft may be defined as "any weight-carrying structure that navigates through the air." It is safe to assume from this definition, that aircrafts include gliders, airplanes, balloons, dirigibles, hang-gliders, etc. It took a long time for humans to conquer the sky, but ever since the first day we did, progress has been constant and very quick. It has now become almost impossible to spend one day without seeing at least one form of aircraft flying over our heads. The sky has become a crowded highway to the stars. It is now possible for anyone to travel anywhere in the world within 24 hours! We can reach other planets faster than the speed of sound! Imagine... the first flight of a powered airplane was recorded in 1903, when the Wright brothers flew their "Flyer III" over a distance covering only 852 ft. for a total of 59 seconds. It was considered to be one of the human race's greatest achievements.

4. To give you an example of the fast evolution of aircrafts and how they have come to revolutionize our lives, remember that it is possible for today's Space Shuttles to reach outer space in a matter of minutes; that it took the Russian astronaut Yuri Gagarin less than two hours to orbit the Earth in 1961; and that, it took the Portuguese explorer Fernand de Magellan over three years to complete his journey around the world on a ship! Amazing, isn't it?

HOT AIR BALLOONS/AIRSHIPS

5. The first successful flight was made in 1783 by Joseph and Etienne Montgolfier, two brothers who believed that the smoke coming out of their chimney was a lighter-than-air gas. They thought they could enclose this gas in a very light container, causing this container to rise in the air. After several experiments, their balloon finally left the ground and rose up to an altitude of about 6 000 feet. A couple of weeks later, a nest was added to the balloon to help carry the first "air travellers" – a sheep, a rooster and a duck! In November of the same year, the Montgolfier brothers' "Montgolfière" carried two men in flight for the first time, for 35 minutes, over a distance covering 5-1/2 miles. The heat required to provide the lift was first produced by burning gases such as hydrogen and helium, but this method proved to be too dangerous because these gases are flammable. Today's hot air balloons are equipped with propane burners installed in the balloon's nest.

6. The main difficulty with hot air balloons is that they have no manoeuvrability. Their flight depends on the wind's direction and its force. This is why, using the balloon's technology, airships were created. Unlike balloons, airships are equipped with some propulsion equipment that allows the pilot to steer the aircraft. A propeller was installed to help during take-offs and landings. The first airship was created in 1852 by Henri Giffard. Dirigibles became more popular around 1900 when they were used as a form of transportation. They also served as convoy escorts during the First World War. These airships were the equivalent of large ships on the sea. They were the largest aircrafts ever built and allowed to sail in the sky. They were easily recognizable, not only for their immense size, but for their cigar shape.

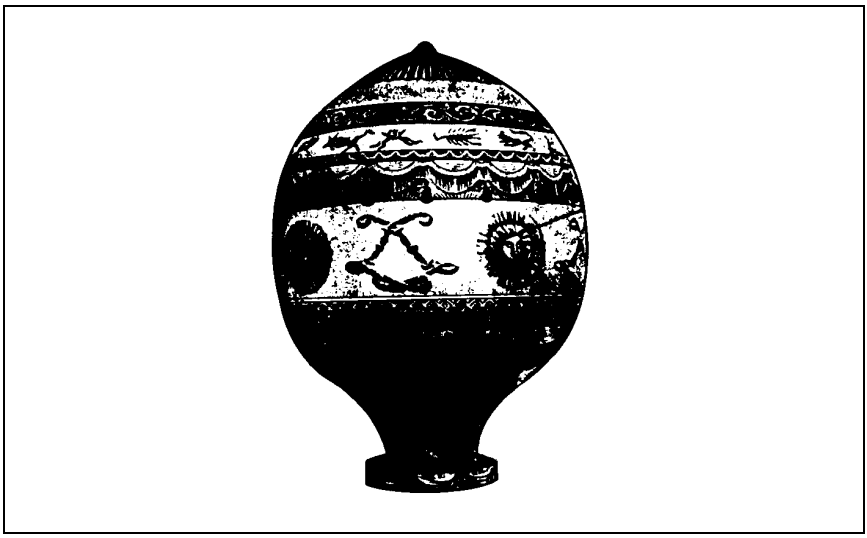


Figure 7-1 Montgolfière

7. Have you ever heard of Count Ferdinand Von Zeppelin? Zeppelin was a German aircraft builder who added a rigid structure to the airships making it possible for them to transport people. His aircrafts were widely called Blimps, referring to their non-rigid, or limp construction. Blimps could retain their form by the use of an aluminium structure. Zeppelin built many versions of this aircraft, one of them being the "B" version (B-Limp). However, his most famous dirigible (from the French "dirigeable" for steerable) was the Hindenberg, a magnificent 880 feet long aircraft that was capable of carrying 100 passengers. The Hindenberg was the top of its class. It could reach a speed of 130 km/h and it could cross the Atlantic Ocean in less than 60 hours. In 1937 the Hindenberg, which was filled with the flammable gas, hydrogen, was destroyed in only 34 seconds by fire. More than 30 passengers lost their lives. This was the end of the Zeppelin commercial era. Airships were used during the Second World War, but their popularity kept on decreasing, while airplanes gained in popularity.

8. There are still a few dirigibles in the air today, but they no longer serve as passenger carriers. They are mostly used for aerial surveillance and for advertising. The most famous modern blimp is the "Mayflower", property of the Goodyear Tires company. The Mayflower is mostly used for the broadcasting of many important sporting events.

GLIDERS

9. Long before the success encountered with balloons, humans had been dreaming of flying like birds, often trying to reproduce birds' flight by building rigid "wings" that they would attach to their arms. Several attempts were made; all of them failed, some tragically. Otto Lilienthal, a German, succeeded where everyone else had failed, when he designed a biplane hang-glider in 1895. Lilienthal would hang from the structure by his arms and would control the direction of the aircraft by swinging his body. This represents the first successful attempt at what has now become a very popular sport, practised around the world: hang-gliding. Lilienthal was the first to be able to control the direction of his machine. Modern hang-gliders have not changed that much except for the materiel used for their construction and the more modern design. Hang-gliders are unpowered and use currents of hot, rising air to stay in the air.

10. The Wright brothers, who are renowned for having been the first people to actually fly a powered airplane, started by experimenting with what could be considered the ancestor of the modern glider. They were inspired by Lilienthal's research. After making hundreds of flights with their gliders, they applied the same technology to their airplane. Until the Wright brothers, gliders could only fly in a straight line. The brothers perfected the technology that would allow them to be the first to control the direction of the plane. Another major breakthrough.

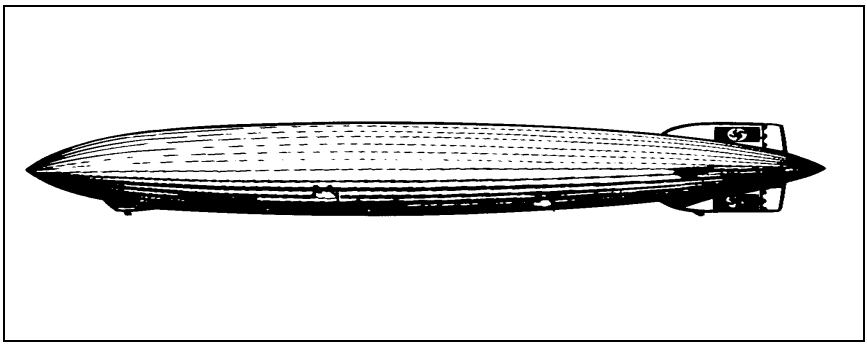


Figure 7-2 Dirigible

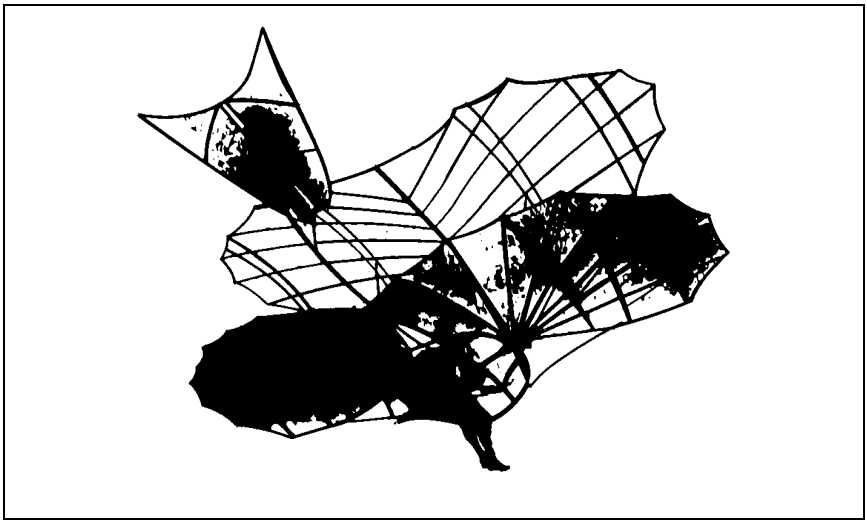


Figure 7-3 Lilienthal's Glider

11. Another type of hang-glider is actually gaining in popularity, but this time it is equipped with a small engine and a compartment where the pilot can be seated. The Ultralight, as its name defines it, is a very light aircraft, basically a stronger hang-glider structure that can be used by two persons. Ultralight aircrafts are also steered by shifting the weight of the pilot on one side. Ultralights are becoming increasingly popular due, in large part, to their low price and the fact that they do not require another plane or car for launching. They also require relatively little ground to land.

12. You will probably have a chance to experience the thrill that comes with flying in the air in a glider during your years as an air cadet. Gliders have no engines and use no fuel. They have no propeller and are equipped with landing gear. Gliders are launched by using an airplane, an automobile or a winch to which the glider is attached by a wire hooked under the fuselage. Gliding is now a very popular sport, widely practised all over the world. It is a very safe form of flying.

13. After the First World War, many countries were restricted to flying aircrafts without engines. In order for their pilots to learn about the principles of flight, Germany decided that the glider would be used as a trainer aircraft. This decision led to the rapid evolution of gliding throughout Europe. Gliders were also used during the Second World War for territorial recognition and for scouting. The gliders had the advantage of being silent and reducing the chances of being detected. Larger gliders, carrying up to 20 soldiers, were also built and used. They were towed by another plane and released just before a designated landing area.

14. Two types of gliders are currently used by the Air Cadets in Canada. Manufactured by Schweizer Aircraft Corporation in Elmira, New York, the two models used are the 2-33 and 2-22. The gliders are high-wing aircrafts with two seats.

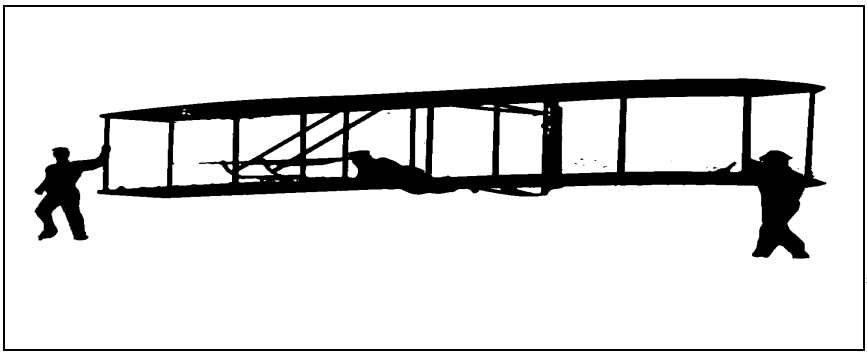


Figure 7-4 Wright Brother's Glider

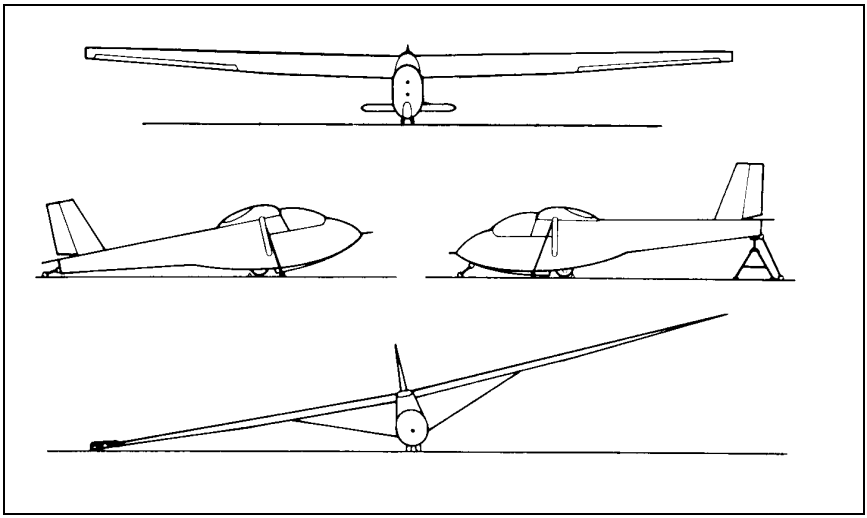


Figure 7-5 Air Cadet Gliders

What Do You Think?

The Space Shuttles are launched into space by two rockets attached to their sides. Then, as they enter outer space, they use their own powerful engines. As they come back to Earth, they slowly soar like a glider... WHAT IS A SPACE SHUTTLE? Is it an airplane, a glider or a rocket?

AIRPLANES

15. Aviation made giant steps forward between 1903 and 1909 when Orville and Wilbur Wright developed the first powered airplanes. Until 1903, the Wright brothers had been experimenting with biplane gliders before dedicating their work exclusively to powered machines. In 1903, they produced the Flyer 1, an airplane based on the technology developed with their No. 3 Glider. The Flyer I was the first airplane equipped with a 12 horsepower gasoline engine (also built by the brothers) and a propeller. The Wrights made the first powered and controlled flight in their airplane on 17 December 1903. This flight was the first of four and lasted for 12 seconds. The fourth flight lasted 59 seconds, covering a distance of 852 feet over the ground. For the next two years, the Wrights perfected their machine until they were able, in 1905, to easily perform figures, circles, etc, for a half hour. This first step was a significant one. From that day on, the sky would never be the same.

16. Thousands of airplanes were built between 1905 and the beginning of the First World War. People were experimenting with new technologies to improve stability, lift, speed, comfort, etc. The biplane was the most popular form of airplane, but people were also experimenting with triplanes and monoplanes. Until the beginning of the war, planes had no real purpose other than for the experimenting with flight. But, as is often the case with any war, things changed radically. The vocation of airplanes, first used as reconnaissance vehicles only, drastically changed. More money was invested in the development of technologies that would allow planes to travel faster and higher. By the end of the war, planes could easily climb up to 20 000 feet and reach a speed exceeding 145 miles per hour. The planes were made of metal and equipped with machine-guns and bombs. The use of airplanes completely transformed war strategy.

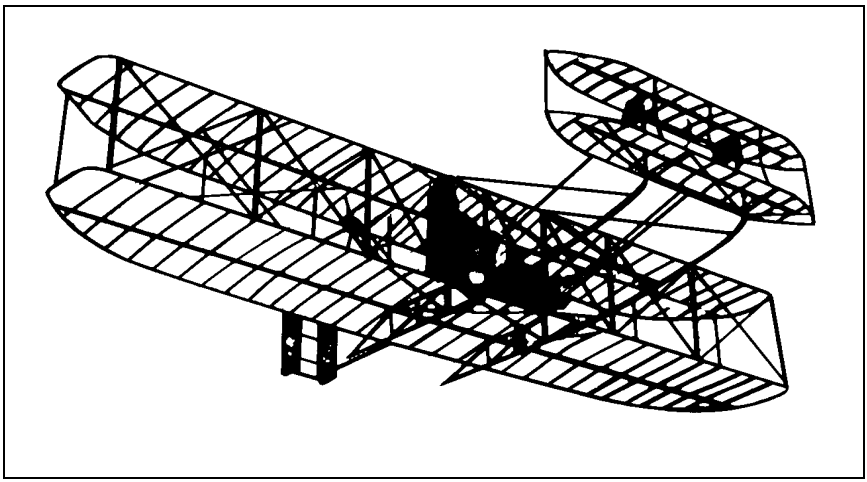


Figure 7-6 Wright Brothers' Flyer III

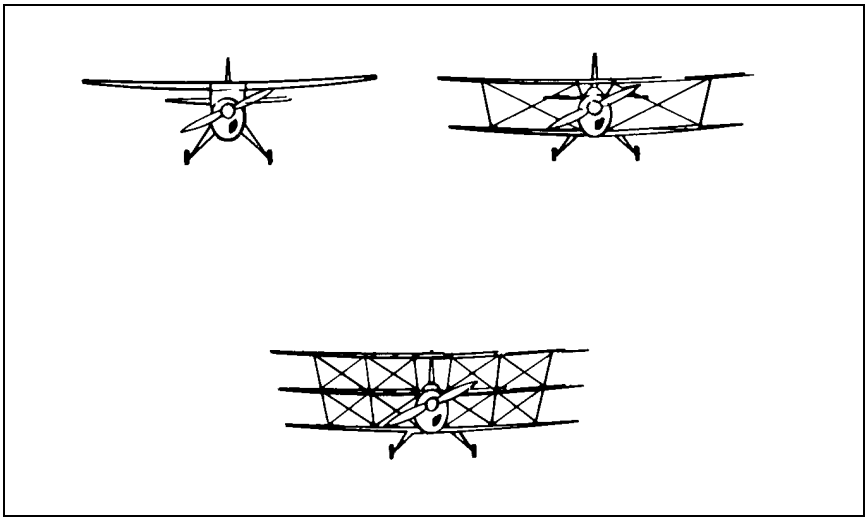


Figure 7-7 Monoplane, Biplane, Triplane

17. By the end of the war, airplanes were still not a "popular" mode of transportation. Those who flew the planes were often referred to as daredevils. One major event, which occurred in 1927, helped popularize the use of airplanes as a safe and practical means of travelling. Charles Lindbergh, aboard his "Spirit of St. Louis", successfully completed as a 33--hour flight between New York and Paris, France. It was the first time that anyone had crossed the Atlantic Ocean on a non-stop, solo trip. Up until that time the journey could only be made by boat. This flight was widely publicized and Lindbergh was welcomed as a true hero. Lindbergh's achievement clearly established, once and for all, that long distances could be travelled a lot faster.

18. The period of time spanning the two World Wars allowed airplanes to become established as popular modes of transportation. Commercial airlines linking cities, countries and continents were created throughout the world. Planes, such as the Douglas DC-3, the Lockheed 14 and the Boeing 307 Stratoliner, were built bigger to carry more passengers, were made stronger, and were able to fly faster and longer distances. This was a very exciting era for the development of commercial aviation.

19. Monoplanes (airplanes with one wing on each side of the fuselage) almost completely replaced the biplanes and triplanes as the most efficient and reliable airplane during the Second World War. Since then, biplanes and triplanes have been reduced to appearance at air shows. The monoplane, however, has become the most popular type of aircraft in the world. You may have a chance to fly in a monoplane with your squadron because air cadets use the Cessna L-19 and the Bellanca Scout (two monoplanes) to tow gliders for familiarization flying.

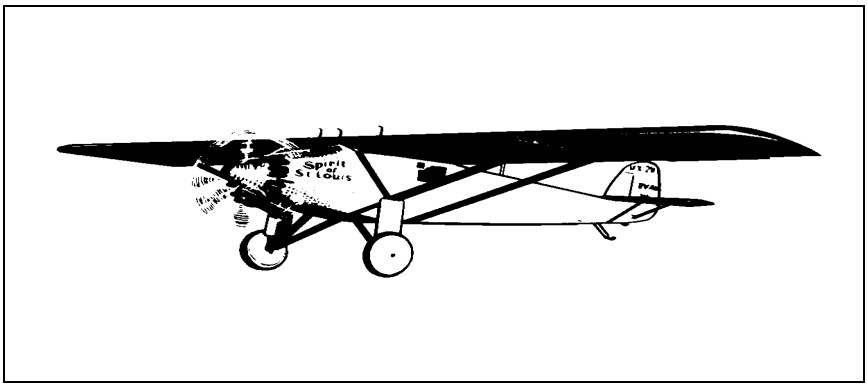


Figure 7-8 Spirit of St. Louis

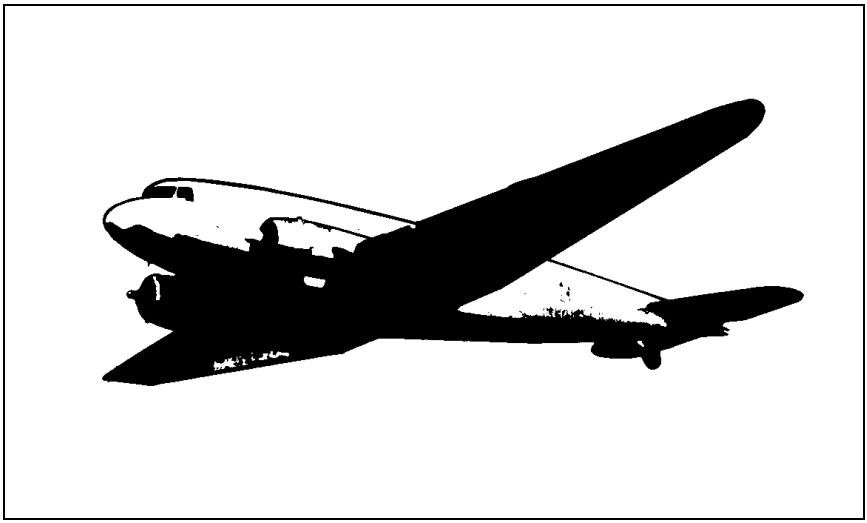


Figure 7-9 Douglas DC-3

20. Airplanes played a greater role in the Second World War than they did in the First World War. Once again, a lot of money was put into the development of faster and bigger airplanes. Some bomber airplanes could carry up to 6 tons of bombs and fly a distance of over 3 000 km! The race to produce the ultimate flying weapon was on. To give you an example of the progress made, just consider the following numbers: in 1909, the Wright's biplane achieved the speed of 54 km/h; when the First World War started a monoplane could fly at 275 km/h; when the Second World War started the Heinkel He 100 reached the speed of 746 km/h; and by the end of the war, only six years later, Captain Wilson flew his Gloster Meteor F 4 to a speed of 975 km/h! In 1947, Captain Chuck Yeager of the US Air Force was the first person to reach Mach speed (or the speed of sound) which is equivalent to 1 193 km/h. Some of today's jet fighters are equipped with engines so powerful that they can reach a speed equivalent to three times the speed of sound!

21. Once again, the period following the Second World War contributed to further development in the world of aviation. Today, a growing number of people enjoy the pleasure of flying their own airplanes, and more people than ever before use commercial airlines to travel the world. It is believed that almost 98 per cent of all aircrafts in the world are airplanes, the remaining 2 per cent is composed of balloons, helicopters, dirigibles, etc.

22. We have now reached the age of supersonic flight. Supersonic means that the airplane is able to exceed the speed of sound. This technology, developed by rocket scientists and later used on all fighter aircrafts, such as the McDonnell Douglas CF-18 Hornet (currently used by Canada's air force), is now applied to commercial transportation. On 31 December 1968, the Tupolev Tu-144, a Russian prototype, made the first commercial supersonic flight. On 26 May 1970 it reached the amazing speed of Mach 2. But the most famous supersonic transport airplane is the Concorde, an Anglo-French aircraft. The first prototype of the Concorde flew on 2 March 1969. To really appreciate the Concorde's performance, remember that today's Boeing 747 takes seven hours to travel from Paris (France) to New York (USA), while the Concorde can travel the same distance in only 3 hours 45 minutes, carrying 100 passengers!

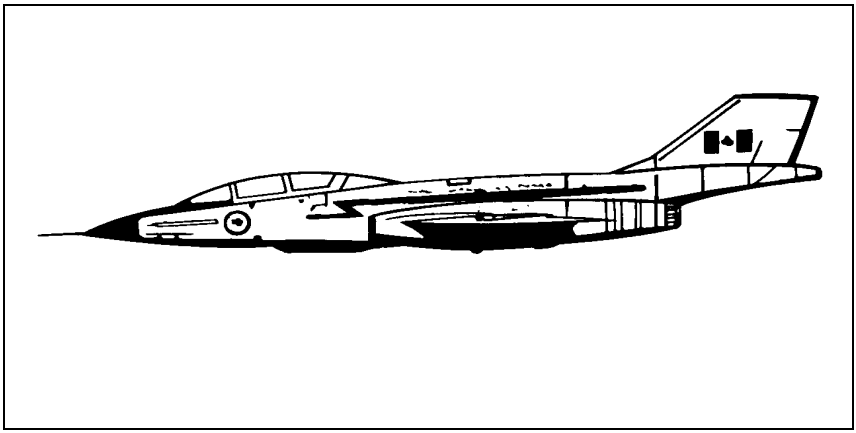


Figure 7-10 McDonnell F-101 Voodoo

23. Airplanes are now designed to fit specialized uses. This is the case with the Canadair CL-215, a plane built in Canada and used as a waterbomber around the world to help prevent and control forest fires. The AWACS is a modified version of the Boeing 707 equipped with radars and computers to detect enemy aircraft. The hydroplane is an aircraft equipped with pontoons to take off and land on water. Modern technology even allows for bombers such as the Stealth to be invisible to radars. Today's airplane technology changes so rapidly that it has become very difficult to keep track of all new breakthroughs.

SPACE TRAVEL

24. The exploration of space was the next logical step to follow after our own skis had been conquered. As you well know, we are curious by nature. For most of you, the fact we travel to and from the moon represents nothing more than a simple fact of life. You can see and hear about it on television on a regular basis. However, the exploration of the other worlds was, not too long ago, a journey that was only described in experimental novels or television series. The only thing that we knew for sure, was that there were other planets in the sky. For centuries now, sailors such as Christopher Columbus and Magellan, as well as native people around the world, have been using the location of other planets and stars as reference in order to navigate.

25. To dream of exploring other planets is one thing... but before we could actually "go up there" and see for ourselves, we had to find out if the conditions existing in space (such as the temperature, the presence of oxygen, etc) would allow humans to survive. Scientists used rockets to launch artificial satellites that would travel around the Earth and bring back vital information. The first ones to succeed at launching a satellite were the Russians. On 4 October 1957, they shocked the whole world by announcing the successful launching of "Sputnik 1". Sputnik (which means "road companion") only carried a transmitter used to send a radio signal back to Earth. One month later, Sputnik 2 was launched. This satellite carried scientific equipment and Laika, a female dog. Sadly, Laika never came back, but she survived one week, proving for the first time that the possibility for a living creature to travel in space existed. The Americans followed in 1958 with their own successful launch of a satellite, Explorer 1. Many artificial satellites followed and provided information about the Earth's atmosphere and the Earth itself. This information would allow scientists to develop spacecrafts able to carry humans.

26. Once again, the Russians were the first to put a human into orbit. Yuri Gagarin, a lieutenant in the Russian Air Force, travelled aboard the spacecraft Vostok 1. He took 1 hour 48 minutes to complete a full circle around the Earth at the incredible speed of 500 km a minute! He was the first human to experience space travel. It was also the first time that humans visited space and returned. John Glenn was the first American to orbit the Earth, on 20 February 1962, aboard the capsule Friendship 7. He successfully completed three full circles around the Earth in 4 hours 55 minutes. The first woman in space was Valentina Tereshkova, a Russian. She spent 71 hours in orbit in June 1962. Between March and June 1965, Alexei Leonov and Edward White became the first two humans to "walk" in space (they did not really walk, but they were the first to leave the spacecraft and float while in space). Many other humans would follow in their footsteps and go to space. However, the biggest challenge was still to come...

27. In the past, people wondered if it would be possible for humans to travel to another planet. This was a scary thought, because if we were able to seek and explore other worlds, that could only mean that the possibility also existed for other planets to seek and explore our world. Most people chose to believe that this goal was not achievable. The American President, John F. Kennedy, however, had other plans in mind. On 25 May 1961, in an effort to motivate the American space industry, he declared: **"I believe that this nation should commit itself to achieving the goal, before the decade is out, of landing a man on the Moon and returning him safely to Earth...".** The project Apollo was born.

28. It only took eight years for the Americans to achieve their goal. On 20 July 1969, Apollo 11 reached the Moon and landed. The event was televised almost everywhere in the world! Everybody held their breath when Neil Armstrong, followed by Edwin Aldrin, set foot on the Moon. We had finally reached another planet! Before safely returning to Earth, they left a plaque behind on which the following words are engraved: **"Here men from the planet Earth first set foot upon the Moon July 1969, A.D. We came in peace for all mankind".** Five additional Apollo missions reached the Moon before the end of 1972.

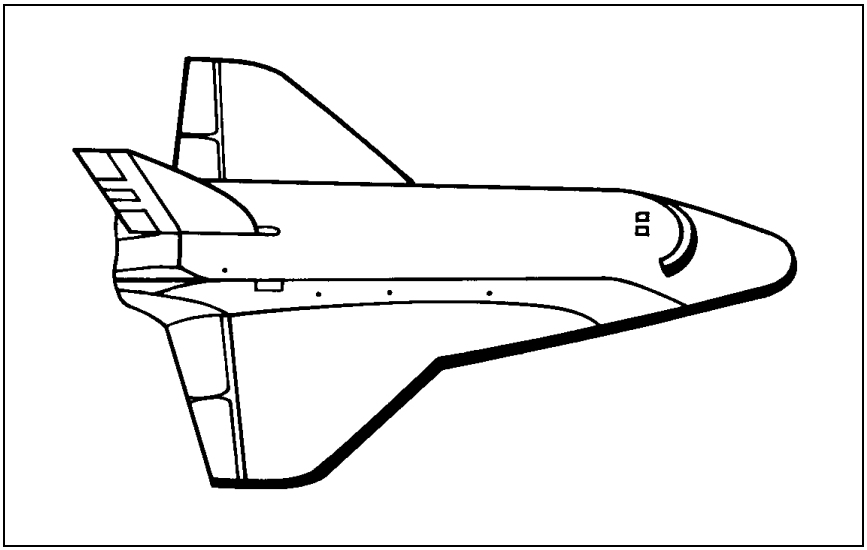
29. The main reasons for travelling in space are exploration and research. However, this type of travelling costs billions of dollars and the aircrafts may not be used again as they crash into the Earth on their way back. This is the reason space laboratories were built and experimented with. Space laboratories, such as the Russian Saliout and the American Skylab, allowed for many teams of astronauts to spend extended periods of time in space and conduct research. A space laboratory is built to last for many years in space.

30. There are thousands of objects in space, ranging from telecommunication satellites to space stations. The maintenance and the retrieval of these objects is crucial to their good performance but it is also very difficult and costly.

31. However, the latest innovation in space travel, the Space Shuttle, promises to solve this problem. The Shuttle is an extraordinary space vehicle. It combines airplane technology, a laboratory, a reusable launching system, and the capability to allow several astronauts to work on different experiments. The Shuttle itself consists of a spacecraft called the

Orbiter, shaped like a big airplane, and a Spacelab that is located in Orbiter's cargo bay.

Did you know that the Space Shuttle "Enterprise" was named in honour of the famous spaceship from the television series "Star Trek" and that one shuttle aboard the fictional Enterprise from "Star Trek: The Next Generation" was named after one of today's real Space Shuttles? Can you identify it?



32. The Space Shuttle has already proven to be quite a success: it allowed scientists to repair several satellites as well as the largest telescope ever launched into the space – the Hubble. This telescope experienced technical problems that were later solved when the crew of the Space Shuttle successfully retrieved and repaired it while orbiting around Earth. The operation was made possible by the use of the CANADARM, a mechanical device shaped like an arm. The CANADARM as its name says, is a Canadian invention of which we should all be proud! The repair of Hubble took days and was televised around the world!

Can you name the first two Canadian astronauts to travel to space aboard a Space Shuttle?

Major Marc Garneau aboard "Challenger" in 1984 and Roberta Bondar aboard "Discovery" in 1992.

33. The future of space travel is bright and promises to be quite exciting. The Wright brothers would find it difficult to believe that only 90 years after their heroic flight, modern airplanes are equipped with many computers they are capable of carrying over 400 passengers, they can surpass the speed of sound and we can reach other planets! And, it is far from being over. Who knows if tomorrow we won't be able to travel to space stations based around the galaxy using space buses?

YOU WANT TO LEARN MORE?

If you want to know more about aircraft history, ask your instructor or visit your local library. Hundreds of books have been published on the subject and many of them include great pictures of very old airplanes. You could also visit the National Aviation Museum in Ottawa. It is one of the great places to learn and see the glorious history of aviation.

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AERONAUTICAL FACILITIES

CHAPTER 8

PERFORMANCE OBJECTIVE 412

AERONAUTICAL FACILITIES

1. As a cadet you will probably visit an aerodrome at some point It will be helpful to you if you are familiar with some of the components of the aerodrome and its surroundings.

APRON AREAS

2. The apron (tarmac) is the area of the aerodrome intended to accommodate the loading and unloading of passengers and cargo and the refuelling, servicing, maintenance and parking of aircraft. The apron is bounded by blue lights.

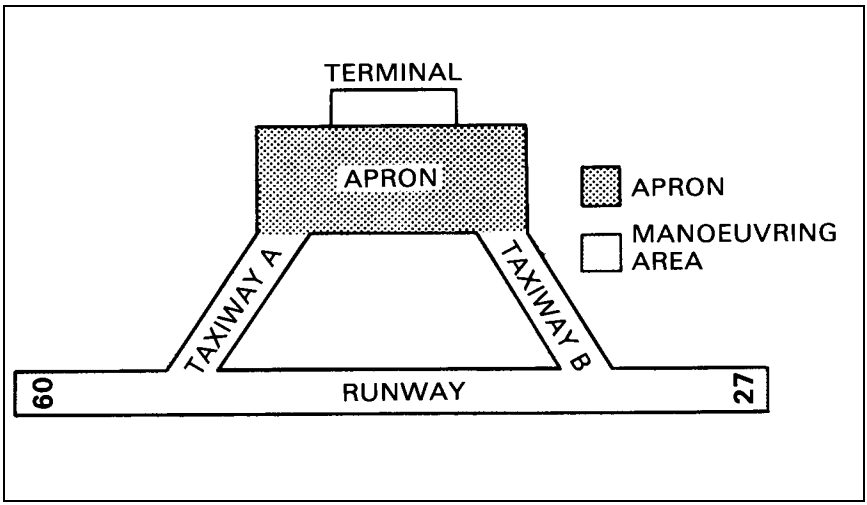

Figure 8-1 Aerodrome Movement Areas

TAXIWAYS

3. A taxiway is the area used by an aircraft to move from the apron to the runway. Taxiways are usually designated by letters. At aerodromes with lighting, the taxiways are defined by blue lights.

RUNWAYS

4. Runways are the areas on which the aircraft land. A runway may be paved, grass or dirt. Runways are numbered according to their magnetic direction and are rounded off to the nearest 10 degrees, with the last zero omitted. For example, a runway that points in the direction of 266 degrees would be numbered 27. 266 is rounded to 270 and the zero is dropped. The number is found on the end of the runway. When runways are parallel, they are designated left (L) and right (R) as illustrated in Figure 8-2.

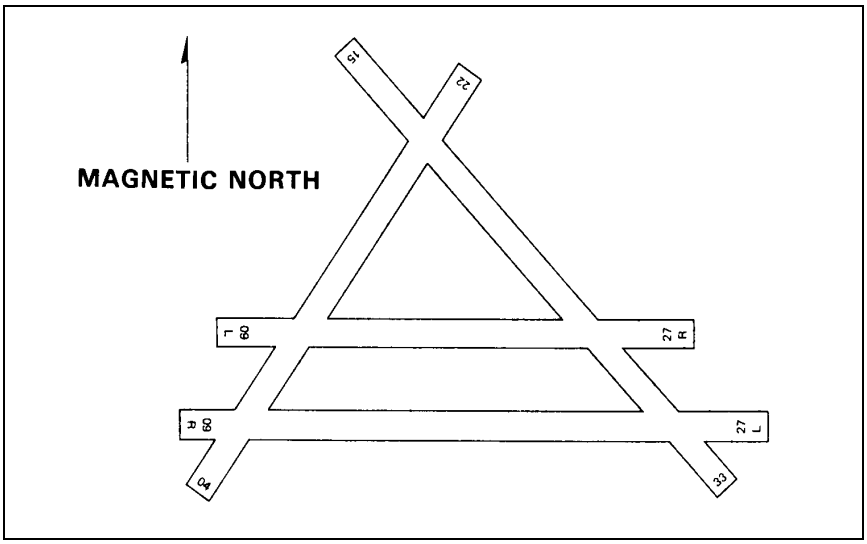

Figure 8-2 Runway Marking System

5. Runways are lit by several different coloured lights. The runway is lined down each side with white lights. There are also red lights that show the end of a runway and green lights that indicate the beginning. An example of runway lighting is illustrated in Figure 8-3.

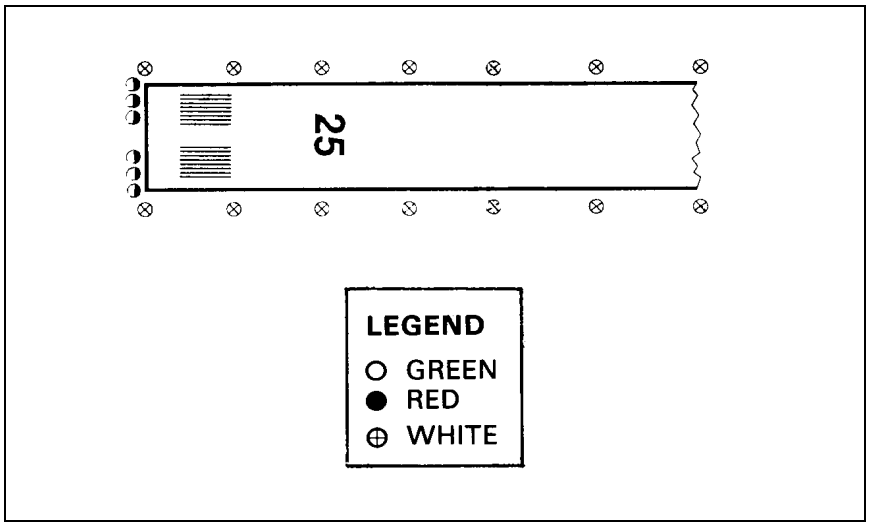

Figure 8-3 Runway Lighting

CONTROL TOWER

6. Some aerodromes have a control tower to ensure the safe and efficient movement of aircraft. The air traffic controllers in the tower are responsible for the control of all traffic, taking off and landing. They are also responsible for the control of all aircraft flying under visual flight rules (VFR) conditions in the aerodrome's control zone. VFR generally means that the aircraft is flying while it can see the ground.

7. Most controlled airports also provide ground control. The ground controller is responsible for the movement of all traffic on the ground at the airport, except aircraft that are landing and taking off. If the rotating white light on the top of the control tower is lit it is a sign that it is night or that the weather is not good for flying under VFR conditions.

AIRPORT BUILDINGS AND FIXTURES

8. Hangars are used for storage, protection and maintenance of aircraft. Terminal buildings are used for passengers arriving and departing, and for baggage and cargo handling. A flying school is located on many aerodromes.

9. Usually at least one wind sock or wind-T is located on every aerodrome. The wind sock shows the direction of the wind and gives an approximate wind speed. The wind sock is lit at night to enable pilots to use it to determine wind direction. It is also lit to show that it is an obstruction for pilots to avoid.

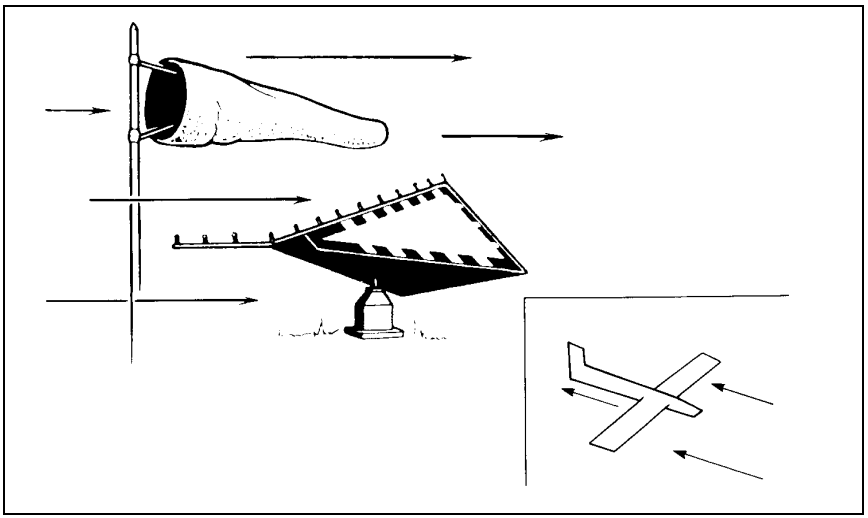

Figure 8-4 Wind Direction Indicators

10. Other obstructions are also lit. Obstructions such as towers, buildings, and poles are lit with red lights.

AERODROME MARKINGS

11. If you are on an aerodrome during a glider familiarization outing you may notice lines on the runway. Three types of these lines are illustrated in Figure 8-5. The markings from aerodrome to aerodrome vary because of size and the type of facility.

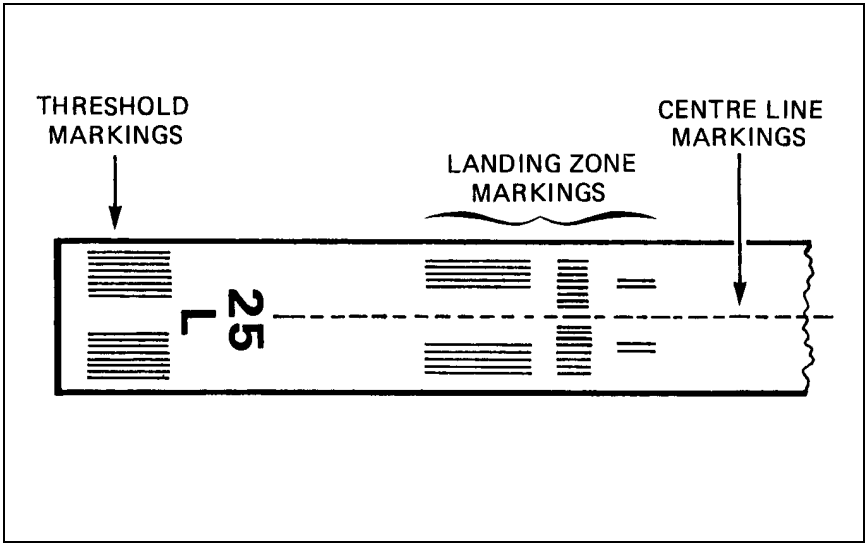

Figure 8-5 Runway Markings

12. Threshold markings indicate the beginning (or end) of the runway. Landing (touchdown) zone markings show the area where it is desirable to touch down. Centre line markings designate the centre of the runway on which the pilot should try to line up the aircraft.

13. At times there may be a danger area on an aerodrome caused by construction or disuse. Such an area is signified by a large white "X" on the runway or taxiway.

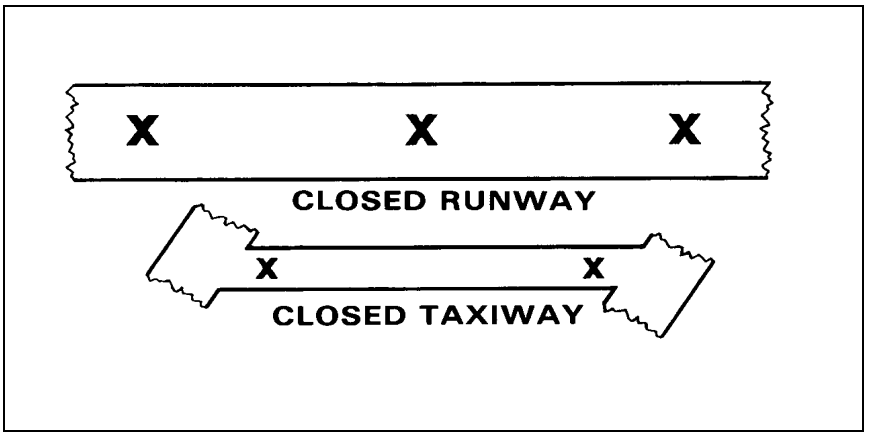

Figure 8-6 Runway Danger Markings

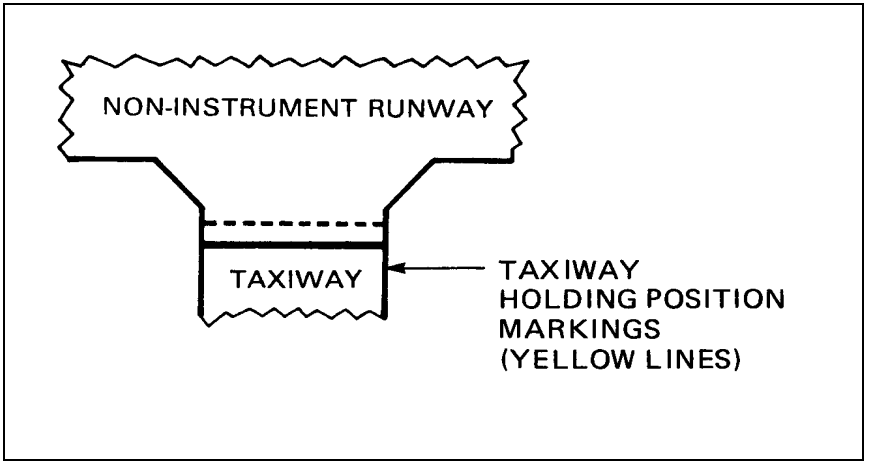

Figure 8-7 Taxiway Holding Markings

14. There are holding position markings between the taxiway and runway. These are yellow lines as illustrated in Figure 8-7. A holding position is like a stop sign placed at an intersection.

AERODROME CRASH AND EMERGENCY RESPONSE

15. Major airports have extensive crash and emergency response equipment and personnel. There are usually firefighting vehicles and ambulances in place. Firefighters are equipped with personal air packs and fire-resistant clothing. They undergo constant training and upgrading to remain proficient in their work. The fire trucks are equipped with water and often foam for extinguishing fuel fires. As well as working in an emergency response function, firefighting personnel also function in an ongoing fire prevention capacity.

CHECK YOURSELF

Here are some more questions. These questions will help you to review this chapter. You should answer these questions in your notebooks. The answers to the questions will serve as a quick and permanent reference for you, as well as a good review.

1. Match the words to their correct definition.

a. Runway	(1)	Aircraft shelter where maintenance is also done.
b. Taxiway	(2)	Path used by the aircraft to get to the runway.
c. Tarmac	(3)	Location of the air traffic control service.
d. Hangar	(4)	Aircraft use it as an outdoor parking lot.
e. Control Tower	(5)	Used for take-offs and landings.

2. What do the numbers on the end of runways represent?

3. Describe the three runway markings you learned in this chapter.

4. Obstacles are identified by what colour lights?

5. The control tower is identified by a white rotating beacon. The device must be lit at what times?

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AIRFRAME STRUCTURES

CHAPTER 9

PERFORMANCE OBJECTIVE 415

AIRFRAME STRUCTURES

SECTION 1

AIRCRAFT COMPONENTS

1. The airframe is the structure of the aircraft without engines or other power producing components. To allow for easier construction, assembly, dismantling and maintenance the airframe is made up of several separate parts.

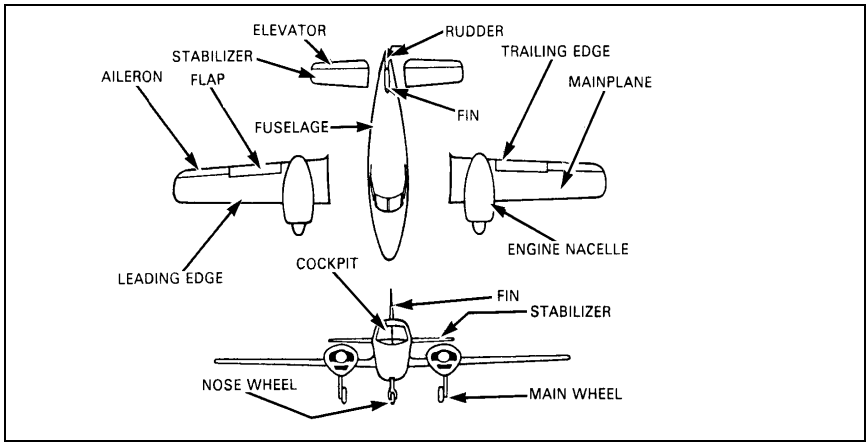

Figure 9-1 Aircraft Components

FUSELAGE

2. The fuselage is the body of the aircraft to which other parts, such as mainplanes (Wings), the tail unit and landing gear, are attached. The fuselage contains the pilot's cockpit, or crew flight deck, passengers and/or freight. In military aircraft, provision may be made for various types of armament.

MAINPLANES (WINGS)

3. The fuselage is fitted with wings on the left and right. The primary purpose of the mainplanes is to support the aircraft in flight by providing most of the lift. The following components are attached to the wings:

a. **Ailerons.** They control the banking (rolling) of the plane from left to right. They are moved by operating the control column from side to side.

b. **Flaps.** They are surfaces attached to the rear of the mainplane. They are closer to the fuselage than the ailerons. The flaps provide increased lift and decreased speed. They are moved by operating a lever or hand-wheel in the cockpit and may be electric, hydraulic or manual.

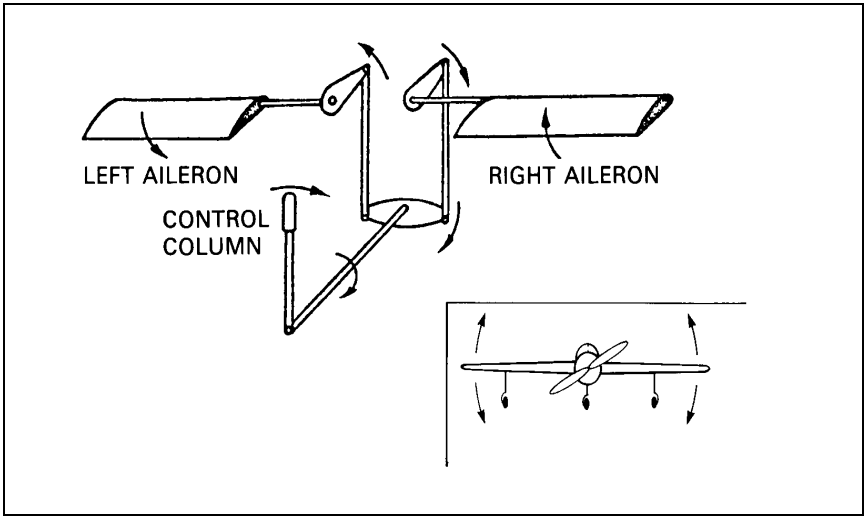

Figure 9-2 Aileron Control

EMPENNAGE (TAIL UNIT)

4. The tail unit reduces the pitching movement in flight. Pitching is the up and down movement of the nose and tail. The empennage consists of the following components:

a. **Fin.** The fin is the vertical part of the tail. The fin provides stability in much the same way that a rudder on a boat keeps the boat going in the desired direction.

b. **Rudder.** The rudder is a control surface used in controlling yaw. Yaw is the side to side movement of the aircraft. If you were to pass a long pin straight down through a model airplane and move the airplane around the pin, the movement would be yaw. The rudder is hinged to the fin and is operated by the rudder bar or pedals in the cockpit.

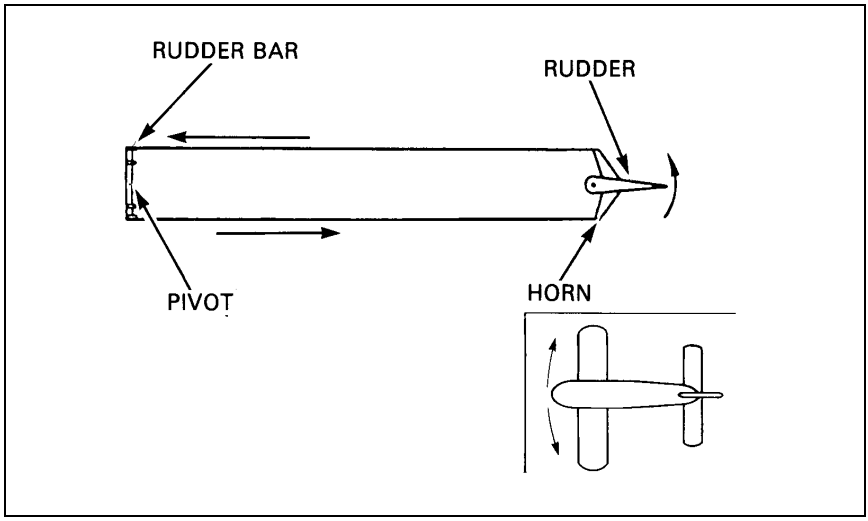

Figure 9-3 Rudder Control

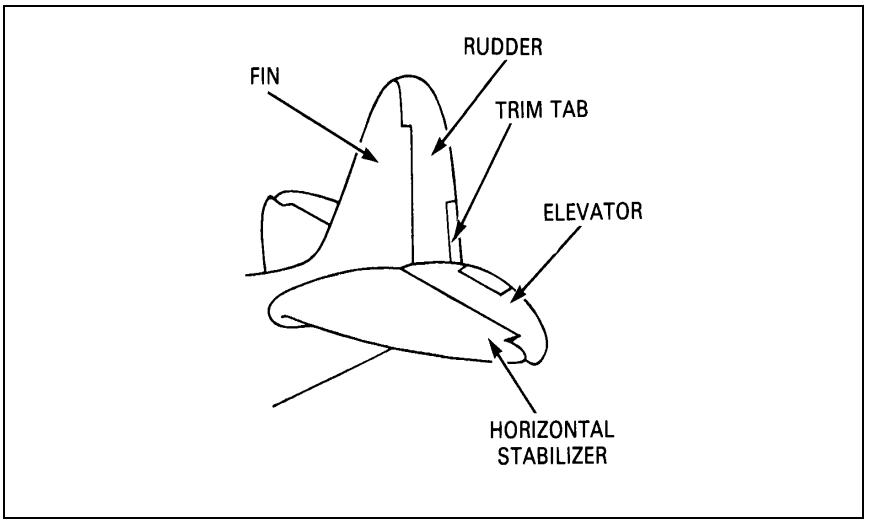

Figure 9-4 Tail Unit Assembly

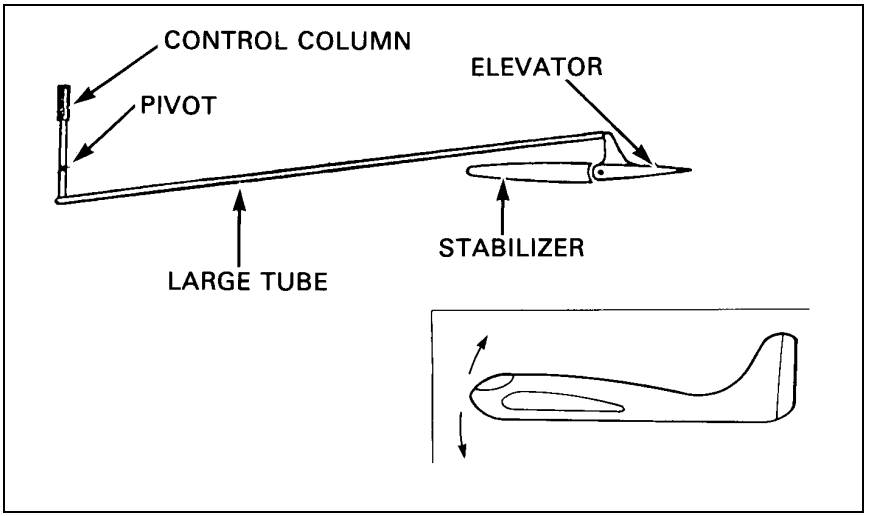

Figure 9-5 Elevator Control

c. **Tailplane (Horizontal Stabilizer).** The tailplane is the horizontal surface of the tail unit. The tailplane is shaped like an aerofoil.

d. **Elevators.** The elevators are movable surfaces that make the aircraft climb or descend. They are attached to the tailplane and are moved by operating the pilot's control column forward and backward.

LANDING-GEAR

5. The landing-gear supports the aircraft when it is on the ground and absorbs the shock of landing. All aircraft have main landing-gear under the main part of the fuselage or wings. The third wheel is usually under the nose of the aircraft. Such an arrangement is called tricycle gear. Sometimes the third wheel is under the tail; this is often called a tail-dragger. Some landing-gear are stationary while others are retractable.

NACELLE

6. The nacelle is the structure that contains the engine. It is streamlined and may contribute to the cooling of the engine. The nacelle may also house the landing-gear and other aircraft systems components.

SECTION 2

AIRCRAFT CONSTRUCTION

7. Aircraft construction has come a long way since the early days. Aircraft used to be built of wood and covered with fabric. Today, research has developed numerous alloys (mixtures of metals) from which aircraft are constructed. Strength and weight are the two most important factors in aircraft construction materials. A lightweight material that is also strong is best suited to aircraft construction.

8. The construction of fuselages is generally classified into one of three types. Each of these types is illustrated in Figures 9-6 to 9-8.

TRUSS CONSTRUCTION

9. The truss design is an assembly of members (supports) forming a rigid framework. This method of construction is used mostly on older fabric-covered aircraft.

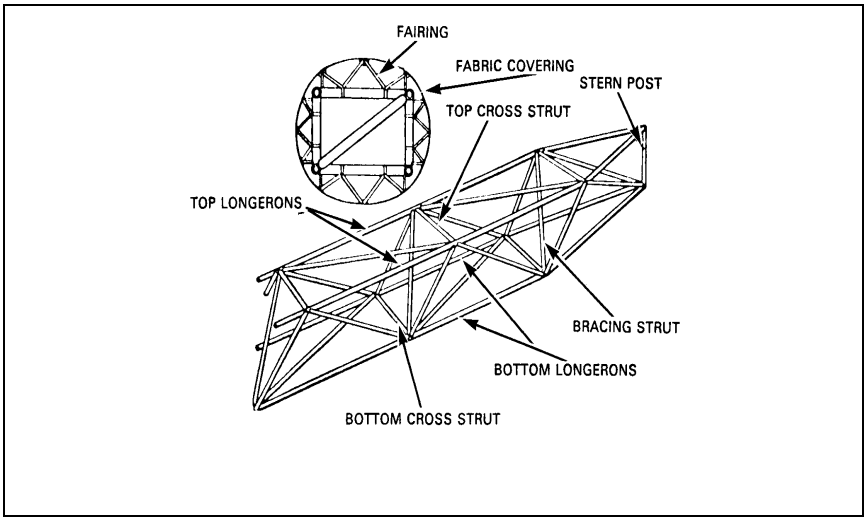

Figure 9-6 Truss Construction

MONOCOQUE CONSTRUCTION

10. The monocoque design involves the construction of a metal shell without internal framework. The reinforcements are vertical rings, station frames or bulkheads. This type of design is also called stressed-skin construction.

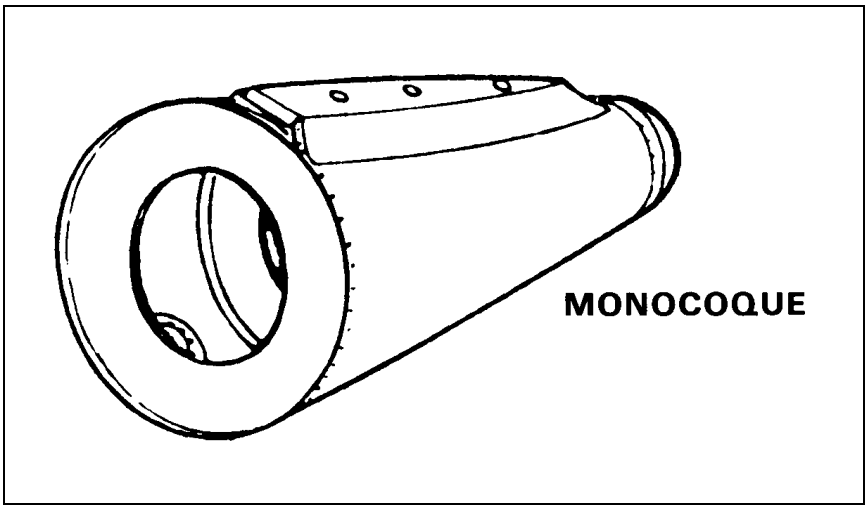

Figure 9-7 Monocoque Construction

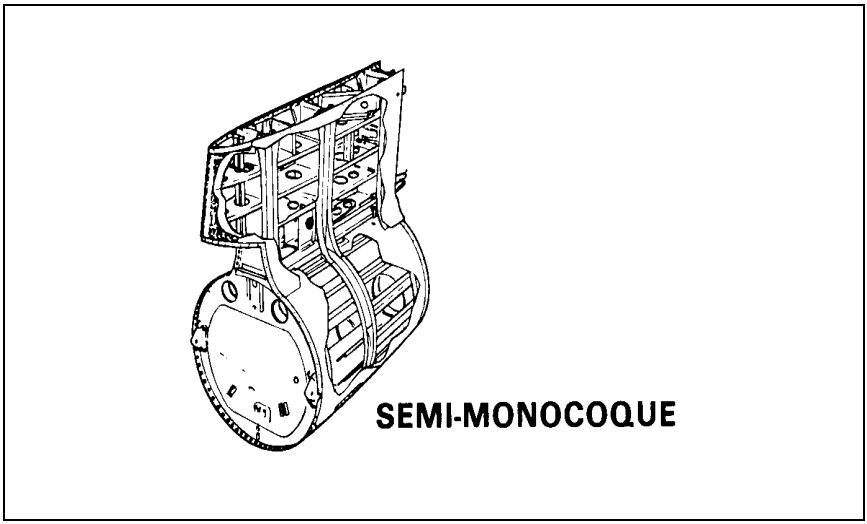

Figure 9-8 Semi-Monocoque Construction

SEMI-MONOCOQUE CONSTRUCTION

11. The semi-monocoque construction consists of a framework of vertical and longitudinal members (supports). These components are covered with a structural skin that carries most of the stresses placed on an aircraft while in flight. The longitudinal members are called stringers.

SECTION 3

AIRMANSHIP

GENERAL

12. Airmanship is skill in the handling and operating of airplanes on the ground and in the air. Airmanship is largely a matter of safety.

13. Airplane cleanliness is a part of airmanship. Dirt disguises defects, which makes them harder to detect: Dirt also creates friction, which decreases aircraft performance. Clean windows are an important factor when considering visibility and safety.

14. When an aircraft is taken for a flight, its pilot does a pre-flight check. This check or inspection ensures that the aircraft is airworthy and has no damage. Before take-off a run-up is performed. The run-up checks the engine, instruments and controls.

15. Complete maintenance records are maintained on every aircraft. These records document all maintenance, adjustments and alterations, as well as any problems encountered and all additions of fuel and oil.

CHECK YOURSELF

1. Define each of the flight controls from the descriptions that follow:

   a. Makes the aircraft's nose move to the left or to the right.

   b. Makes the nose of the aircraft move up and down.

   c. Makes the aircraft roll to the right or left.

2. What is the component that covers the engines to help in cooling and streamlining called?

3. Describe the location of the landing-gear in a tail-dragger.

4. The control column in the cockpit controls what two surfaces?

5. Material with what characteristics is best suited to aircraft construction?

6. In one word, why is airmanship important?

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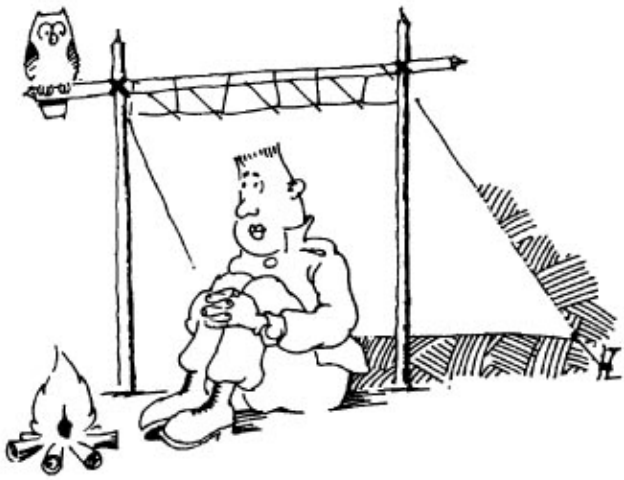
AIRCREW SURVIVAL



CHAPTER 10

PERFORMANCE OBJECTIVE 419

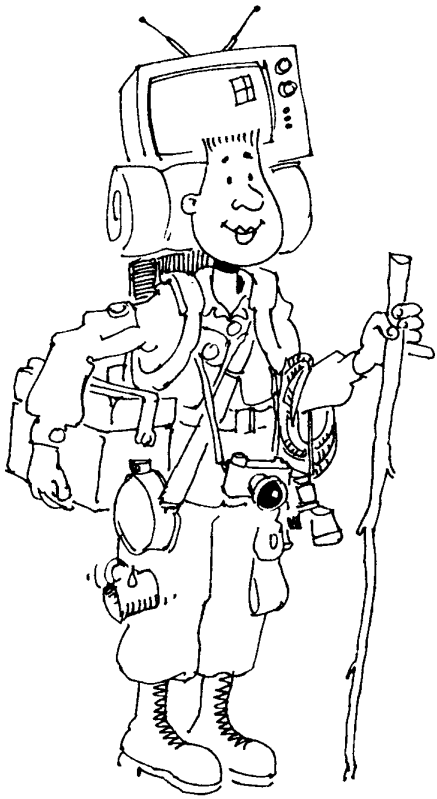
AIRCREW SURVIVAL

SECTION 1

INTRODUCTION

GENERAL

1. Survival is the art of staying alive. While you are in cadets you will likely have an opportunity to take part in several survival exercises. In no case will your well-being be threatened in any way. Cadet survival exercises are in reality, simulated survival situations. If you are properly prepared you will be reasonably comfortable during your stay at the survival training



2. You will be informed by the training personnel at your squadron exactly what you will need to take with you. The next few paragraphs will give you some assistance in preparing for your exercise. In order to enjoy maximum comfort it is important that you maintain your equipment and clothing properly.

SECTION 2

MAINTENANCE OF EQUIPMENT AND CLOTHING

CLOTHING

3. There is no hard and fast rule that can be applied to clothing. Generally, wool surpasses cotton because it sheds water and when it is wet it is less uncomfortable than cotton. A jacket or coat, moreover, is quite useless in the bush. Such articles of clothing are impractical because they catch in the brush. They are also drafty and take considerable time to dry if they get wet. A good pullover or coat sweater, therefore, is of far better value per pound of weight carried. A waterproof windbreaker may be added if conditions warrant.

4. Footwear is largely a matter of preference. The main point is to be sure of comfort and that the footwear is in a good state of repair. An unstitched boot in the bush can be a major tragedy. Socks, moreover, should be well fitted. Extra pairs of woollen socks should be carried.

5. Even in summer, some woodsmen carry a good pair of heavy gloves. Heavy gloves can be very useful when one is working with hot cooking utensils and also when handling certain kinds of thorny brush. A second pair of trousers is quite unnecessary. If the material is good, wool fabric the trousers will shed most of the water and dry quickly.

6. **Care of Clothing.** The following are applicable:

a. All items of clothing must be kept clean. Dirt from clothing reaches the skin; dirt and sweat from the skin soak into clothing. This may cause considerable irritation, and it is, therefore, important that underclothing be changed daily.

b. Change socks as often as possible. When laundering socks, use lukewarm water. Carefully rinse out all the soap, squeeze out the water, and gently stretch the socks into shape. Keep your socks in

good repair; mend holes as soon as they appear. Be careful not to burn or scorch your socks in front of a fire.

c. You must be sure that your boots are properly maintained. They must be kept soft and should never be placed too close to the fire.

d. Tears in shirts and sweaters should be mended as soon as possible. Replace buttons as quickly as they are lost. Buttonholes that enlarge can be tightened by sewing together one end of the hole. A wool sweater requires careful laundering in water no hotter than lukewarm to prevent shrinkage.

e. Try to keep grease and fuel off of trousers and other clothing.

7. **Wearing.** The following principles should be followed to be sure of maximum warmth from clothing during chilly or cold spells in the winter:

a. The first principle is keeping clothing clean. Dirty clothes are cold clothes. Dirt contains moisture and micro-organisms that, themselves, absorb more moisture from the atmosphere. Therefore, clothes worn in cold weather must be kept as clean as possible.

b. Avoid overheating. To stay warm, avoid getting hot. When clothing gets damp from perspiration, the spaces previously occupied by the excellent insulator, still air, become filled with heat conducting moisture, which allows body heat to escape.

c. Clothing must be loose and roomy. Layers of air between layers of clothing serve to warm the outside air gradually. If there is only one layer of air the outside is not warmed sufficiently. If clothing is tight, much of the insulating air will be squeezed out.

d. Keep clothing dry. Moisture can soak into clothing from two directions – inside and outside. Cadets must take every precaution to keep their clothing dry and to take every opportunity to dry clothing after it becomes damp.

SECTION 3

PERSONAL HYGIENE

8. Keeping healthy is an important factor for survival, so strict hygiene should be practised, not only personally but in the planning and running of a camp. Rubbish and latrines must be kept away from the camp to reduce the threat from flies and, since most of the common diseases in a survival situation are water-borne, pollution of drinking water must be rigorously avoided. Food scraps and other rubbish should be burned in the fire if possible.

9. Latrines should be dug downhill of the camp and away from the water supply so that there is no possible risk of seepage polluting either. Latrines and rubbish disposal should be well away from the camp – and preferably downwind – but not so far that it is inconvenient and people are tempted to go elsewhere.

10. **Ablutions.** The aim of personal hygiene is a daily bath. Whenever the daily bath is not possible, you must clean those parts of the body where dirt and sweat are particularly likely to collect:

a. hands – with particular attention to the fingernails;

b. feet – taking special care in drying thoroughly between the toes;

c. between the thighs and buttocks; and

d. the armpits.

11. **Hair.** Dirty and long hair is liable to harbour lice, which play an important part in the spread of serious diseases. Therefore, a short haircut is a good idea. Unkempt hair can also breed germs that cause serious skin conditions on other parts of the body, particularly the face, chest and back.

12. **Teeth.** To get full advantage from a toothbrush use it correctly, in brisk up and down strokes, from the gums to the biting edges of the teeth. A toothbrush should not be used in side to side scrubbing movements.

13. **Dressing.** In addition to keeping the body warm, underwear separates the skin from the heavy outer garments which, because of their weight and texture, cannot be washed frequently. Some people adopt the attitude, "What is not seen, does not matter". Dirty underwear means that

the skin is continually exposed to the risk of infection. Consequently, rubbing and chafing occur. This causes skin injury. Underwear, therefore, should be changed and washed at least every two days, and, if possible, every day. For health reasons, no clothes should be worn for 24 hours without being removed.

14. **Daily Bowel Movement.** The most important point about the movement of the bowels is regularity. If the desire to move the bowels is neglected through laziness the whole mechanism of bowel evacuation may become upset and serious constipation may result. The bowels then become clogged with waste matter, which poisons the system, and gives rise to headaches, lack of energy, and a feeling of general ill health. **REMEMBER – NEVER** urinate or defecate in or near your water supply

15. **Leisure and Recreation.** Physical exercise causes the individual to breathe deeply and to expand the lungs to the full. Not only does this keep the lungs in efficient working order but it also purifies the blood. Physical exercise also increases the tone of the muscles and nervous system. It develops a sense of rhythm and alertness, thereby increasing the health and efficiency of the whole body.

16. **Sleep.** At the end of the day, attention is again directed to personal ablution and a change of clothing. Fresh air is essential while sleeping. Attention must, therefore, be paid to the standard of ventilation.

CARE OF KNIVES

17. The knife should be kept sharp and carried in a stout sheath. Return it there immediately after use. Always position the sheath on your belt towards the back of your hip, since with the knife in the forward position it is possible that a fall could drive the knife into the groin.

18. Guard against loss by attaching a cord from the handle of the knife to your belt loop. Never throw your knife. It is ineffective when so misused and will probably be damaged or lost.

SECTION 4

FIRE

19. Fire is one of the basic survival requirements. It has among its uses:

a. providing warmth and comfort;

b. cooking food;

c. drying clothes;

d. keeping potentially dangerous animals away;

e. providing relief from insects;

f. signalling your position to parties searching for you; and

g. providing a great psychological lift to a person in a survival situation.

20. Three essentials are required to start and maintain a proper fire:

a. fuel,

b. air, and

c. heat.

21. Fires require oxygen. Ensuring that a fire is well ventilated will help maintain a hot, bright fire. Reducing air flow to the fire will cause the fire to burn more slowly and will use less fuel.

22. Smokey fires usually result when wet wood or green wood has been used. Smokey fires can be avoided by carefully following the steps outlined in this section on how to light a fire.

PREPARATION

23. The first step in making a proper fire is to ensure you have sufficient quantities of tinder, kindling and fuel. The (next step is to make sure that the fireplace you prepare can help control the fire. A fire that is used carelessly and is not under strict control can bring disaster.

24. **Tinder.** The first starter should be fine, dry, highly flammable material such as:

a. cotton fuzz;

b. paper fuzz;

c. absorbent cotton;

d. dry, dead grass, "witch's hair" or "old man's beard";

e. bird down;

f. powdery bird and bat droppings; and

g. dry, **ABANDONED**, bird or mouse nests.

25. Tinder absorbs moisture readily from the atmosphere and may be least effective when you most urgently require it. Keep your tinder dry! Always keep an eye open for tinder to collect.

26. **Kindling.** Birch bark, dry twigs, feather sticks and pitch, which is found on all evergreens, are all very good for starting fires. The wetter and colder the fuel, the more kindling you will need. Inexperienced personnel usually do not secure enough small kindling for starting the fire.

HOW TO MAKE A FEATHER STICK

FEATHER STICKS ARE MADE WITH DRY WOOD. WITH EITHER A KNIFE OR AXE, RAISE SHAVINGS ALONG ONE SIDE OF EACH STICK, LEAVING THEM ATTACHED TO THE STICK. LIGHT THE SHAVINGS WITH THE STICK SUPPORTED IN SUCH A POSITION THAT THE FIRE RUNS UP THE SHAVINGS AND PLAYS OVER THE STICK.

Figure 10-1 Feather Stick

27. **Fuel.** The most common form of fuel is wood. Softwood (coniferous) makes a quick, hot fire but burns rapidly. Hardwood (deciduous) makes a hot, steady fire. Hardwood can be identified in summer as trees with broad leaves, as opposed to softwood trees which generally have needles. In winter hardwood trees lose their leaves while softwood trees remain green.

28. Sources of dry wood for fuel are dead branches, cores of dead stumps, and driftwood. In summer, the best source of fuel is resinous twigs. Other sources of fuel are dead branches from wood shrubs, dry lichens, dry grasses and their roots.

OTHER SOURCES OF FUEL

29. At times, wood may be scarce or unavailable. If this is the case, other possible sources of fuel must be found. Some of these may be:

a. animal droppings (dried);

b. peat;

c. coal; and

d. fat.

30. Construct the fire site as follows:

a. In a forested country, try to dig down to bare ground and make a base formed of green logs.

b. Do not build a fire directly under low hanging branches.

c. Lay cooking fires in trenches or hollows.

d. Choose a fire site with care.

31. Lay the fire as follows:

a. First make a little heap of shavings or twigs and some pitch.

b. After touching it off, add more and larger bits of kindling as soon as the flame shoots up.

c. Stack the added kindling in teepee fashion or lean it over the fire against a rack or a log.

d. Lay big pieces in the fire when the kindling pile is big enough to support them.

e. Keep the sticks close together so the flame licks from one to the other. Do not pack the wood so tightly that the draft is shut off.

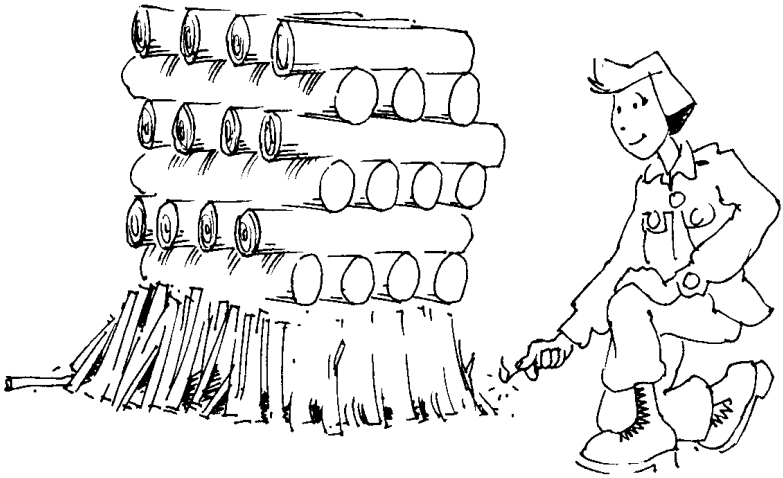
f. If, when endeavouring to light the fire, the first match blows out, do not throw it away. Split it into slivers and twist them around the second match just below the head.

g. For successful fire building, you must remember the fire burns upwards and needs air.

h. Fires should be small, and should be used by small groups.

j. A small fire allows closer approach than a larger one and requires less fuel.

k. A fire should be lighted downward.



32. **Campfire Do's.** The following are applicable:

- Equip yourself with a shovel and/or pail before you light your fire.
- Prepare your fire site by removing all leaves, twigs and other flammable material from an area extending at least 3 feet around the fire and down to mineral soil.
- Build your campfire at least 10 feet away from any log, stump, snag or standing tree.
- Build your fire at least 50 feet from any structure or flammable debris.
- Always attend your fire and be certain it is fully extinguished before leaving it.
- Get permission to have a campfire on private or public land.

33. **Campfire Don'ts.** The following are applicable:

- Do not start a fire where the Forest Service, a property owner or a tenant has posted a notice prohibiting fires.
- Do not start a fire when a strong wind is blowing.
- Do not build a fire bigger than necessary. The best cooking fire is small and hot.
- Do not build a fire larger than 4 feet in diameter and 3 feet high at any time.

- Do not leave your fire unattended. Escaped campfires can become costly forest fires.

- Do not place wet or porous rocks and stones near fires, especially rocks that have been submerged in water – they may explode when heated.

METHODS OF STARTING A FIRE

34. **Starting a Fire.** The following are applicable:

a. **Matches/Lighter.** Of course, the easiest way to start a fire is by the use of matches or a lighter. However, the use of disposable butane/propane lighters should be discouraged near campfires. One disposable lighter can have the effect of a stick of dynamite if ignited by a burning ember from a fire. If this happened while the lighter was in a pocket, the result could be permanently crippling!

b. **Flint and Steel.** This is an easy and reliable method of fire lighting. If the sparking metal flint on the bottom of the fire tablet case is available, use a knife blade or similar piece of steel to scrape a spark from the flint into a tinder nest of cotton batting, scraped cotton cloth or scraped paper fluff.

c. **Battery.** A small fire can be ignited by the use of a battery and some steel wool. Connect the ends of a small battery (D cell) with some steel wool. The steel wool will start to burn. You can use the burning steel wool to ignite your kindling.

d. **Magnifying Glass.** A magnifying glass can be used to focus the sun's rays on a piece of dry wood or paper. The wood or paper will begin to get hot and will ignite. Of course, you can only use this method on a sunny day.

SECTION 5

GARBAGE DISPOSAL: WET AND DRY

35. As good citizens we all have a responsibility to protect the environment. If you go into the woods be sure to dispose of your waste properly. All dry garbage should be burned as it is created and a pit of ample dimensions should be dug for the burial of wet garbage. When camp is broken, the pits should be filled in, both as a measure of safety and to prevent odors. Such pits should be dug downwind from the kitchen. Care should also be taken to locate them where there is no danger of contaminating the water supply through pollution caused by seepage. The pits should be clearly marked either "wet" or "dry."

36. **Restriction.** Due to the current emphasis upon ecology, the burning and burying of solid wastes may not be permitted in particular areas. Arrangements must be made to pack out the waste. **PACK IT IN, PACK IT OUT.**

SECTION 6

SURVIVAL PSYCHOLOGY

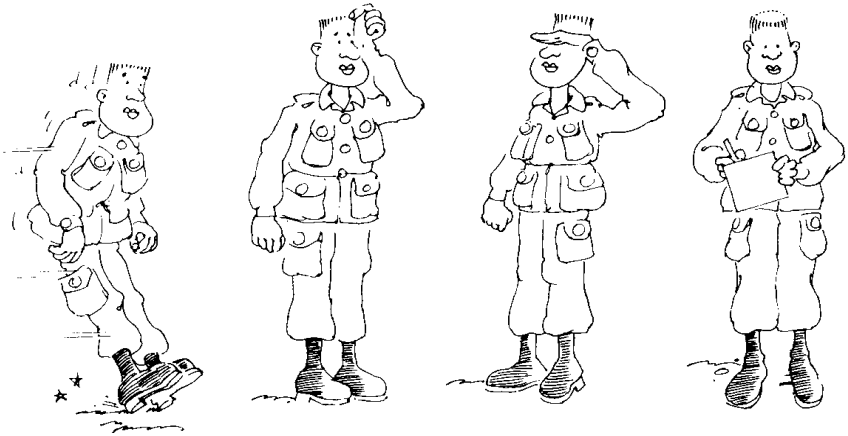
37. Upon finding yourself in an emergency situation you must not act without careful consideration of the results. If you become lost you should remember the following steps:

a. **STOP.** The body is designed to carry out three main functions: digest food, do work, or think. It does not do any two of these functions very well at the same time. Hence the need to stop so you can think. By stopping to think you may avoid the errors of hasty decisions.

b. **THINK.** Think about the immediate and future danger to yourself. Analyse the weather, the terrain, and the available energy and resources to sustain life.

c. **OBSERVE.** Look around you, observing the problem for possible solutions. Observe resources, weather potential, and the best possible course of action.

d. **PLAN.** After thinking and observing all aspects of your emergency, plan a course of action that will best use your limited available energy. Plan your activities, whatever they may be, to take advantage of the natural and ready resources.

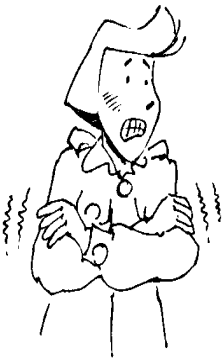


SEVEN ENEMIES OF SURVIVAL

38. Pain, cold, thirst, hunger, fatigue, boredom and loneliness – everyone has experienced these, but few have known them where they have threatened survival. In the survival situation, the feelings of pain, cold, etc, are no different from those experienced elsewhere; they are only more severe and more dangerous. With these feelings, as with fear, the more you know about them and their effects on you, the better you will be able to control them, rather than letting them control you.

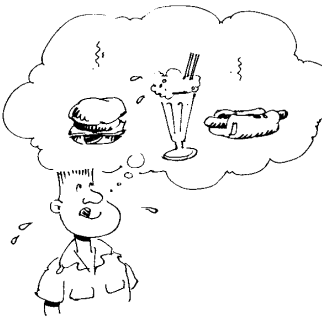
39. **Pain.** Pain is Nature's way of making you pay attention to something that is wrong with you. However, Nature also has ways of holding off pain if you are too busy doing something else to pay attention to the injury right then. Pain may go unnoticed if your mind is occupied with plans for survival. On the other hand, once given in to, pain will weaken the drive to survive. Pain can get the best of you if you let it, even if it is not serious or prolonged. A special effort must be made to keep your hopes up and to keep working.

40. **Cold.** Cold is a much greater threat to survival than it sounds. It not only lowers your ability to think, but it also tends to lower your will to do anything but get warm again. Cold is an insidious enemy; at the same time that it numbs the mind and body, it numbs the will. Because it is hard to move and you want to sleep, you can forget your goal... to survive.



41. **Thirst.** Thirst is another enemy of survival. Even when thirst is not extreme, it can dull your mind. As with pain and cold, thirst can be almost forgotten if the will to survive is strong enough. It is also important to remember not to deprive oneself unnecessarily of water. Serious dehydration may occur in a survival situation even when there is plenty of water available.

42. **Hunger.** Hunger is dangerous because of the effects it can have on the mind, primarily in lessening the person's ability for rational thought. Both thirst and hunger increase a person's susceptibility to the weakening effects of cold, pain and fear.



43. **Fatigue.** Even a very moderate amount of fatigue can reduce mental ability. Fatigue can make you careless – it becomes increasingly easy to adopt the feeling of just not caring. This is one of the biggest dangers in survival. The confused notion that fatigue and energy use are directly related may be responsible for many deaths in survival situations. Certainly, there is a real danger of over-exertion, but fatigue may actually be due to hopelessness, lack of a goal, dissatisfaction, frustration or boredom. Fatigue may represent an escape from a situation that has become too difficult. If you recognize the dangers of a situation, you can often summon the strength to go on.

44. **Boredom and Loneliness.** Boredom and loneliness are two of the toughest enemies of survival. They are dangerous mainly because they are unexpected. When nothing happens; when something is expected and does not come off; when you must stay still, quiet, and alone, these feelings creep up on you.

SECTION 7

OTHER HINTS AND HELP

WATER

45. Food is not, as many people think, an immediate necessity for survival. People can exist for some time on nothing but water and their own body fat. Water is essential for survival. About half a litre (two cups) is considered to be a normal minimum daily requirement.

46. On the average, a person will lose between two and three litres of water per day. When you exert yourself, water loss is increased through perspiration and an accelerated respiration rate.

HOW TO RETAIN FLUIDS

47. The following steps should be taken to minimize fluid loss:

a. do not exert yourself – rest as much as possible;

b. do not smoke;

c. try to keep cool by staying in the shade;

d. do not lie where the ground or surface is hot;

e. do not drink alcoholic beverages as it diverts fluids from the vital organs to digest them;

f. avoid talking, and breathe through your nose not your mouth; and

g. try to eat as little as possible, as water will be taken from the vital organs in the digestion of food thereby further increasing dehydration. Ingestion of fat, especially, should be avoided as it requires a lot of fluid to digest.

WATER SOURCES

SUMMER	WINTER
• FAST RUNNING STREAMS • DIGGING INTO MOIST SOIL • LAKES (WELL DRAINED)	• MELTED SNOW AND ICE (DO NOT EAT SNOW – MELT IT FIRST – EATING SNOW DEHYDRATES YOUR BODY)

TO PURIFY WATER: FILTER OR SKIM, THEN BOIL 3 TO 5 MINUTES.

48. Salt is essential for survival. A normal diet would include approximately 10 g of salt per day. However, when the body loses salt, through sweat and urine, faster than it is taken in, problems may surface. As well, physical activity will increase this loss. The first evidence of a salt deficiency comes in the form of muscle cramps, dizziness, nausea and fatigue. A simple remedy is to drink a pinch of salt with a pint of water.

EDIBLE AND NON-EDIBLE PLANTS

49. In addition to hunting and fishing, plants can be a valuable part of a diet in the wilderness. Plants are important as sources of vitamins and other nutrients as well as a method of breaking the monotony of fish and game.

50. This section is not intended to give you a concise guide to all plants. It is an introduction only. You should not eat any plants until they are carefully identified by an instructor. You will never **HAVE** to eat any wild plants while on a cadet exercise.

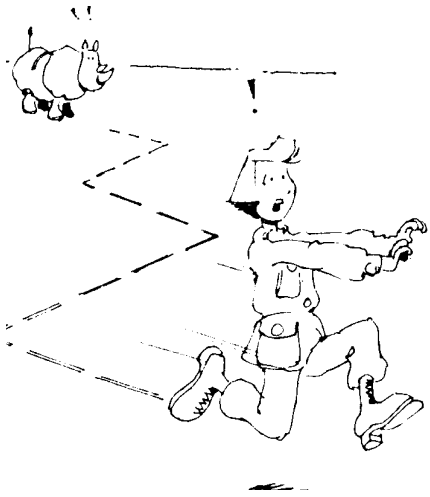
51. Mushrooms should always be avoided. Some mushrooms are excellent to eat, but others that seem very similar in appearance are deadly. Mushrooms have no nutritional value so it is best to avoid them entirely.

52. Many excellent books exist that will describe the edible wild plants in your area. Check your library or bookstore for books that apply to your geographic location.

SNOW BLINDNESS

53. **Snow Glare.** The reflection of the sun's rays by the snow, can be very bright and may cause snow blindness. Wear goggles for protection or, if you don't have any, make a blindfold from cloth or bark with narrow slits cut for the eyes.

CONFRONTATIONS WITH DANGEROUS ANIMALS



54. Maintaining a campfire will keep dangerous animals away from your camp area. Loud noises, such as shaking a rock in a tin, also act as a deterrent for unwanted guests. However, if you should come face to face with a large animal, remain calm. Remember it will probably be more frightened than you are. Stand still, then slowly back off. It most likely will too.

55. If you have to run, run in a zig-zag – animals such as rhinos charge in a straight line and have poor eyesight. Of course, it is not likely you will come across a rhino in Canada!

56. Sometimes just moving out of the way will make the animal feel less threatened. You might have been standing on its path.

57. As a last resort, climb a tree. Be prepared to hang around for a while if the animal is really interested in you.

CAMP DISCIPLINE

58. The following are some simple yet important points to remember that will make your stay at the survival exercise site more pleasant and comfortable

a. The premises should be kept neat and tidy; everything should have a storage place. For example, hook cooking utensils, cups, etc, on tree branches. Everything should be kept off the ground where it will get dirty.

b. Spare clothing and equipment should be stored in the shelter to avoid getting them wet or destroying them.

c. To avoid evaporation or dehydration, replace the lids on water bottles and containers immediately after use.

d. Food should be kept covered and off the ground, as well as away from tree-dwelling animals.

EMERGENCY RATION PACK

59. If you carry an emergency ration pack be careful not to consume it on the first day. You may have the urge to use emergency rations as soon as you get hungry. You must control this urge and begin getting your food from the environment as soon as possible. It is wise to keep any empty containers – you may have to collect rain or melt snow.

421

RANGE

CHAPTER 11

PERFORMANCE OBJECTIVE 421

RANGE

SHOOTING SAFETY

This PO will be amended as soon as the final approved documentation as it relates to the Air Riffle is available.

1. The most important principles the beginning shooter should learn are those concerning safety. Therefore, before individuals are exposed to the use of firearms they must have a thorough understanding of how to handle firearms safely.

2. Your squadron may or may not have range facilities available but at some time in your first year at cadets you will have the opportunity to visit a range facility. Every individual who enters the range is responsible for knowing the range orders. These are usually posted in the range or just outside the door and you must read them prior to participating in any range activity. The following rules should be strictly followed at all times when handling firearms:

a. Treat each rifle as if it were loaded. If it is passed to you, immediately check to see if it is loaded.

b. Follow all commands given by the range officer.

c. Always hold the rifle so that it is pointed in a safe direction. Usually this is in the air or down range. **NEVER POINT A RIFLE AT ANYONE.**

d. Be sure of your target before you shoot.

e. Be sure of your backstop (the area behind your target).

f. Never point a rifle at anything you would not want to shoot.

g. Do not climb trees or fences with a loaded rifle.

h. Shooting at hard flat surfaces and water causes ricochets. Never shoot at these.

3. All shooters must protect their hearing. Ear muffs or ear-plugs must be worn at all times when shooting is in progress. The sound from a .22 rifle can damage hearing.

4. Most of you will be handling a No. 7 rifle, Lee Enfield 303 converted to a .22. The number .22 refers to the width of the ammunition that is used. Before shooting, it is important to know the parts of a rifle and their function. You must be able to strip a rifle and assemble it without damaging any parts. You will be required to do this when cleaning the rifle.

5. As you start stripping the rifle, lay the parts out from left to right to assist in naming the parts and assembling the rifle:

a. **Identification.** See that the serial number on the bolt is the same as the number on the left side of the body. The rifle will not shoot accurately with the wrong bolt in it.

b. **Remove the sling.**

c. **Remove the bolt.** The bolt must be drawn back until the bolt head coincides with the bolt release slot on the right side of the body. With the fingers of the left hand, raise the bolt head upwards and with the right hand withdraw the bolt from the rifle.

6. Check Figure 11-1 to see where the different parts of the rifle are. It is important that you are familiar with all the parts so that when you are instructed to do something with the rifle you will know where to look to get it done. As well, you should have an understanding of what makes the rifle function. These functions can be broken down into different actions:

a. **Primary Extraction.** When raising the bolt lever, the bolt turns, and the stud on the cocking place moves from the long cam groove at the back of the bolt to the short, pulling the striker back 1/8-in. The lug under the bolt moves down a sloped slot in the left side of the body of the rifle, pulling back the bolt and the cartridge case about 1/8-in.

b. **Extraction and Ejection.** When pulling back the bolt, the extractor draws the cartridge case out of the chamber and ejects it. To eject the cast cleanly, pull the bolt back sharply.

c. **Feed the Round.** Insert one .22 calibre round into the chamber.

d. **Cocking Piece.** As the bolt goes forward the full bent of the cocking piece meets the nose of the sear, which stops the cocking piece and striker from going any further forward, and compresses the main spring inside it.

e. **Locking Action.** When turning the bolt lever down, the rib of the bolt slides over the resisting shoulder on the right of the body. The lug on the bolt slides into the sloped slot in the left of the body. This finally closes and locks the breech.

f. **Trigger Pressures.** When firing the rifle you will discover there are two trigger pressures. The first squeeze of the trigger brings the nose of the sear to the full bent of the cocking piece. The second pressure releases the cocking piece.

g. **Safety Catch.** When the safety catch is applied, the cocking piece and bolt cannot move.

7. **To Assemble the Rifle.** The following should be observed:

a. **Bolt.** Make sure the serial number on the bolt and the number on the file are the same. Make sure the bolt head is screwed up and that the cocking piece and lug are in line. Put the safety catch forward. Insert the bolt and push it forward until the bolt head lies opposite the gap in the body. The bolt head must be turned downwards into the gap and held down while the bolt lever is pushed fully forward and downwards.

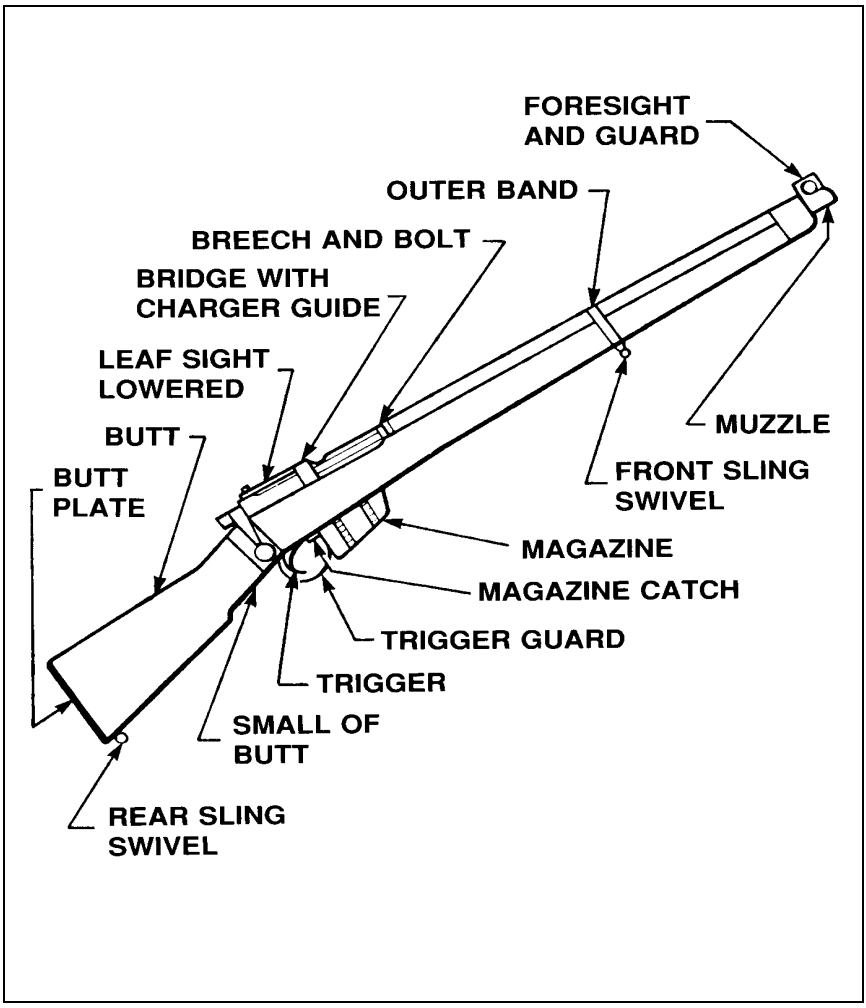


Figure 11-1 Rifle Parts

b. **Press the Trigger.** To do this, hold the small of the butt firmly with the right hand, with the forefinger on the lower part of the trigger. Press gently and feel a check, which is the end of the first pressure; go on pressing (the second pressure) until the cocking piece goes forward.

c. Apply the safety catch by turning it to the rear, keeping the bolt lever down with the fingers.

d. If the cocking piece stays half-way forward (the half cock), pull it back, open the breech, see that the chamber is clear, close the breech and press the trigger. If the half cock occurs when shooting, pull the cocking piece back and go on firing.

e. Replace the sling.

CARE AND CLEANING

8. The efficiency of a rifle depends on two factors: the care given to the rifle and the skill of the firer. Daily cleaning and maintenance are necessary so that the rifle will operate efficiently.

9. Before cleaning, the rifle must be stripped. Assemble all the equipment you will need before starting the cleaning process. You will require:

a. a pull-through rod;

b. flannelette pieces (approximately 4 in. by 1-1/2 in.); and

c. oil.

10. Assemble the pull-through rod by screwing in the jag. The jag provides a small hole for the flannelette to be secured to the pull-through. Push the rod into the muzzle until it appears in the breach. Attach the flannelette to the jag and pull the rod up through the barrel.

11. Examine the barrel and chamber. The best method of examining the barrel is to hold the muzzle end close to the eye with the breech open and against a light background in such a manner that light is reflected up the barrel. While looking through the barrel, rotate it slowly. Avoid looking through the barrel instead of looking into it.

12. Pull a clean, slightly oiled piece of flannelette through the barrel. Using the jag, slightly oil the chamber. Repeat the pull-through process with a clean piece of flannelette.

13. Wipe dirt and dust from all parts of the rifle and apply a light film of oil. Remove all dirt from all parts of the rifle and oil the bolt slightly. If the climate is dry and dusty, however, leave the bolt dry. Reassemble the rifle.

RANGE ORDERS AND PROCEDURES

14. There are orders and procedures to follow on the range and it is extremely important that everyone is aware of those rules and that they are followed. The following are some general rules regarding range orders and procedures:

a. No one will be allowed in front of the firing point while firing is in progress .

b. No one will load or adopt a firing position until ordered to do so by the supervising officer.

c. No one will be on the firing point except the shooters and those detailed by the range safety officer (RSO).

d. There should be no shouting or loud talking in the range area.

e. To inspect targets, rifles will be unloaded and laid on the firing point: bolt open; bolt handles up. Only when the RSO is satisfied that all weapons are safe will anyone be allowed to move ahead of the firing.

f. All weapons should be inspected before being removed from the firing point.

g. After firing, live rounds will be separated from empty cases and collected.

h. After firing, all personnel will be gathered in one place and warned by the supervising officer that it is an offence to have live ammunition in their possession. The supervising officer will then inspect all weapons, and equipment and ask if the personnel have any live ammunition.

RANGE SAFETY ORDERS

15. When you receive an order on the range you must know what action to take There is a sequence of orders that must be followed prior to any rifle being fired. In an indoor range the orders are as follows:

a. **Take Post.** Shooters assume prone position. Ammunition is Issued.

b. **Load.** Shooters load a single round into the rifle chamber and close the bolt.

c. **In Your Own Time Fire.** Shooters commence firing in their own time.

d. **Cease Fire.** Rifles are lowered and safety catches are placed on.

e. **Unload.** All rifles are to be unloaded, laid down pointing at the butt with bolts to the rear and breech open, and sights folded down.

f. **Stand Clear.** Shooters will rise and remain behind the firing platform. The RSO will ensure that all rifles are safe and the bolts are pulled back.

g. **Examine Targets.** Shooters will examine or change targets. The RSO will ensure that the rifles on the firing point remain untouched while people are down range.

SHOOTING ESSENTIALS

16. **The Prone Position.** When you begin to shoot you will be asked to take the prone position. It will not feel comfortable until you have practised it a few times. The prone position is the best position to attain accurate aim and scores. The following are observed for the prone position:

a. the shooter lies to the left of the line of fire with the body forming a 5 to 15 degree angle from the line of fire;

b. the body is not twisted, but stretched out and relaxed. The spine is straight;

c. the left leg is nearly parallel to the spine, with the toes pointed inward;

d. the right leg is angled away from the spine at approximately 45 degrees and the knee is bent so the lower leg is almost parallel to the left leg. The toes are pointed outward;

e. the left elbow should be slightly to the left of the rifle;

f. the left arm, hand and fingers should be relaxed;

g. the sling may be high or low on the arm and adjusted so that it supports the weight of the rifle. No effort should be made to hold up the rifle with the left hand and forearm. The left hand is pushed forward against the handstop;

h. the right elbow is placed a comfortable distance away from the body and supports very little weight;

j. the right hand grips the stock with a comfortable amount of pressure; and

k. the butt plate is fitted snugly into the shoulder and is located in the same place for each shot.

LOADING AND UNLOADING

17. It is important to practise loading and unloading so that it becomes automatic. Your mind can then concentrate on actions that are not automatic, such as aiming and firing.

18. To load, perform the following:

a. push forward the safety catch and open the breech;

b. insert one round into the chamber;

c. close the breech, apply the safety catch and grip the small of the butt; and

d. wait for orders before processing.

19. If a stoppage or misfire occurs (ie, nothing happens when the trigger is pulled) identify yourself immediately to the RSO by raising your hand. The RSO will then proceed with the appropriate action for such an occurrence. **DO NOT** attempt to solve the problem yourself by opening the breech. Keep the rifle pointed down range.

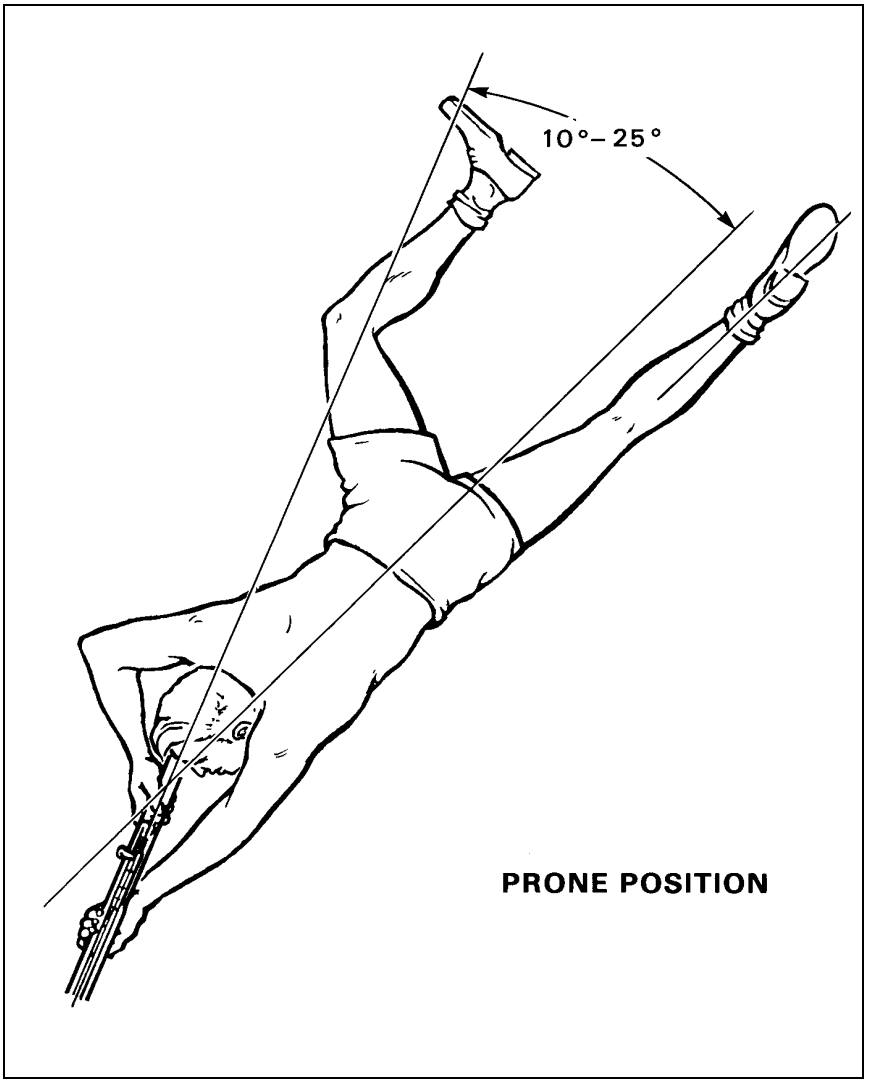


Figure 11-2 Prone Position – Overhead View

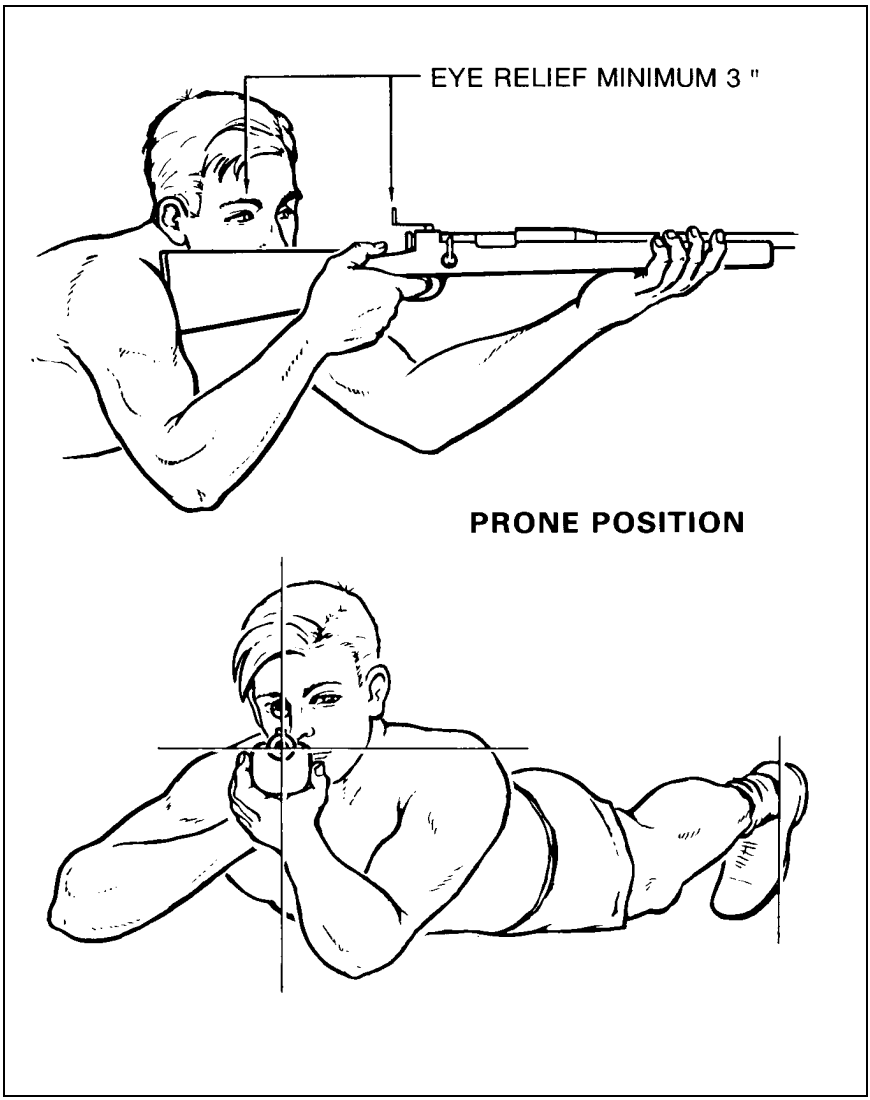


Figure 11-3 Prone Position Side/Front View

20. To unload, perform the following:

a. push the safety catch forward;

b. move the bolt quickly back and forward; and

c. press the trigger and apply the safety catch.

21. Your instructor will talk about some factors that affect shooting. Here are some essentials of marksmanship:

a. **Breathing.** It is important to breathe evenly when shooting. At the moment the shot is fired your lungs should be half empty. The procedure involves the following: aim; breathe in; and let the muzzle drop a little. You should then breathe out and bring the muzzle up. As the foresight reaches the aiming mark, fire the shot, if you are satisfied that the aim is correct.

b. **Trigger Control.** There are two pressures on the trigger. You should squeeze the trigger so as to avoid pulling the rifle and moving it from the aim you have chosen.

22. Many skills must be developed for good marksmanship. It takes time and practice and a great deal of self-discipline. If you are interested in developing your shooting skills ask your NCOs if there is a shooting team at your squadron.

CHECK YOURSELF

1. In one word, what is the single most important thing to remember when handling a rifle and while on the range?

2. List three safety rules that must be followed when handling a rifle?

3. What position must you be in when firing a rifle on the range?

4. How many pressures are there on the trigger?

5. Describe your action as a shooter upon receiving the following commands:

   a. TAKE POST;

   b. CEASE FIRE; and

   c. LOAD.

6. If your are passed a rifle, what should you do immediately?

7. List two essentials of marksmanship?