ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 4

EO M425.04 – DEVELOP AN EXPEDITION RATION PLAN

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Have the cadets bring their Expedition Duo-Tang.

Photocopy the *Eating Well With Canada's Food Guide* located at Attachment A and the Energy Expenditures for Physical Activity Information Sheet located at Attachment B for each cadet.

Photocopy the Expedition Ration Plan Information Sheet located at Attachment C for each cadet.

Photocopy Section 4 of the Expedition Planning Booklet located at Attachment D for each cadet.

Review the completed example of Section 4 of the Expedition Planning Booklet located at Attachment E.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen for TPs 1–4 as it introduces the cadets to developing an expedition ration plan.

An in-class activity was chosen for TP 5 as it is an interactive way for the cadets to confirm their comprehension of developing an expedition ration plan.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have developed an expedition ration plan while considering meal requirements, food options, food weight and nutritional value.

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IMPORTANCE

It is important for cadets to develop an expedition ration plan as it is a significant step in the process of planning an expedition. Being able to identify the different types of rations, their nutritional values and how the food is going to be packed and cooked, while considering the type of activities that are to be conducted, will aid in the overall success of the expedition. With a successful ration plan, cadets will have more time and energy throughout the day to fully participate in the expedition.

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Teaching point 1 **Discuss daily nutrition requirements when on an expedition.**

Time: 10 min Method: Interactive Lecture



This TP is intended to discuss nutritional requirements when on an expedition.

Distribute *Eating Well With Canada's Food Guide* located at Attachment A and the Energy Expenditures for Physical Activity Information Sheet located at Attachment B for each cadet for reference while describing the nutrition requirements and developing an expedition ration plan.

Basic nutrition must be kept in mind when planning expedition rations, as cadets typically burn many more calories on an expedition compared to most everyday activities. Ensuring an adequate amount of calories and nutritional balance helps to maintain energy levels and positive attitudes, as well-nourished cadets can think better and tend to make better safety-related decisions.

NUTRIENTS

Calories. A measurement of food energy. Required calories are based on the amount and intensity of expedition activities. When an individual's expedition activities change, their eating habits should reflect those changes. More calories are required as activity level increases.

Sodium. Most sodium in food comes from sodium chloride, which is table or sea salt. Salt is a common ingredient in processed and prepared foods. The appropriate amounts of sodium help maintain fluid and electrolytes balance when active.



Water is essential. Even a small amount of dehydration (one percent of body weight) can increase cardiovascular strain as indicated by a disproportionate elevation of heart rate during exercise and limit the ability of the body to transfer heat from contracting muscles to the skin's surface where it can be dissipated to the environment.

Carbohydrates. Primary sources of energy for the body. The types of carbohydrates are fibre, which is a complex carbohydrate, and sugar, which is a simple carbohydrate.

- **Complex carbohydrates.** Break down slowly and can help prevent overeating. They are found in vegetables, fruit, whole grains, brown rice, nuts, soy products and legumes.
- **Fibre.** A complex carbohydrate found in plants. Unlike other carbohydrates it passes through the body undigested and is healthy for the digestive system. Fibre provides energy for the muscles and brain.
- **Simple carbohydrates.** Break down quickly and can cause a person to become hungry quickly (quick high, quick low). They are found in sugary soft drinks, sugary cereals, white bread, white rice, cookies, candy, fries and pastries.
- **Sugars.** A simple carbohydrate. Natural sugars are found in foods such as milk, fruit and vegetables. Added sugars contribute calories, yet they have no significant nutritional value.

Protein. Found in a variety of foods such as meat, poultry, fish, legumes, nuts, milk products and grain products. It builds muscles, bones and teeth.

Vitamin C. Found in many fruits and vegetables. Helps the body fight infections.

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Iron. Found in foods such as meat, fish, poultry, grains, vegetables, fruit, nuts and seeds. Helps the red blood cells carry oxygen throughout the body.



The following personal daily nutritional guidelines must be adhered to:

- 50–80 percent should be carbohydrates,
- 10–15 percent should be proteins, and
- 30 percent should be fats (of which only 10 percent should be saturated fats).

CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. What are calories and why are they important when planning meals for an expedition?

Q2. What types of foods are proteins found in?

Q3. Why is important to include iron when considering nutrition requirements?

ANTICIPATED ANSWERS:

A1. A measurement of food energy. Required calories are based on the amount and intensity of expedition activities. When an individual's expedition activities change, their eating habits should reflect those changes. More calories are required as activity level increases.

A2. Proteins are found in a variety of foods such as meat, poultry, fish, legumes, nuts, milk products and grain products.

A3. Iron helps the red blood cells carry oxygen throughout the body.

Teaching point 2 **Discuss planning meals for an expedition.**

Time: 10 min Method: Interactive Lecture



This TP is intended to consider the people participating in the expedition when planning the meals.

When planning meals for an expedition, considerations need to be determined, such as nutrition, taste, perishability, cooking ease and cleanup. As well, the following aspects of the expedition and mealtimes also need to be determined.

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Type of activity. The average individual on an expedition will consume thousands of calories throughout the day, an important factor to remember when planning an expedition ration plan. Depending on the expedition activity, the following calorie consumption is to be considered:

- Activities such as moderate backpacking or canoeing will consume 2 500–3 000 calories per day.
- Strenuous activities such as difficult backpacking or snow camping will consume 3 000–3 500 calories per day.
- Very strenuous activities such as mountaineering or extended periods of time spent in cold weather requires 3 500–5 000 calories per day.

Number of people. For each meal, calculate the amount of cadets on the expedition and the amount of food that will be required for each. Count the total number of meals and categorize them as breakfast, lunch, dinner or snack.



Individuals consume from 1.5–2.5 pounds (.68–1.13 kg) of food per day. When planning meals and meal sizes for the expedition, the following per person, per day estimates are helpful:

- average activities require 1.5 pounds (.68 kg) of food,
- strenuous activities require 1.5–2 pounds (.68 to .91 kg) of food, and
- very strenuous activities require 2–2.5 pounds (.91 to 1.13 kg) of food.

Size of cooking groups. The decision needs to be made whether to cook in small groups or one large group, depending on the number of cadets on the expedition.

- **One large group.** Mealtimes with one large group can promote relaxation and a sense of community. Cooking in a large group ultimately saves weight, as the total number of stoves and pots to carry are minimized, however the actual cooking process tends to take longer to complete.
- **Several small groups.** Mealtimes with small groups tend to be more efficient and it enables more people to become more proficient cooks. Small groups can create a sense of separation unless cooking groups are rotated frequently.



Group leaders need to decide whether to cook and eat with the groups or alone. On a short trip or with young cadets, it makes sense for the leader to share food with the group. On a long trip or with more experienced cadets, it can be very productive for the group(s) if the leaders separate themselves. It gives cadets complete control of the quality and timings of the meals and a sense of independence.

Special meal requirements. When deciding what to eat at each meal, it is important to take note of food preferences (eg, vegetarians) and allergies within the group.

Helpful Tips

The following are helpful tips for when planning the rations and conducting mealtimes on an expedition:

- **Plan ahead.** While dinner is cooking, plan the food for the next day. Sort the food required for the next day while on the trail in one or two stuff sacks. Try to plan simple meals for long days and more complex meals on the easier days.
- **Eat often.** While conducting expedition activities, try to consume calories more efficiently by eating five times a day (breakfast, morning snack, lunch, afternoon snack and dinner).

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- **Pack individual snack bags.** Rather than having one large bag of trail mix, divide the large bag into individual snack bags the night before. This way, each person can snack throughout the day according to individual needs, rather than waiting for a group-determined snack break. It also limits the spreading of germs.
- **Keep snacks accessible.** Pack lunch and snacks in the top or side pockets of the expedition field pack for easy access.
- **Start slow-cooking food early.** Pre-soak foods that may take a long time to cook (eg, beans).
- **Oil the pot.** Prior to cooking starches or grains, rub the inside of the pot with margarine or oil. This makes cleanup easier and prevents liquids from boiling over.
- **Be creative with leftovers.** Think of ways to use leftovers (eg, leftover rice can be kneaded into bread dough, fried up with spices, or made into rice pudding by adding milk, sugar, raisins and nutmeg or cinnamon). Screw-top hard-plastic containers are useful for storing leftovers for later consumption.
- **Make hot drinks for more than one.** When making hot drinks, make a full pot for several cadets.
- **Drink, drink, drink.** Water helps digest food.
- **Use dried fruits and vegetables.** Rehydrated dried fruits and vegetables can make a bland meal seem almost gourmet.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. How many calories are consumed when conducting very strenuous activities?

Q2. How many pounds of food do cadets consume per day, on average?

Q3. What are the advantages to cooking as a large group?

ANTICIPATED ANSWERS:

A1. Very strenuous activities require 3 500–5 000 calories per day.

A2. Cadets consume from 1.5–2.5 pounds of food per day.

A3. Mealtimes with one large group promotes relaxation and a sense of community. Cooking in a large group ultimately saves weight, as the total number of stoves and pots to carry are minimized.

Teaching point 3 **Discuss the types and options of expedition rations.**

Time: 10 min Method: Interactive Lecture



This TP is intended to introduce the types and options when planning expedition rations.

Distribute the Expedition Ration Plan Information Sheet located at Attachment C for each cadet for reference while describing the types and options of expedition rations and developing an expedition ration plan.

EXPEDITION RATION TYPES

Whether conducting a menu plan or bulk rations for the expedition, there are five food types to consider when developing an expedition ration plan.

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1. **Freeze-dried.** A way to preserve food by freezing it and drying it by the sublimation of ice in a vacuum. Pre-packaged freeze-dried meals are very light to carry and allow for quick preparation with minimal cooking skills and time, however they tend to be more expensive (average $4–10 per meal) and tend to be less nutritious. There are many types of food that can be freeze-dried (eg, meat, pasta and vegetables).



Pre-packaged meals that are made for four people may actually only satisfy two very hungry people. Supplementing with additional rice or noodles may be required.

2. **Dehydrated.** Food that has had the water removed for preservation and storage (eg, fruit, vegetables and meat).

3. **Trail food.** Food that can be consumed while in the middle of an activity (eg, trail mix and granola bars).

4. **Fresh rations.** Food that has been store bought and is still fresh for consumption (eg, fruit, vegetables and meat).

5. **Individual meal packages (IMPs) and meals ready to eat (MREs).** Otherwise known as boil-in-the-bag. Each IMP and MRE include a main course (meat or vegetarian), vegetables and fruit in sealed foil pouches, and dried foods in paper/tinfoil pouches. All of the food items are safe to eat cold and dry—they may not taste as good as hot food, though. High sugar items like chocolate, hard candies and drink mixes, as well as coffee and tea are also included.

6. These types of meals were developed to meet a typical day's three meal requirement. These meals are identified as breakfast, lunch and supper and contain between 1400 and 1800 calories—enough calories for an adult performing strenuous tasks for prolonged periods.



Staple food is the chief element or a main component of a meal (eg, rice or noodles).

EXPEDITION RATION OPTIONS

Being able to develop an appropriate expedition ration plan is an important aspect of expedition planning, as the food consumed can dramatically affect the success of an expedition. There are two different expedition rationing options that are commonly followed when designing a ration plan.

Menu Planning



Ask the cadets questions about planning a menu to evaluate their level of knowledge.

Some sample questions may include:

- Have you planned meals for an expedition before?
- What factors did you have to consider when planning meals for an expedition?
- What type of meals did you plan for the expedition?

Menu planning systematically plans the contents of each meal over the course of the expedition. The advantages to menu planning are that there is an organized guide of each meal created to assist in preparation and it is a convenient way to plan for short expeditions (2–5 days).

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Steps of the Menu Planning System

The menu planning system has seven steps:

1. Determine the number of meals (breakfast, lunch, dinner and snacks) that are required for the expedition.

2. Identify items which can be eaten at each meal.

3. Decide specifically what to eat at each of the meals, taking note of food preferences and allergies within the group.



When deciding each meal, some helpful hints may include:

- packing fresh foods (fruits and vegetables) for the first day or two;
- freezing meat that will be thawed and ready to cook for dinner; and
- adding freeze-dried items which can add additional nutrition (eg, freeze-dried peas added into a pasta dish).

4. Estimate how much food will be needed at each meal to feed every cadet, while considering:

   a. how big the appetites will be,

   b. how strenuous the expedition will be, and

   c. the time of year.

5. Determine the total food required, based on the menu and generate a shopping list.

6. Purchase the food.

7. Repackage, prepare and pack the food for the expedition.

Bulk Rationing

Buy food in bulk based on the amount and weight of food consumed per day. The advantages to bulk rationing are that it provides opportunities for cooking creativity, allows easier calculations for caloric and nutritional levels and is more beneficial for longer trips. The bulk ration system tends to be more financially feasible, as cadets can eat plenty of delicious food for $3–6 a day.

Bulk food must be repacked into clear plastic bags or containers to reduce packaging and additional waste in the field. There are many foods that can be purchased in bulk to repackage for the expedition such as pasta, beans, rice, flour, cereals, nuts, dried fruits, sugar, soup bases and spices.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS:

Q1. What are the five types of expedition rations?

Q2. What are the two different expedition rationing options that are commonly followed when designing a ration plan?

Q3. What is the average cost per person, per day with the bulk ration system?

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ANTICIPATED ANSWERS:

A1. The five types of expedition rations are:

- freeze-dried,
- dehydrated,
- trail food,
- fresh rations, and
- IMPs.

A2. The two different expedition rationing options are menu planning and bulk rations.

A3. The bulk ration system tends to be more financially feasible, as cadets can eat plenty of delicious food for $3–6 a day.

Teaching point 4 **Discuss packing food for an expedition.**

Time: 5 min Method: Interactive Lecture



This TP is intended to discuss packing and distributing food prior to conducting an expedition.

Have examples of containers, pre-assembled meals and packed food for the cadets to view.

Once the expedition ration plan has been developed and the food has been purchased, the food must be pre-assembled and packed. The following steps simplify packaging, carrying and preparing food while on the expedition.

Strip away the packaging. Cardboard, paper, foil and cans are all excess weight and potential litter.

Select containers. Pack food in see-through bags and containers to allow the contents to be easily seen and selected without having to open the bag or container. Labelling or marking the bags or containers can also aid in selecting. Use bags or containers that are lightweight and are resealable. Examples of containers that can be used include:

- resealable plastic bags (or other strong bags that can be tied),
- resealable plastic containers,
- plastic bottles with screw-top lid, and
- squeeze tubes.



When labelling each container or bag, meal directions or ingredients can also be marked on the outside (eg, pasta directions or chili ingredients).

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Pre-assemble the meals. Pre-assembling most of the food prior to the expedition saves time and aids by having the meal preparation times go faster and smoother. Some examples of pre-assembling meals include:

- throwing all ingredients in a bag (called meal-in-a-bag) and cook when required;
- pre-soaking foods that require a longer time to cook (eg, beans); and
- dividing trail food into individual bags.

Develop storage for cold items. As some meals require foods to be chilled or frozen throughout the expedition, cold storage will need to be developed for those items. It is recommended that frozen or chilled items be used first to ensure they stay fresh. If this is not possible, a cold storage system needs to be developed. As groups are rarely stationary on an expedition, maintaining cold storage may be difficult, however some locations to store cold foods may include:

- ice packs and coolers,
- food barrels,
- in a river, lake or creek (ensure the container is sealed),
- in the snow, and
- with regular or dry ice (be careful when handling dry ice).

Divide items among group members. As repackaging consolidates food into a more manageable system of transport, it is easier to distribute the food among the group. When the food has been labelled, it is then distributed among group members. Keep the contents of one complete meal together with one person, as this allows for each meal to be found easily among the group.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS:

Q1. What are some examples of containers that may be used to pack and store food while on an expedition?

Q2. Why is it beneficial to pre-assemble most of the food prior to the expedition?

Q3. What are some locations that food can be stored in order to stay cold?

ANTICIPATED ANSWERS:

A1. Some examples of containers that can be used to pack and store food while on an expedition include:

- resealable plastic bags (or other strong bags that can be tied),
- resealable plastic containers,
- plastic bottles with screw-top lid, and
- squeeze tubes.

A2. Pre-assembling most of the food prior to the expedition saves time and aids in having the meal preparation time go faster and smoother.

A3. Some locations to store cold foods include:

- ice packs and coolers,
- food barrels,

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- in a river, lake or creek (ensure the container is sealed),
- in the snow, and
- with regular or dry ice (be careful when handling dry ice).

Teaching point 5 **Have the cadets, in groups of no more than three, develop an expedition ration plan.**

Time: 15 min Method: In-Class Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadets, in groups of no more than three, develop an expedition ration plan and record the information in the Expedition Planning Booklet.

RESOURCES

- *Eating Well With Canada's Food Guide* located at Attachment A (one per cadet),
- Energy Expenditures for Physical Activity Information Sheet located at Attachment B (one per cadet), and
- Expedition Ration Plan Information Sheet located at Attachment C (one per cadet),
- Section 4 of the Expedition Planning Booklet located at Attachment D (one per cadet),
- Completed example of Section 4 of the Expedition Planning Booklet located at Attachment E,
- Expedition Duo-Tang, and
- Pens / pencils.

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of no more than three.
2. Distribute to each cadet:
   a. Section 4 of the Expedition Planning Booklet, and
   b. Expedition Ration Plan Information Sheet.
3. Introduce the expedition ration guidelines, to include:
   a. meal requirements based on activity,
   b. food options,
   c. food weights,
   d. nutritional value, and
   e. packing and food distribution.
4. Have the groups read through the Expedition Ration Plan Information Sheet.

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5. Have the groups fill in the expedition ration information in Section 4 of the Expedition Planning Booklet using information gathered from the Expedition Ration Plan Information Sheet.

6. Have the groups share their answers. Refer to the completed example of Section 4 of the Expedition Planning Booklet as required.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 5

The cadet's participation in the activity will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

QUESTIONS:

Q1. What foods are vitamin C found in and why is vitamin C important to the body?

Q2. After determining whether to have large or small cooking groups, what other factors need to be considered when deciding how or where to eat as the leader?

Q3. What are the seven steps when conducting the menu planning system on an expedition?

ANTICIPATED ANSWERS:

A1. Vitamin C is found in many fruits and vegetables and helps the body fight infections.

A2. Group leaders need to decide whether to cook and eat with the groups or alone. On a short trip or with young cadets, it makes sense for the leader to share food with the group. On a long trip or with more advanced cadets, it can be very productive for the group(s) if the leader(s) separate themselves. It gives cadets complete control of the quality and timings of the meals and a sense of independence.

A3. The seven steps when conducting the menu planning system are:

(1) Determine the number of meals (breakfast, lunch, dinner and snacks) that are required for the expedition.

(2) Identify items which can be eaten at each meal.

(3) Decide specifically what to eat at each of the meals.

(4) Estimate how much food will be needed at each meal to feed every cadet.

(5) Determine the total food required, based on the menu and generate a shopping list.

(6) Go shopping for the food.

(7) Repackage, prepare and pack the food for the expedition.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

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METHOD OF EVALUATION

This lesson is assessed IAW A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 3, Annex B, 425 PC.

CLOSING STATEMENT

A well thought out ration plan can provide the required nutrients and energy levels required to successfully complete the expedition and achieve the goals and objectives that have been set out. As the ration plan is being developed it is also important to consider the types of activities, cadets and how the food is going to be packed and cooked. Creating a ration plan is a skill that can be applied when planning other overnight activities.

INSTRUCTOR NOTES / REMARKS

Nil.

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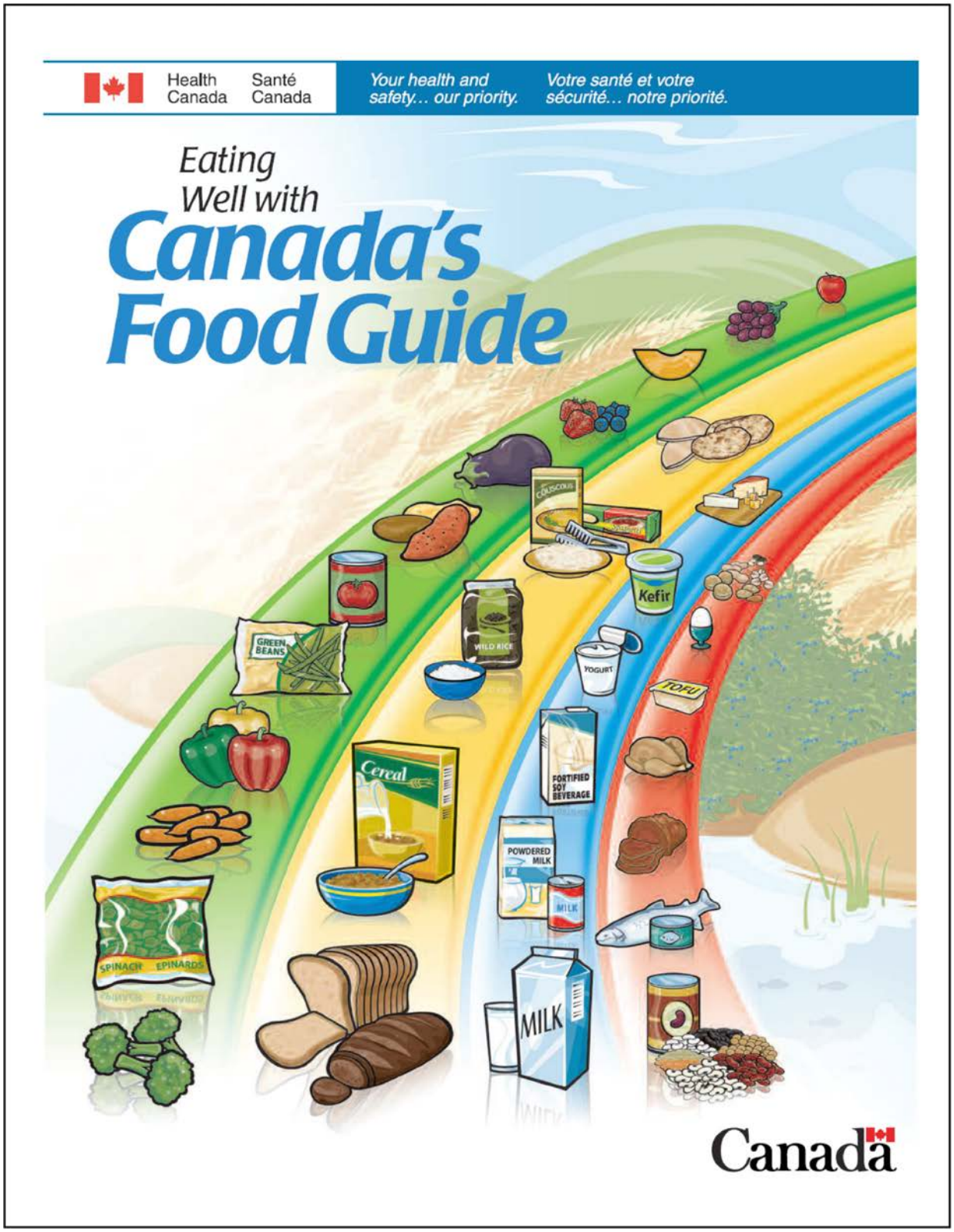

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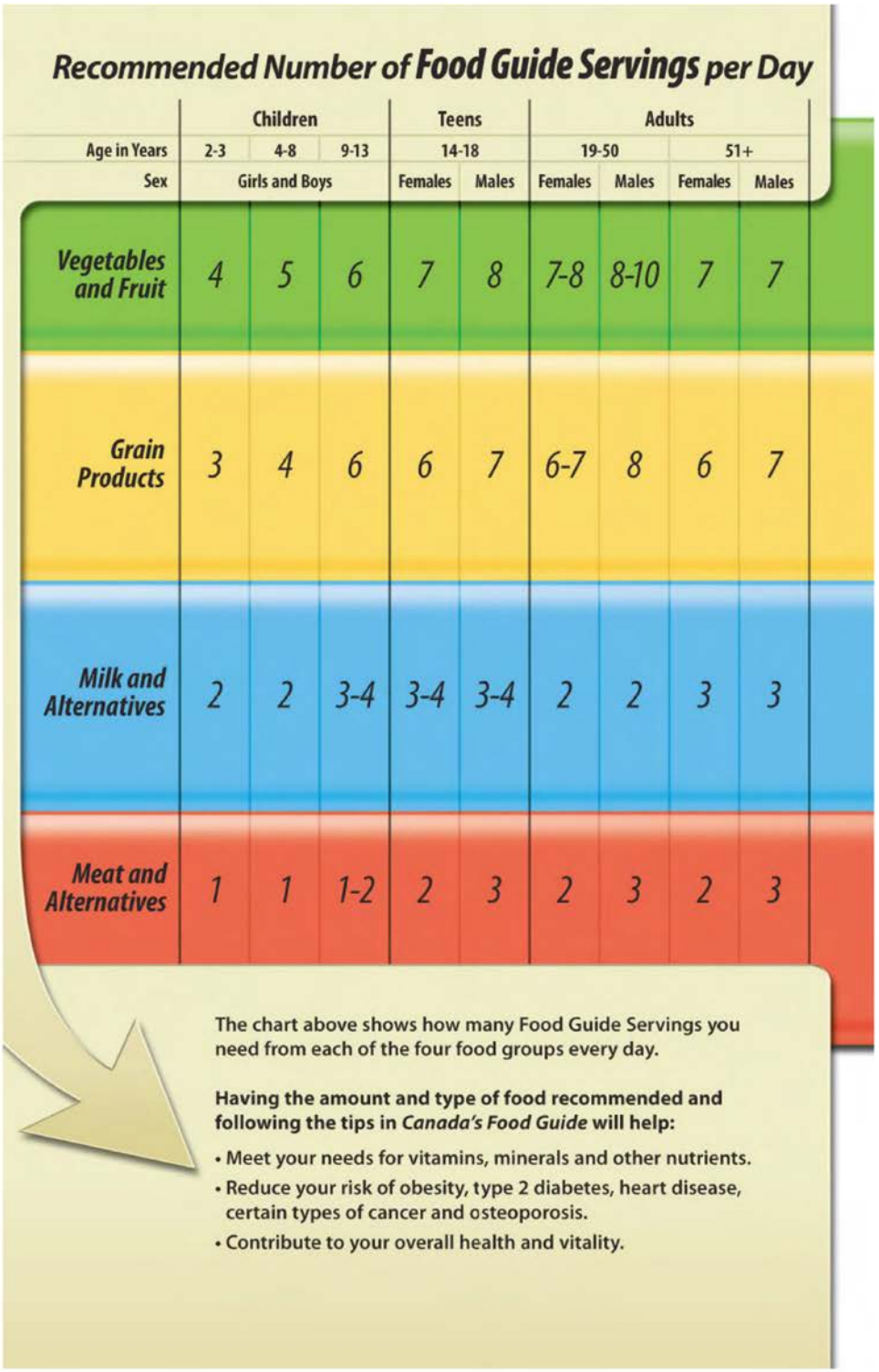

Recommended Number of Food Guide Servings per Day

	Children			Teens		Adults			
Age in Years	2-3	4-8	9-13	14-18		19-50		51+	
Sex	Girls and Boys			Females	Males	Females	Males	Females	Males
Vegetables and Fruit	4	5	6	7	8	7-8	8-10	7	7
Grain Products	3	4	6	6	7	6-7	8	6	7
Milk and Alternatives	2	2	3-4	3-4	3-4	2	2	3	3
Meat and Alternatives	1	1	1-2	2	3	2	3	2	3

The chart above shows how many Food Guide Servings you need from each of the four food groups every day.

Having the amount and type of food recommended and following the tips in *Canada's Food Guide* will help:

- Meet your needs for vitamins, minerals and other nutrients.
- Reduce your risk of obesity, type 2 diabetes, heart disease, certain types of cancer and osteoporosis.
- Contribute to your overall health and vitality.

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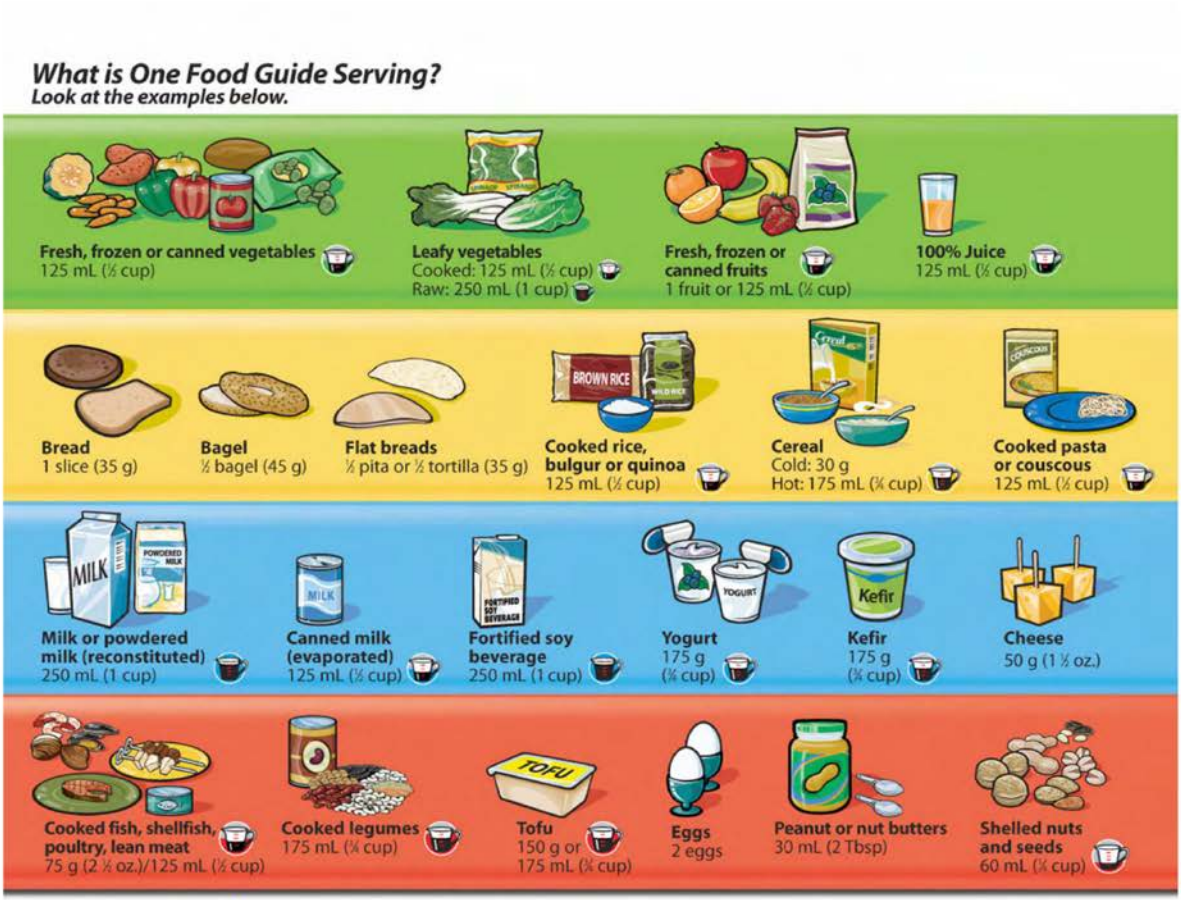

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Make each Food Guide Serving count…

wherever you are – at home, at school, at work or when eating out!

- **Eat at least one dark green and one orange vegetable each day.**
  - Go for dark green vegetables such as broccoli, romaine lettuce and spinach.
  - Go for orange vegetables such as carrots, sweet potatoes and winter squash.
- **Choose vegetables and fruit prepared with little or no added fat, sugar or salt.**
  - Enjoy vegetables steamed, baked or stir-fried instead of deep-fried.
- **Have vegetables and fruit more often than juice.**

- **Make at least half of your grain products whole grain each day.**
  - Eat a variety of whole grains such as barley, brown rice, oats, quinoa and wild rice.
  - Enjoy whole grain breads, oatmeal or whole wheat pasta.
- **Choose grain products that are lower in fat, sugar or salt.**
  - Compare the Nutrition Facts table on labels to make wise choices.
  - Enjoy the true taste of grain products. When adding sauces or spreads, use small amounts.

- **Drink skim, 1%, or 2% milk each day.**
  - Have 500 mL (2 cups) of milk every day for adequate vitamin D.
  - Drink fortified soy beverages if you do not drink milk.
- **Select lower fat milk alternatives.**
  - Compare the Nutrition Facts table on yogurts or cheeses to make wise choices.

- **Have meat alternatives such as beans, lentils and tofu often.**
- **Eat at least two Food Guide Servings of fish each week.***
  - Choose fish such as char, herring, mackerel, salmon, sardines and trout.
- **Select lean meat and alternatives prepared with little or no added fat or salt.**
  - Trim the visible fat from meats. Remove the skin on poultry.
  - Use cooking methods such as roasting, baking or poaching that require little or no added fat.
  - If you eat luncheon meats, sausages or prepackaged meats, choose those lower in salt (sodium) and fat.



Enjoy a variety of foods from the four food groups.



Satisfy your thirst with water!

Drink water regularly. It's a calorie-free way to quench your thirst. Drink more water in hot weather or when you are very active.

* Health Canada provides advice for limiting exposure to mercury from certain types of fish. Refer to www.healthcanada.gc.ca for the latest information.

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Advice for different ages and stages…

Children

Following *Canada's Food Guide* helps children grow and thrive.

Young children have small appetites and need calories for growth and development.

- Serve small nutritious meals and snacks each day.
- Do not restrict nutritious foods because of their fat content. Offer a variety of foods from the four food groups.
- Most of all... be a good role model.



Women of childbearing age

All women who could become pregnant and those who are pregnant or breastfeeding need a multivitamin containing **folic acid** every day. Pregnant women need to ensure that their multivitamin also contains **iron**. A health care professional can help you find the multivitamin that's right for you.

Pregnant and breastfeeding women need more calories. Include an extra 2 to 3 Food Guide Servings each day.

Here are two examples:

- Have fruit and yogurt for a snack, or
- Have an extra slice of toast at breakfast and an extra glass of milk at supper.



Men and women over 50

The need for **vitamin D** increases after the age of 50.

In addition to following *Canada's Food Guide*, everyone over the age of 50 should take a daily vitamin D supplement of 10 µg (400 IU).



How do I count Food Guide Servings in a meal?



Here is an example:

Vegetable and beef stir-fry with rice, a glass of milk and an apple for dessert		
250 mL (1 cup) mixed broccoli, carrot and sweet red pepper	=	2 **Vegetables and Fruit** Food Guide Servings
75 g (2 ½ oz.) lean beef	=	1 **Meat and Alternatives** Food Guide Serving
250 mL (1 cup) brown rice	=	2 **Grain Products** Food Guide Servings
5 mL (1 tsp) canola oil	=	part of your **Oils and Fats** intake for the day
250 mL (1 cup) 1% milk	=	1 **Milk and Alternatives** Food Guide Serving
1 apple	=	1 **Vegetables and Fruit** Food Guide Serving

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Eat well and be active today and every day!

The benefits of eating well and being active include:

- Better overall health.
- Lower risk of disease.
- A healthy body weight.
- Feeling and looking better.
- More energy.
- Stronger muscles and bones.

Be active

To be active every day is a step towards better health and a healthy body weight.

Canada's Physical Activity Guide recommends building 30 to 60 minutes of moderate physical activity into daily life for adults and at least 90 minutes a day for children and youth. You don't have to do it all at once. Add it up in periods of at least 10 minutes at a time for adults and five minutes at a time for children and youth.

Start slowly and build up.

Eat well

Another important step towards better health and a healthy body weight is to follow *Canada's Food Guide* by:

- Eating the recommended amount and type of food each day.
- Limiting foods and beverages high in calories, fat, sugar or salt (sodium) such as cakes and pastries, chocolate and candies, cookies and granola bars, doughnuts and muffins, ice cream and frozen desserts, french fries, potato chips, nachos and other salty snacks, alcohol, fruit flavoured drinks, soft drinks, sports and energy drinks, and sweetened hot or cold drinks.

Read the label

- Compare the Nutrition Facts table on food labels to choose products that contain less fat, saturated fat, trans fat, sugar and sodium.
- Keep in mind that the calories and nutrients listed are for the amount of food found at the top of the Nutrition Facts table.

Nutrition Facts

Per 0 mL (0 g)

Amount		% Daily Value
Calories 0		
Fat 0 g		**0** %
Saturates 0 g		**0** %
+ Trans 0 g		
Cholesterol 0 mg		
Sodium 0 mg		**0** %
Carbohydrate 0 g		**0** %
Fibre 0 g		**0** %
Sugars 0 g		
Protein 0 g		
Vitamin A 0 %	Vitamin C	0 %
Calcium 0 %	Iron	0 %

Limit trans fat

When a Nutrition Facts table is not available, ask for nutrition information to choose foods lower in trans and saturated fats.

Take a step today...

- ✓ Have breakfast every day. It may help control your hunger later in the day.
- ✓ Walk wherever you can – get off the bus early, use the stairs.
- ✓ Benefit from eating vegetables and fruit at all meals and as snacks.
- ✓ Spend less time being inactive such as watching TV or playing computer games.
- ✓ Request nutrition information about menu items when eating out to help you make healthier choices.
- ✓ Enjoy eating with family and friends!
- ✓ Take time to eat and savour every bite!

For more information, interactive tools, or additional copies visit Canada's Food Guide on-line at:
www.healthcanada.gc.ca/foodguide

or contact:

Publications
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Également disponible en français sous le titre :
Bien manger avec le Guide alimentaire canadien

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ENERGY EXPENDITURES FOR PHYSICAL ACTIVITY INFORMATION SHEET

Many references evaluate the amount of calories burnt during various activities. This table is to serve as a guide with the understanding that other resources could suggest different values. Values below are for activities of one-hour durations.

Activity (1 hour)	Cadet Weight		
	130 lbs	155 lbs	190 lbs
Backpacking, general	413	493	604
Bicycling, < 16 km / h, leisure	236	281	345
Bicycling, > 32 km / h, racing	944	1126	1380
Bicycling, 16–19 km / h, light effort	354	422	518
Bicycling, 19–22.4 km /h, moderate effort	472	563	690
Bicycling, 22.4–25.4 km / h, vigorous effort	590	704	863
Bicycling, 25.4–30.4 km / h, very fast, racing	708	844	1035
Canoeing, on camping trip	236	281	345
Canoeing, rowing, > 9.6 km / h, vigorous effort	708	844	1035
Canoeing, rowing, light effort	177	211	259
Canoeing, rowing, moderate effort	413	493	604
Cooking or food preparation	148	176	216
Hiking, cross country	354	422	518
Skiing, cross-country, moderate effort	472	563	690
Skiing, cross-country, slow or light effort	413	493	604
Skiing, cross-country, uphill, maximum effort	974	1161	1423
Skiing, cross-country, vigorous effort	531	633	776
Snowshoeing	472	563	690
Walking, 3.2 km / h, slow pace	148	176	216
Walking, 5.6 km / h, uphill	354	422	518
Walking, 6.4 km / h, very brisk pace	236	281	345
White-water rafting, kayaking, or canoeing	295	352	431

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EXPEDITION RATION PLAN INFORMATION SHEET

Steps of the Menu Planning System

1. Determine the number of meals (breakfast, lunch, dinner and snacks) that are required for the expedition.
2. Identify items which can be eaten at each meal.
3. Decide specifically what to eat at each of the meals.
4. Estimate how much food will be needed at each meal to feed every cadet.
5. Determine the total food required, based on the menu and generate a shopping list.
6. Purchase the food.
7. Repackage, prepare and pack the food for the expedition.

Number of Calories per Pound for Some Expedition Ration Items

DAIRY	GRAINS / STARCHES	LEGUMES	MEATS	TRAIL FOODS	SWEETS	CONDIMENTS	DRINKS	SPICES	MISC.
Powdered Milk: 1650	Flour (white): 1650	Lentils: 150	Bacon Bits: 2836	Dried Apricots: 1100	Honey: 1300	Jelly: 1200	Tea: 0	Salt and Pepper: 0	Yeast: 0
Powdered Eggs: 2700	Flour (wheat): 1500	Pinto Beans: 200	Pepperoni: 2250	Mix Dried Fruit: 1250	White Sugar: 1700	Peanut Butter: 2580	Coffee: 0	Garlic Powder: 0	Olive Oil: 4000
Margarine: 1900	Pancake Mix: 1850	Chili Base: 1600	Salami: 2050	Raisins: 1400	Brown Sugar: 1700	Maple Syrup: 1222	Hot Cocoa Mix: 1650	Oregano: 0	Vegetable Oil: 4000
Cheddar Cheese: 1760	Pasta Noodles: 1700	Soup Mix: 2000		Salted Peanuts: 2650	Chocolate Chips: 2100	Salad Dressing: 500	Juice Mix: 1950	Chili Powder: 0	Granola Bars: 1760
Parmesan Cheese: 1800	Rice (white): 1650			Roasted Peanuts: 2500	Cocoa: 1650	Soy Sauce: 240		Onion Powder: 0	Popcorn: 1650
Dairy Cream: 3750	Rolled Oats: 1750			Cashews: 2500	Cookies: 2200	Bbq Sauce: 240		Curry Powder: 0	Ketchup: 400
	Cream of Wheat: 1750			Walnuts: 2450	Brownie Mix: 1800			Beef Bouillon: 0	Tomato Sauce: 109
	Potato: 1624			M&M's: 2133				Tabasco: 0	

Core Nutrients	Nutritional Needs Required per Cadet per Day
• calories, • sodium,	• 50 percent to 80 percent carbohydrates, • 10 percent to 15 percent proteins, and • 30 percent fats (of which only 10 percent should be saturated fats).

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• carbohydrates, to include: ◦ complex carbohydrates, ◦ fibre, ◦ simple carbohydrates, and ◦ sugars.	**Types of Expedition Activities** • Activities such as moderate backpacking or canoeing will require 2 500–3 000 calories per day. • Strenuous activities such as difficult backpacking or snow camping will require 3 000–3 500 calories per day. • Very strenuous activities such as mountaineering or extended time spent in cold weather requires 3 500–5 000 calories per day.
	Average Consumption per Day • From 1.5–2.5 pounds (.68–1.13 kg) of food. • Average activities require 1.5 pounds (.68 kg) of food. • Strenuous activities require 1.5–2 pounds (.68–.91 kg) of food. • Very strenuous activities require 2–2.5 pounds (.91–1.13 kg) of food.

Helpful Tips When Planning Expedition Rations and Conducting Mealtimes	**SAMPLE MENU PLAN**	**Friday**	**Saturday**	**Sunday**
• Plan ahead. • Eat often. • Pack individual snack bags. • Keep snacks accessible. • Start slow-cooking food early. • Oil the pot. • Be creative with leftovers. • Make hot drinks for more than one cadet. • Drink, drink, drink.	**Breakfast**		Hash browns with cheese Powdered Milk Hot coffee / chocolate	Oatmeal Powdered Milk Salami Hot coffee / chocolate
	Morning snack		GORP	Granola bars
	Lunch / Dinner		Salami Bagels Havarti cheese Fruit drink	Veggie wrap Carrots Soup Fruit drink
	Afternoon snack		Peanut butter Crackers	

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• Use dried fruits and vegetables.	**Dinner / Supper**	Instant soup Basic pasta Fruit bars Hot chocolate	Chili No-bake cookies Fruit Hot Chocolate	

Figure C-1

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SECTION 4- EXPEDITION RATION PLAN

IDENTIFY THE ACTIVITIES BEING CONDUCTED ON THE EXPEDITION

1: Identify expedition ration planning guidelines.

Time of Year / Number of Days	
Number of Cadets	

2: Determine number of meals required.

	Day One	Day Two	Day Three	Total
Breakfast				
Morning Snack				
Lunch / Dinner				
Afternoon Snack				
Dinner / Supper				

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3: Determine the following.

What type of meals may be prepared and eaten on this type of expedition.	
Determine how much food is required.	
Special meal requirements.	
Cooking group size(s).	
Packing food considerations. (packaging, pre-assembling meals and food and weight distribution)	
Budget (if applicable).	

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4: Create a menu plan.

	Day One	Day Two	Day Three
Breakfast			
Morning Snack			
Lunch / Dinner			
Afternoon Snack			
Dinner / Supper			

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IDENTIFY THE ACTIVITIES BEING CONDUCTED ON THE EXPEDITION

Canoeing on flatwater. Paddling a distance between 10–15 km.

Mountain biking on familiarization trails. Biking a distance between 40–50 km.

1: Identify expedition ration planning guidelines.

Time of Year / Number of Days	Fall (October) / 2 nights, 3 days.
Number of Cadets	36 cadets (12 females, 24 males), 8 staff (5 male, 3 female) = 44 total cadets

2: Determine number of meals required.

	Day One	Day Two	Day Three	Total
Breakfast		44	44	88
Morning Snack		44	44	88
Lunch / Dinner		44	44	88
Afternoon Snack		44		44
Dinner / Supper	44	44		88

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3: Determine the following.

What type of meals may be prepared and eaten on this type of expedition.	A menu that includes some fresh rations, with some meals to be pre-assembled prior to the expedition. Breakfast Saturday morning and Supper / Dinner Saturday evening will be the two pre-assembled meals. The remaining meals and snacks will be fresh rations.
Determine how much food is required.	44 cadets—six meals and three snacks each. 264 meals and 132 snacks total. (note the total weight of food and caloric requirements)
Special meal requirements.	One vegetarian.
Cooking group size(s).	Six groups with each group consisting of six cadets and one staff. Two remaining staff will be cooking / eating on their own.
Packing food considerations. (packaging, pre-assembling meals and food and weight distribution)	Two meals will be pre-assembled prior to expedition. Remaining meals will be fresh rations stored in containers. Each cadet will carry one full meal and their individual snacks.
Budget (if applicable).	Not applicable.

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4: Create a menu plan.

	Day One	Day Two	Day Three
Breakfast		Pancakes Fruit Powdered milk Hot coffee / chocolate	Fried cheese bagels Salami Fruit drink Hot coffee / chocolate
Morning Snack		No-bake cookies	Peanut butter Crackers
Lunch / Dinner		Italian pasta salad Fruit bars Cheese Fruit drink	Basic falafel Vegetables No-bake cookies Powdered milk
Afternoon Snack		Trail Mix	
Dinner / Supper	Sweet and sour rice Vegetables Crackers Hot coffee / chocolate	Vegetarian meatballs Soup Fruit Hot coffee / chocolate	

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