MAPLE SYRUP

GENERAL LEVEL

GUIDE FOR LEADERS AND YOUTH LEADERS

Ontario
4-H Council

Ontario
Ministry of Agriculture,
Food and Rural Affairs

4-H 1700 95 LEI

THE 4-H PLEDGE

"I pledge:
My Head to clearer thinking
My Heart to greater loyalty
My Hands to larger service
My Health to better living
For my club, my community and my country."

TABLE OF CONTENTS

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BE A "GREEN" 4-H CLUB

The 4-H program uses a lot of paper. Please help us to reduce our costs, and save a few trees, by remembering these tips.

- Only 4-H members (10-21) and screened volunteers should receive 4-H resources.
- If your club plans to do this project again, keep the resource materials so you don't need to reorder.
- If your club has extra resources, please return them promptly to the Ontario Ministry of Agriculture, Food and Rural Affairs office so they can be used by someone else.

Welcome To 4-H

It has often been said that, "Volunteer 4-H leaders are a blend of friend, teacher and parent." What a big order to fill! But you will discover that you have many talents as a 4-H leader. Having an interest in young people and their development and being willing to take up the challenge of 4-H leadership is the first step to success.

This project focuses on maple syrup: its production, marketing and use. However, the development of members as individuals is your real goal. You will get to know the club members and where their interests lie very well. Use this knowledge, your own expertise and imagination to help members plan a fun, interesting and challenging club program. And enjoy being a 4-H leader!

Rationale

This project will help 4-H members develop an understanding of the key steps involved in successful maple syrup production. This project will also help 4-H members develop basic skills in tree identification, tapping, judging, advertising and baking. 4-H members will become wise consumers of maple products and will become familiar with their use in recipes. Finally, 4-H members will come to value maple syrup as a food and as part of the Canadian culture.

Responsibilities

4-H Leaders

Before your project begins:

1. Familiarize yourself with current provincial and local 4-H policies;
2. Attend a leader training session (if scheduled);
3. Advertise the project and organize a club with a minimum of six members; and
4. Review available resources and begin planning the club program.

During the project:

1. Attend each meeting and the Achievement Program;
2. Assist members in planning and presenting the club program;
3. Provide a FUN, learning atmosphere;
4. Ensure the club membership list and/or enrolment cards are completed and forwarded to the Ontario Ministry of Agriculture, Food and Rural Affairs office before the second meeting;
5. Help each member to set and achieve goals for personal development;
6. Encourage members to work together as a group;
7. Provide guidance in choosing and completing an Achievement Program; and
8. Evaluate the club program.

4-H Members

General Requirements

See the Members' Manual page 1.

Special Activities

Individual clubs will decide if members need to complete a Special Activity. Here are some ideas for Special Activities. Encourage the members to display, present or share in some way the results of their activity. This could be done at a club meeting, the Achievement Program or another 4-H event.

Junior Member Special Activity Ideas

1. Draw a map of a sugar bush. Include hills, streams, roads, the sugar shanty and the tubing system.

2. Interview a person involved in the maple syrup industry (past or present). Prepare your questions ahead of time. Give a report on your interview.

3. Use your artistic skills to sketch pictures, make a mural, a model, a collage or a mosaic of the sugar bush and/or things that happen in it. Write a few sentences about the picture and maple syrup. Enter your art work in a local fair if possible.

4. Design a poster or flyer for a local maple syrup festival, maple syrup producer, your own operation, or an imaginary operation. Apply what you know about marketing.

5. Collect recipes made with maple products. Include recipes using maple syrup as a sweetener, a glaze, a filling, etc... Try at least one recipe at home and comment on the results.

6. Spend a day with a maple syrup producer. Keep a diary, write a poem, draw a cartoon strip, paint a picture or mount and label photographs about your experience.

7. Invent your own idea for approval by your leader(s).

Senior Member Special Activity Ideas

1. Do further research on some aspect of maple syrup making that interests you. Present your findings to the club. (eg. insect pests, the effects of acid rain, vacuum pumps, export markets for maple syrup, etc...)

2. Carry out a consumer survey or market research about maple syrup. Ask permission before doing any research in a store. Present your findings to your club.

3. Choose a recipe that does not have maple syrup in it. You might even choose a recipe from another country. Then, alter the ingredients by substituting maple syrup. Taste it! Compare the difference in taste and cost.

4. Develop a video tape or slide show focused on the maple syrup theme. Arrange to show it to your club.

5. Keep records on your maple syrup operation. Consider tracking some of the following:
   -expenses (spiles, tubing, buckets, evaporator, fuel, other equipment)
   -income (maple syrup sold)
   -amount of sap produced by each tree
   -amount of sap collected each day
   -total amount of sap collected over the entire season
   -amount of sap produced compared to the temperature each day
   -dates that the season starts and ends
   -amount of maple syrup produced compared to sap collected
   -hours of work overall or in each stage of production.

6. Invent your own idea for approval by your leader(s).

4-H Club Program Planning

A successful 4-H club doesn't just happen! Careful planning is necessary and very important. As a 4-H leader, you have a responsibility to do the best job you can in providing a fun, learning experience for the 4-H members. Planning will make this a reality.

The 4-H Volunteers' Handbook has lots of valuable information to help you and your members plan a successful club program. Refer to "The 4-H Meeting" section of your handbook for tips on planning successful meetings, effective communication, games, judging and special events. The chart on page 5, of this Guide, can be used to record your plans.

What Is An Achievement Program?

- An opportunity for members to share with others the knowledge and skills they have gained during this 4-H project.
- Involves each member in some way.
- Informs the public about the purpose and goals of the 4-H program.

Achievement Program ideas specific to this project are suggested below. Your club may wish to choose one idea or combine a few. Involve club members in selecting a suitable

4-H CLUB PROGRAM PLANNING CHART

MEETING OR EVENT	DATE	TOPIC ACTIVITY OR TASK	PEOPLE WHO COULD HELP	PRESENTATION IDEAS TO CONSIDER

idea and making the necessary preparations. Your club should choose what they want to do by the second meeting. Some time is given in meeting 6 for Achievement Program planning, however, members should be reminded of this activity each meeting. Your Achievement Program will be more organized and enjoyable, if your club plans ahead.

Contact the local newspaper or radio to tell them about your activity, the date, the time and where it will be held. Send out a personal invitation to the group you plan to invite to the Program, or send a personal request from your club to visit an organization and present your Achievement Program. Don't forget to include parents/guardians and/or family members.

Achievement Program Ideas

1. Have a maple bake sale. Give the money you make to charity or use it for club expenses. Ask a producer if you could sell his/her syrup, candy and maple butter at your bake sale. He/she might give you a commission on any sales. Don't forget to advertise.

2. Try being a tour guide. Your club could volunteer to take a group of children through the sugar bush (eg. a grade one class, or a Brownie pack etc...). You could also volunteer to be tour guides for a local maple syrup producer or for a maple sugar festival.

3. Organize a maple food fair or pancake brunch. Highlight recipes using maple products. Invite family, friends and sponsors to enjoy the food and see what you have learned. Share the recipes with your guests. You could have the guests pick the most outstanding recipe.

4. Arrange a meeting with local syrup producers. Develop a presentation (eg. songs, skits, poems and demonstrations). Show what you know about making maple syrup!

5. Use your media skills to make a video tape or slide show about maple syrup. Present the video or slides (at school, for your friends and family, for a local children's club, or for senior citizens etc...).

6. Set up an exhibit at a local sugar bush or maple syrup festival. The exhibits could be about different aspects of maple syrup production. 4-H members should be present

to answer questions that anyone might have. Include a club exhibit about the 4-H program.

7. Offer to help out at a local maple festival. You could be involved in advertising by making posters and by giving out flyers. Promote an environmentally friendly festival. Your club could wash dishes instead of throwing away plastic plates and utensils. You might be able to make and serve pancakes. Don't forget to wear t-shirts or pins that show you are 4-H members.

SPECIAL NOTES

1. This 4-H project is structured as follows.

   - General Members' Manual for members with little background in maple syrup production and who would like a basic introduction to the topic.

   - Advanced Members' Manual for members with more background in maple syrup production and who might wish to become producers themselves. It is a more detailed manual to meet these members' needs.

2. The Members' Manual has been designed as a reference source. Encourage members to leave their manuals closed for most of the meeting, allowing them to observe, learn and take part in the discussion and other activities. It is **not necessary to read** all the information given in the Members' Manual during the meeting. The page numbers in this Guide refer to the Members' Manual unless otherwise indicated.

3. You are free to change the order of meetings and information if you like. However, for the General Members' Project, it is recommended that the first meeting not be moved. This meeting has been designed as an introduction to maple syrup production. **Also, remember if you do rearrange the order of meetings, you might need to reorder the Before the Next Meeting Activities so that they fit with the Roll Calls.** The schedule of meeting dates can be recorded on page 2.

4. In most cases, the outdoor activities recommended are superior to their indoor alternatives. However, sometimes

it is not possible to complete the outdoor activities for one reason or another. In these cases, try to bring the equipment and other objects to show the members. Most maple syrup producers will be willing to lend you equipment for a short period of time, depending on the season.

5. Some clubs may wish to complete the outdoor activities in one or two long outings instead of several short outings. The chart below will help leaders to organize the outdoor activities.

General Members' Manual Outdoor Activities	Length of Time Needed (min.)	Meeting Number	Page Reference (This Guide)
How Can You Identify a Tree? -Tree Identification Features -Walking Tour -Find The Same Tree Game -Bark and Leaf Rubbings -Scavenger Hunt	70 (10) (25) (5) (10) (20)	Two	
Has Finding the Age of a Tree Got You Stumped?	10	Two	
Regeneration	10	Two	
How Many Tapholes in a Tree?	15	Three	
How Do You Tap a Tree?	20	Three	
Buckets or Tubing	15+	Three	
Collection and Storage of Sap	5	Three	
Evaporator	10	Four	
How Much Sap?	5	Four	
When Is the Syrup Done?	30	Four	
Filtering and Canning	10	Four	
Filter Experiment	10	Four	
Grading and Judging	30	Four	

6. In each meeting of this Guide there is a section titled, "Special Notes For This Meeting." This section discusses the possibility of special guest speakers, meeting locations or meeting times. You should consult this section when planning your meeting schedule.

   Remember to:
   - share information in the Manuals and Guides with special guests,
   - remind members to wear appropriate clothing and bug repellent to outdoor meetings,
   - schedule outdoor activities for daylight hours (especially in the winter and spring when days are short).

7. Some outdoor activities are best completed at certain times of the year. These cases are noted in the "Special Notes for This Meeting" section. In these cases an alternative activity is suggested.

8. **Remember to Refer to Your 4-H Volunteers' Handbook** - You will find many useful tips and ideas covering topics such as program planning, successful meetings, parliamentary procedure, effective communicating and presentation methods. Refer to your Volunteers' Handbook as you plan meetings. If you do not have a handbook, please ask your OMAFRA contact.

Additional Resources

Books

- A tree identification book for the meeting titled "Barking Up the Right Tree." Most libraries have an assortment of books on tree identification. If you are doing the project in the winter, make sure the book includes bud and twig characteristics. The Audubon Society Field Guide to North American Trees (Eastern Region) by E.L. Little and published by Alfred A. Knopf, New York has excellent pictures and descriptions but does not include bud characteristics.

Factsheets

- OMAFRA factsheet, Maple Syrup: Measuring Density (Agdex 310/70) (Order No. 89-111) (Suggested for the "From Sap to Syrup – The Sappy Story" meeting. It deals with the use of hydrometers and refractometers.

Audio Visual

- The following audio visual material is available from: A.V. Library, Communications Branch, OMAFRA, 52 Royal Road, Guelph, Ontario N1H 1G3. Telephone: (519) 767-3622 Fax: (519) 824-9521

  Liquid Gold of Spring is a 12 min. video produced by the Ontario Maple Syrup Producer's Association. This video overviews the history of maple syrup production and more modern methods. (Suggested for use in the "Search for Sugar" meeting.)

  Ontario Maple Syrup is a 12 min. slide presentation produced by the Ontario Ministry of Agriculture and Food. The slides include a historical outline of how maple syrup was made and includes more modern methods as well. (Suggested for use in the "Search for Sugar" meeting.)

  The library also has a 15 minute video (Frost and Fire) and a 17 minute film (Maple Syrup Makers). You should consult the Catalogue of Audio Visual Material produced by OMAFRA to find out more about them.

People

- The following people may be useful resources for information or equipment or as guest speakers:

  - a local maple syrup producer
  - a technician from the Ministry of Natural Resources
  - someone who is knowledgable about tree identification
  - a person who is in the advertising or marketing field
  - a member of the Ontario Maple Syrup Producer's Association (To obtain the name of a member near you, contact Ken McGregor, Sec./Treas., R.R. #6, Strathroy, ON., N7G 3H7, (519) 232-4596 or Fax (519) 232-9166.)
  - Maple Syrup Advisor, OMAFRA, Cedar Hill Plaza, 449 Dunlop St. West, Barrie, ON., L4N 1C3, (705) 725-7288 or toll free 1-800-461-9626.
  - an equipment supplier (Suppliers are listed on page 12-13 of this Guide for your convenience. It is current as of 1994.)

Field Trips

- You might be interested in taking your club to The Maple Syrup Museum of Ontario. It is located on 8 Spring Street, St. Jacobs, Ontario, N0B 2N0. Telephone: (519) 664-3626. Artifacts of maple syrup production are housed there.

- The November-April Events Guide produced by the Ministry of Tourism and Recreation lists maple events taking place in Ontario. You can obtain this free brochure by phoning 1-800-ONTARIO and asking for the Events Guide.

Feedback

The 4-H Resource Development Subcommittee of the Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address.

4-H Resource Development Subcommittee
c/o Guelph Agriculture Centre
P.O. Box 1030
Guelph, Ontario
N1H 6N1

SUPPLIER	SUPPLIES AVAILABLE
Atkinson Maple Syrup Supplies, R.R. #1, Barrie, ON, L4M 4Y8, (705) 722-3331	Evaporators, reverse osmosis machines, tubing systems, used equipment and trade-ins, containers, labels and candy packaging (Free price list, mail order and delivery available.)
Camp Can-Aqua Maple Syrup and Suppliers, Box 70, Cardiff, ON, K0L 1M0, (613) 339-2969	Full line of supplies. Dominion and Grimm Evaporators, tubing and containers.
Curle's Maple Products and Supplies, Box 93, Campbellford, ON, K0L 1L0, (705) 653-2519	Full line of supplies. Lightning Evaporators, Natural Flow tubing, and reverse osmosis machines.
Donald Dodds, R.R. #2, Clayton, ON, K0A 1P0, (613) 256-4045	Waterloo Evaporators and Equipment. Tubing and supplies.
Dave Gardiner, Opeongo Maple Products, R.R. #4, Eganville, ON, K0J 1T0, (613) 754-2049	Full line of supplies. Evaporators, reverse osmosis, Piggy-Back pans, pumps, tubing, cans, bottles, jugs, labels. (Free price list available.)
Jakeman's Maple Products, R.R. #1, Beachville, ON, N0J 1A0, (519) 539-1366.	Full line of supplies. Small Brothers' evaporators, Maple Experts tubing, Travaini pumps, Canadian cans, reverse osmosis machines, used equipment, labels, candy packaging.
Peter Kidd, Kidd's Home Hardware, Sunridge, ON, P0A 1Z0, (705) 384-5344.	Dominion and Grimm evaporators and equipment; Natural Flow tubing; plastic, glass and metal containers. (Free listings to sell or buy equipment in their mailing list.)
Elmer Kuepfer Service and Supply, R.R. #1, Linwood, ON, N0B 2A0.	Diesel and gasoline engines, generating sets and chain saws.
Duncan MacArthur, Lancaster, Ontario. K0C 1N0, (613) 347-3472.	Full line of supplies. Dominion and Grimm and Waterloo Evaporators and Equipment, Travaini and Sihi pumps, Honda generators, I.P.L tubing systems, reverse osmosis machines, syrup containers, syrup drums, syrup filter presses, self-adhesive labels. (Bulk syrup buyer and shipper Lic. 3572.) (Sugar bush consultant and pipeline installer.) (Free price list available.)
McCullough Feed and Seed, P.O. Box 201, Hillier St., Lanark, ON, K0G 1K0, (613) 259-2167.	Full line of supplies, tubing, containers, etc...
McKay Sheet Metal, R.R. #2, Lanark, ON, K0G 1K0, (613) 259-5766.	Custom made S/S pans, fill tanks, galvanized tanks, storage tanks and smoke stacks.
Merriman Farm Supplies, R.R. #1, Elgin, ON, K0G 1E0, (613) 272-2755.	Small Brothers' maple syrup equipment (new and used), syrup containers.
Paul's Maple Products, R.R. #3, Lanark, ON, K0G 1K0, (613) 259-5276.	Full line of supplies. Lightning and Dominion and Grimm evaporators and equipment, Lamb Natural Flow tubing, packaging and containers.
Richards Packaging Inc., 3115 Lenworth Drive, Mississauga, ON, L4X 2G5, (416) 939-7950.	Glass containers and caps, plastic bottles, plastic pails.

Robson-Smith Sugar Bush Supplies Inc., R.R. #3, Schomberg, ON, L0G 1T0, (416) 939-7950.	Full line of supplies. Waterloo, Small Brothers' and Dominion and Grimm evaporators; Lamb tubing systems and their own green tubing; orange Canadian syrup cans (125 mL to 4 L); reverse osmosis; and vacuum systems.
Reist Welding Ltd., R.R. #2, Elmira, ON, N3B 2Z2, (519) 669-1501.	Full line of supplies. Made to order evaporators and storage tanks, new and used buckets and tanks, tubing systems, containers. Dominion and Grimm equipment. (Repairs to equipment.)
Sanders Maple Products, R.R. #1, Finch, ON. K0C 1K0, (613) 984-2368.	Full line of supplies. Dominion and Grimm equipment, Lamb tubing systems, vacuums pumps, reverse osmosis machines, filter presses, evaporators, syrup drums, syrup containers. (Catalog available.)
Seprotech Systems Inc., 2378 Holly Lane, Ottawa, ON, K1G 7P1, (613) 523-1641.	Reverse osmosis equipment and service.
Shearer's Maple Products, R.R. #1, Desboro, ON, N0H 1K0, (519) 363-3392.	Lightning and Dominion and Grimm Equipment; Maple Experts, Lamb, and IPL tubing, fittings, and mainlines; Travaini vacuum pumps; containers; drums; used equipment; and repairs. (Sugar bush consultations available.)
Kennedy's Sugar Bush and Maple Supplies, R.R. #2, Millbrook, ON, L0A 1G0, (705) 932-2653.	Full line of supplies. Waterloo evaporators, Seprotech reverse osmosis machines, tubing, containers, custom printed labels. (Free price list available.)
Peter Stransky, Box 1, Collingwood, ON, L9Y 3Z4, (705) 445-4468 or (705) 445-6871.	Full line of supplies. Lightning evaporators and equipment, tubing, containers, reverse osmosis, used equipment and bulk syrup. (Local agents throughout the maple belt.)
Eli Weber, Box 137, Heidelberg, ON, N0B 1A0.	Full line of supplies. Dominion and Grimm evaporators, tubing systems.

Kids Help Phone

At the bottom of the table of contents page in the Members' Manual you will see the Kids Help Phone logo and number. Kids Help Phone is available to over 7 million children and teenagers throughout Canada.

It is a national, bilingual, confidential, toll free helpline staffed by paid, trained professionals. In response to the problems and concerns of our youth, Kids Help Phone provides a listening ear, emotional support, counselling, information and referrals. Children and teens from anywhere in Canada can call anonymously 24 hours a day, 365 days a year.

Children and teens can call about anything that is bothering them including – abuse; drugs; alcohol; conflicts with parents, friends or teachers; pregnancy; sexuality; suicide; or parental separation and divorce.

Please mention this number to your members and explain what it is for. Make sure they know that it is free and they don't have to give a name or address.

The Kids Help Phone gets 1000 calls a day... 2000 more get a busy signal. If you or your club or someone you know would like to make a donation to the Kids Help Phone, call 1-800-268-3062.

Meeting 1 The Search for Sugar

Objectives

1. To welcome members.
2. To introduce the project and its requirements.
3. To practise parliamentary procedure and to elect the club executive.
4. To learn about the sugar-making process of leaves.
5. To become familiar with legends of maple syrup discovery.
6. To understand the three stages of making maple syrup and how the process has changed over the years.
7. To make and taste a pioneer treat – maple taffy on snow (or crushed ice)!

Time Guidelines

A time guideline has been provided for each section of the meeting. Please remember that this is only a guideline. The number of members, their maturity, specific interests and the way the meeting is structured will all influence the duration of specific activities.

In A Nutshell

Welcome and Get Acquainted Activity	up to 10 min.
Getting Started	15 min.
A Road Map to Good Meetings	15 min.
Roll Call	5 min.
Where Does Maple Syrup Come From?	5 min.
How was Maple Syrup First Found?	20 min.
Three Stages of Syrup Making	25 min.
Making Maple Taffy	20 min.
Wrapping It Up	5 min.
TOTAL	120 min.

Preparation & Equipment

Depending on the selection of activities, you and/or a Youth Leader should prepare the following.

Get Acquainted Activity

- Copy one "Syrup and Signatures!" sheet for each member (page 22 of this Guide).

Getting Started

- Post a copy of the 4-H pledge.
- Supplies: optional name tags, membership list, "4-H Club Member Lives Here" and "4-H Project" signs, General Members' Manuals (one for each member).

A Road Map to Good Meetings

- It might be helpful to review the 4-H Volunteers' Handbook and the OMAFRA Factsheet "Procedures for Meetings" (89-095) before the meeting.

Where Does Maple Syrup Come From?

- Sap or make a sap mixture (see page 18 of this Guide).

Where Was Maple Syrup First Found?

- Arrange the room so there is an area to act out the legend skits.

Three Stages of Syrup Making

- For all the methods below, it would be great if you could bring in actual maple syrup tools to show the members (spiles, a sap bucket or pail, a brace and bit...).

- **Method A:**
  -Order video, have VCR and T.V. ready.
- **Method B:**
  -Order slides and projector and set them up ahead of time.
- **Method C:**
  -Refer to the boxed stage summaries on page 6, 7, and 8. Write the name of each tool or step on a separate piece of paper. Place the pieces of paper into one of three envelopes labelled with name of stage.
  -Markers and paper for presentations.

Making Maple Taffy

- See recipe for ingredients and equipment needed (page R2 in the Recipe Booklet).

Wrapping It Up

- If doing the weather chart, you will need to copy one chart for each member (page 23 of this Guide).

Welcome And Get Acquainted

(up to 10 minutes)

Choose one of the following as an ice breaker or use one of your own ideas.

Get To Know Your Neighbour

This game is especially good if you have several new members. It rearranges where the members sit and gives them a chance to get acquainted.

Tell the members to change seats according to the instructions when you say "Go." Have people wearing white socks go to seats on your left. Have people wearing dark socks go to seats on your right. People with pastel or coloured socks can go to seats in the centre. Tell them that when they move they

should get to know their neighbour. They might be called on to do an introduction!

As the leader, you can play too. Perhaps, you could be the first to introduce a member to show how it's done. If most people already know each other, try telling something special or unique about each other (eg. "This is Jill and she likes snakes."). If the club members don't wear socks, split them up according to the month they were born or any other variation.

Syrup And Signatures!

This game helps the members to get acquainted and helps you to find out about your club's experience with maple sugaring.

Use the sheet on page 22 of this Guide. 4-H members should attempt to get the signatures of fellow members and leaders. Only one signature should be placed on each line; and each person should only sign a sheet once. Begin the game as 4-H members arrive for the meeting. Continue until you feel most members have had a chance to get acquainted. Then, you may want to read the statements. Ask the participants to raise their hand if the statement is true for them. This gives you an idea of their expertise.

Getting Started
(15 minutes)

1. Begin with the 4-H pledge.
2. Welcome the members. Introduce leaders. Have members introduce themselves (if not already done). Introduce the youth leader (if this has been decided). Ensure that everyone has a name tag (optional).
3. Complete membership list.
4. Outline the opportunities members have such as taking part in the local fairs, 4-H Go For The Gold, 4-H Members' Conference etc...
5. Distribute "4-H Club Member Lives Here" and "4-H Project" signs if available.
6. Distribute the General Members' Manuals.
7. Give a brief summary of what club is about and topics covered.
8. Discuss the members' requirements for the project (page 1). Outline any expectations you have of the members.
9. Briefly discuss the Achievement Program possibilities.

A Road Map To Good Meetings
(15 minutes)

It is important for everyone to become familiar with the basics of running a good meeting. Review with members the purpose of an agenda as well as the executive's responsibilities. Have the club members elect an executive. The 4-H Volunteers' Handbook and the OMAFRA Factsheet, "Procedures for Meetings," (89-095) may be helpful.

Roll Call
(5 minutes) page 4

Ask each member to answer the roll call. Provide positive reinforcement to each member for his/her answer.

Where Does Maple Syrup Come From?
(5 minutes)

This discussion should be brief. Just go over the basics (see page 4).

If you have fresh sap readily available you might like to let the members taste some. You can make a mixture like sap by mixing 5 mL of white sugar with 200 mL of water.

Where Was Maple Syrup First Found?
(20 minutes)

1. Explain the different ways groups can approach acting out the legends. A narrator reads the legend while the actors silently depict the characters. Or the narrator could be eliminated, then the actors would use words along with their actions to tell the story. Or use a combination of the first two methods: the actors would use words as well as a narrator.

2. How you split members into groups will depend on the size of your club. See the list below for possible numbers in each legend group.

   SQUIRREL LEGEND: At least 3 characters (man, squirrel, friend) plus optional narrator (an additional friend or squirrel could be added if your club is large).

   HATCHET LEGEND: Two characters (boy and mother) plus optional narrator.

   OLD MOTHER EARTH'S GRANDSON LEGEND: At least two characters (grandson and person) plus an optional narrator (add more people if club is large).

3. Before the members move into groups, encourage members to be creative (use body movements, facial expressions, and/or words to express themselves). Discourage the use of props. Without props, the members

will have to rely more on their acting skills. Finally, remind them, that they will only be given about 10 minutes to prepare their skits.

4. Give the groups 5 minutes to read through the legend and decide who is doing what. Then, advise them that they should move on and practise their parts (5 minutes). Finally, call the groups back together to show their stuff.

Three Stages of Syrup Making
(25 minutes)

One way to learn about the stages of syrup making is to watch a video, or look at slides. You know what they say, "A picture is worth a thousand words." All visual material mentioned below is available from A.V. Library, Visual Communications Services, OMAFRA, 52 Royal Road, Guelph, Ontario N1H 1G3 (519) 767-3622.

NOTE: If you choose Method A or B, your group still might enjoy the equipment sequencing activity in Method C.

Method A (Video)

"Liquid Gold of Spring" is a 12 min VHS video produced by the Ontario Maple Syrup Producers Association. This video overviews the history of maple syrup production and more modern methods. It shows tubing and pails, horse-drawn gathering, drilling with a brace and bit and Native mokuks to name a few.

Before you start, ask the members to pay particular attention to the basic process of making syrup. Challenge them to split the process into 3 stages? Also, ask them to note the equipment used? After the video, discuss what they saw. Ask them what three stages they came up with? Have the members check if their stages are similar to the three stages in the manual. Refer to the boxed summaries on page 6, 7 and 8. Discuss the changes over the years (eg. Ask, why is this method or tool better than this one? etc...).

Method B (Slides)

The A.V. Library also has slides on maple syrup production. Ontario Maple Syrup slides contain a historical outline of how maple syrup was made both in the past and now. In total there are 75 slides with a script. 75 slides at this point might be a little overwhelming. Try slides 5-12, 30-32, 35-36, 40-44. These slides are most relevant to this meeting.

Before the meeting, make sure you are familiar with the slide projector. You might want to go through a test run just to be sure. You could use the script that goes with the slides or write your own if you like. The advantage of a slide over a video is that you can easily answer questions as you go through the presentation. Ask the members questions too! Get them involved. Ask them why they think it would be faster to cook with a kettle. Ask them to explain why Native people used stones instead of cast iron kettles. Get them thinking about the materials available and why changes have come about. Refer to the boxed summaries on page 6, 7 and 8 for further discussion and review.

Method C (Presentations And Sequencing Activity)

Another way to learn about the three stages of syrup making, is to have the members teach each other.

1. Before the meeting prepare the equipment sequencing activity. See "Preparation and Equipment" page 16 of this Guide for details.

2. Split members into three groups, one for each stage. A quick way to do this, is to count 1, 2, 3, 1, 2, 3 until everyone has a number.

3. Then, give one envelope to each group. Tell the groups to sort out the tools and steps and put them in a sequence. They should decide what tools and materials would be used in the past and what would be used today. Have each group compare their sequence to the Manual's to see if it is correct.

4. Have groups read about their stage in the manual. Ask the groups to design a creative and interesting presentation based on this information for the rest of the club. The presentation might be another skit or a formal presentation, or perhaps a rap song. For a skit, a boy or girl might go back in time; or an old maple tree could tell about the changes it has seen over the years. Markers and chart paper might be helpful to some groups. Allow 15 minutes to prepare the presentations. It should only take 5 minutes to show them.

Making Maple Taffy On Snow

Refer to page R1 and R2 of the Recipe Booklet for the instructions and equipment.

(20 minutes)

1. Demonstrate how to find the boiling point of water. Have the members gather around the stove.

2. While waiting for the water to come to a boil, explain the relevance of making maple taffy. (eg. Sugaring off time was very special to the pioneers. The children, and adults too, couldn't wait for the first batch of syrup to be made. Then they would make maple taffy by pouring thick syrup on cold, well-packed snow. Children would pull the taffy to see who could pull the longest strip without breaking the taffy into two parts. Sometimes they would make candy ropes by twisting more than one strand together.)

3. When the water comes to a boil, record the boiling point and calculate what temperature is needed to make taffy.

4. Instruct some of the members on how to prepare the snow or crushed ice. Send them to do this.

5. Supervise an older 4-H member as he/she heats the syrup, keeping a close eye on the temperature. Refer to page R1 of the Recipe Booklet to find out how to use a thermometer and how to keep the syrup from boiling over.

6. When the syrup is ready, pour it on the snow or crushed ice and let the members enjoy.

Wrapping It Up

(5 minutes)

1. Have 4-H members briefly summarize what they learned this meeting.
2. Review the "Before the Next Meeting" activity (page 8). Decide whether the members will complete the entire weather chart or only part of it. Base your decision on the ability level of your club members. Younger members may find the activity more manageable if they focus on temperature and the weather. Explain how members can use the radio, T.V. or newspapers to get information if they don't have access to thermometers, barometers or wind vanes.
3. Remind 4-H members to wear appropriate clothing if the club is going to a sugar bush or woodlot next meeting.
4. Remind the members to think about what they would like to do for an Achievement Program. A decision will be made about it next meeting.

Syrup and Signatures!

Are your 4-H friends sweet for syrup? Get their signatures and see what they are famous for.

1. I like pancakes and maple syrup. _____
2. I have visited a sugar bush. _____
3. I have tapped a tree. _____
4. I have watched someone make maple syrup. _____
5. I have tasted sap from a tree. _____
6. I know what a maple leaf looks like. _____
7. I have made my own maple syrup. _____
8. I have learned about maple syrup at school. _____
9. I have been to a maple syrup festival. _____
10. I have tasted maple butter. _____
11. I can name a maple syrup substitute. _____
12. I know of a recipe that uses maple syrup. _____
13. I have eaten maple sugar candy. _____
14. I have been to the Ontario Maple Syrup Museum. _____
15. I know what the letters OMSPA stand for. _____
16. I have a maple tree in my yard. _____
17. I can name a maple syrup producer in my area. _____
18. I know what a spile is. _____
19. I have eaten maple taffy. _____
20. I have helped to collect maple sap. _____

Weather Patterns And Sap Flow

DATE														
Mid-day (High) Temperature														
Evening (Low) Temperature														
Wind Speed (km/h) and Direction														
Weather:														
Cloudy														
Sunny														
Rain														
Snow														
Sleet														
Sap Flow (fast, slow or none)														

Meeting 2

Barking Up the Right Tree

Objectives

1. To learn about the best kind of tree from which to make syrup.
2. To become familiar with the basic ways to identify a tree.
3. To practise identifying trees.
4. To understand that it takes many years for a tree to grow to tappable size.
5. To decide on what the club will do for its Achievement Program.

Special Notes For This Meeting

Location and Time

It is strongly recommended that you take your club outside to learn to identify trees. You could go to a park, tour the neighbourhood, or go to a woodlot or bush with a variety of trees (including maples). You will need daylight to identify the trees. Schedule your meeting accordingly.

If it is not possible to hold the meeting outside bring the forest to the 4-H members (see "Preparation and Equipment").

A Guest

You might want to invite a technician from the Ministry of Natural Resources, a maple syrup producer, or someone else with knowledge about trees to help you with tree identification.

In A Nutshell

Outdoor Meeting:

Roll Call		5 min.
How Can You Identify a Tree?		70 min.
Tree Identification Features	(10 min.)	
Walking Tour	(25 min.)	
Find the Same Tree Game	(5 min.)	
Bark and Leaf Rubbings	(10 min.)	
Scavenger Hunt	(20 min.)	
Has Finding the Age of a Tree Got You Stumped?		10 min.
How Long Does it Take to Grow a Sugar Bush?		10 min.
Achievement Program Discussion		15 min.
Wrapping It Up		5 min.
TOTAL		115 min.

Indoor Meeting:

Roll Call		5 min.
How Can You Identify a Tree?		45 min.
Tree Identification Features	(10 min.)	
Tree Stations	(25 min.)	
Bark and Leaf Rubbings	(10 min.)	
Has Finding the Age of a Tree Got You Stumped?		10 min.
How Long Does it Take to Grow a Sugar Bush?		10 min.
Maple Mountain Quiz Game		15 min.
Achievement Program Discussion and Decision		15 min.
Wrapping It Up		5 min.
TOTAL		105 min.

Preparation & Equipment

Depending on the selection of activities, you and/or a Youth Leader should prepare the following.

- O = OUTDOOR ACTIVITY, I = INDOOR ACTIVITY.

Walking Tour (O)

- Before the meeting, map out your route. You could tie ribbons around the trees you wish to show.
- Supplies: a pocket tree identification guide for unusual trees (optional); magnifying glasses (several) to examine buds and leaves.

Tree Stations (I)

- Supplies: leaf, twig, fruit, bark samples (never remove bark from live trees) and several magnifying glasses. When you collect the samples, put them in separate bags for each type of tree and label the bags. These will be the stations in the indoor tour.

Find the Same Tree Game (O)

- You will need a whistle for signalling.

Rubbings (O & I)

- Supplies: clipboards **(outdoors only)**, newspaper, dark crayons without paper covering, white paper.

Scavenger Hunt (O)

- While mapping out the walking route, jot down ideas for scavenger hunt items. See page 28 of this Guide for scavenger hunt ideas. Copy out your scavenger hunt list or photocopy the list for pairs of 4-H members.
- Supplies: a copy of the tree identification chart (one for every two members) and bags to hold the groups' scavenger hunt items.

Has Finding the Age of a Tree Got You Stumped? (O & I)

- Locate some tree stumps near your walking route, and bring straight pins to mark every tenth ring.
- **Indoors:** Provide a tree cross section instead of a tree stump.

Regeneration (O & I)

- Locate an area near your route with young maples or seedlings.
- **Indoors:** Provide samples of maple keys or maple seedlings.

Maple Mountain Quiz Game (I)

- Make one copy of page 31 of this Guide. Separate the quiz questions by cutting the sheet. Then, put the questions into a hat.
- Provide a watch or clock with a minute hand.

Roll Call

(5 minutes) page 9

Ask each member to answer the roll call. Provide positive reinforcement to each member for his/her answer.

Tree Identification Features

(10 minutes) page 9

Invite a member to describe your physical appearance. Then, ask the other members if they think they could find you in a crowd using this description? Ask the participants to share other ways to identify people? Some answers might be finger prints, names, dental records, birth marks, etc... Then, get the members to describe features they could use to identify trees. See if the participants can come up with all of the features mentioned in the Members' Manual (page 9).

Walking Tour

(25 minutes)

Outdoors

Take your club on a walking tour. When you come to a tree, have the members guess what kind it is. Then, show them the distinctive features of each tree and tell them its name. (You might find the tree identification chart on page 33 to 36 of this Guide helpful). Emphasize the identification of maple trees. While on tour, discuss what kind of tree is most often tapped, the maple with the sweetest sap etc... (see page 9).

You likely won't come across every tree in the chart, but that doesn't matter. The object here is to let members get familiar with the features used to identify trees. You might come across a tree that is not in the chart. Try using a pocket field guide to identify the unusual tree.

When on the tour, it is important to let members see, touch, feel and smell the trees. Let the 4-H members use the magnifying glasses to examine the buds. Encourage them to

feel and smell the bark and leaves (if on the tree). Experience is the best teacher.

OR

Indoor Tree Stations

Have tree leaves, twigs, bark and fruit separated into piles according to the tree they came from. Thus, the sugar maple leaf, twig and fruit would all be in one pile. Each type of tree will be a station. Number the stations. Split the members into pairs. Have them go to each station, examine the objects and record what type of tree it is. Bring them back together as a large group. Record their answers on chart paper or a chalk board. Ask the pairs to explain why they picked the kind of tree they did. (If leaves and fruit aren't available because of the season try to provide pictures of them.)

Then, take the members on a walking tour of the stations similar to the outdoor tour. After the 'tour', compare the participants' original answers with the correct tree types.

Find The Same Tree Game

(5 minutes)

Outdoors

While on tour, challenge the 4-H members to find a tree that is the same as the one that you just showed. Say, "Ready, set, go!," and the members can scatter to find a similar tree. Bring a whistle to signal when it is time to return.

Bark And Leaf Rubbings

(10 minutes + time at end of meeting)

Bark and leaf rubbings can make patterns stand out. This can help 4-H members identify trees. At the first tree on the walking tour or at the first indoor station, demonstrate how to do bark and leaf rubbings. After that, at each tree or station have one member volunteer to do the rubbing. This will give the club a record of the trees they identified. If there is time left at the end of the meeting, encourage the members to do some more bark rubbings on their own.

NOTE: In the winter, instead of leaf rubbings, encourage the members to sketch the shapes of different trees. The shapes are easier to see because the leaves are gone.

Bark

1. Pick a spot on the bark that doesn't have moss growing on it. You want a true picture of the bark, not the moss.

2. Hold a sheet of paper firmly against the bark. It might be easiest to have a friend hold the paper while you rub.

3. Use the full length of the crayon or charcoal to rub across the paper. Rub the crayon in only one direction.

4. Record the name of the tree on the paper. Then, you have a permanent record of that tree's bark (or leaf).

Leaf

1. Choose good leaf samples. Try to find ones that don't have holes or defects.

2. Place several layers of smooth newspaper on a table, or clipboard if you are outside. This gives a smooth flat surface to do the rubbings on. Place a leaf sample on top of the newspaper.

3. Hold a sheet of paper firmly over the leaf. Continue as in 2, 3 and 4 above.

Scavenger Hunt
(20 minutes)

Outdoors

1. Make a list with fifteen to twenty scavenger hunt items. Don't forget that you can ask for specific kinds of things. A brown maple leaf (in contrast to a green one) or a walnut with its green warty coating etc... Depending on the season other possibilities include: fruits, leaves, twigs, bark from fallen trees and one or two pieces of garbage.

2. Split the 4-H members into pairs. One way to do this, is to tell the members to move around by themselves. When you call out a number the participants should form into groups of that number as quickly as possible. Do this several times, then end by calling out the number 2. The members will get into pairs. If there is a person left over, make a group of three.

3. Give each pair a copy of the tree identification chart, a list of scavenger hunt items and a bag to put them in. The members can use the tree identification chart as a reference if they can't remember the features of certain trees. Tell them that they should not remove bark from a living tree. Also, remind them to try to find twigs and leaves which have fallen on the ground instead of taking

them from a tree. State the boundaries of their search. When they hear the whistle they should return.

4. Whistle after about 15 minutes. When the groups return, check to see who found all of the items. Have each group show and identify two of the things they found. Some members may wish to take the items home and mount them for future reference (encourage them to do so).

Has Finding The Age Of A Tree Got You Stumped?

(10 minutes) page 10

Using a twig, demonstrate how to determine its age by counting the bud scars. Have each 4-H member figure out the age of a twig.

Find a cut tree stump (outdoors) or use a cross section of a tree (indoors). Demonstrate how to find the age of the tree by counting the dark growth rings. To make counting easier, mark every tenth ring with a pin. If available, have the members count the rings on several different stumps or cross sections. Emphasize how long it takes a tree to grow big enough to tap. Stress that this is one reason why we should keep trees healthy.

Have the 4-H members examine the cross section or stump. Ask if the tree grew the same amount each year. If not, ask them to point out years when the tree grew a lot or just a little. Rings that are narrow indicate slow growth, wide rings indicate good growth. Ask why this would happen. In poor weather conditions (eg. drought) a tree will not grow as well as in good weather conditions. Ask if the tree grew the same amount on every side or in every direction. Explain that sometimes the south side of a tree grows more than the other sides because it gets more sun. If there is any scarring in the wood? What caused it? Point out tapping marks (if present).

How Long Does it Take to Grow a Sugar Bush

(10 minutes) page 11

You can conduct this activity indoors using maple key and maple seedling samples. Use the instructions below as a guide, but alter them to fit your indoor location.

Find a maple tree. Ask the 4-H members if anyone knows what a maple tree grows from (if this has not already been discussed). Look for maple keys on the ground or hanging in the tree depending on the time of year. Ask someone to point out where the seed is located in the key. Then look for seedlings and young trees. Ask how they think the seeds got there (birds, wind, wing shape of maple key). Look to see if the seedlings and young trees are growing in sunny spots or shaded spots. Have the members investigate whether the trees

in sunny spots are bigger than the ones in shaded spots. Maple trees, like most plants, need sunlight, rain, carbon dioxide and nutrients from the soil to grow big and strong. Although, young maples will grow in a shaded woodlot, they grow best when direct sunlight is available. A sugar bush owner should thin the bush and cut down large old trees to allow sunlight to reach young maples and seedlings.

Maple Mountain Quiz Game (15 minutes)

Indoor

The object of this game is to review what the participants have learned about tree identification.

1. Have each member write down one quiz question based on tree identification or other information learned during this meeting. He or she should secretly write down the answer on the same sheet and give it to you. Combine the member-made questions with the pre-made quiz questions, on page 31 of this Guide, in a hat.

2. Split the group into two teams. The teams might want to name themselves by tree names (eg. The Mighty Maples vs The Wacky Walnuts).

3. Explain how the game will be played. The team that is closest to a number that you pick between 1 and 10 goes first. The leader or youth leader will read a question from the hat and the team has a maximum of 30 seconds to decide on the answer. If they don't get the right answer, the other team has a chance to steal (15 second time limit). When a team gets a correct answer they get to move one tree further up the maple mountain. Switch questioning from one team to the next.

4. Play the game. First team to the top wins.

Achievement Program Discussion (15 minutes)

Go over the Achievement Program ideas (page 6 this Guide). Invite the members to share additional ideas. Vote on the options. Take this time to begin to discuss the details of the program.

Wrapping It Up (5 minutes)

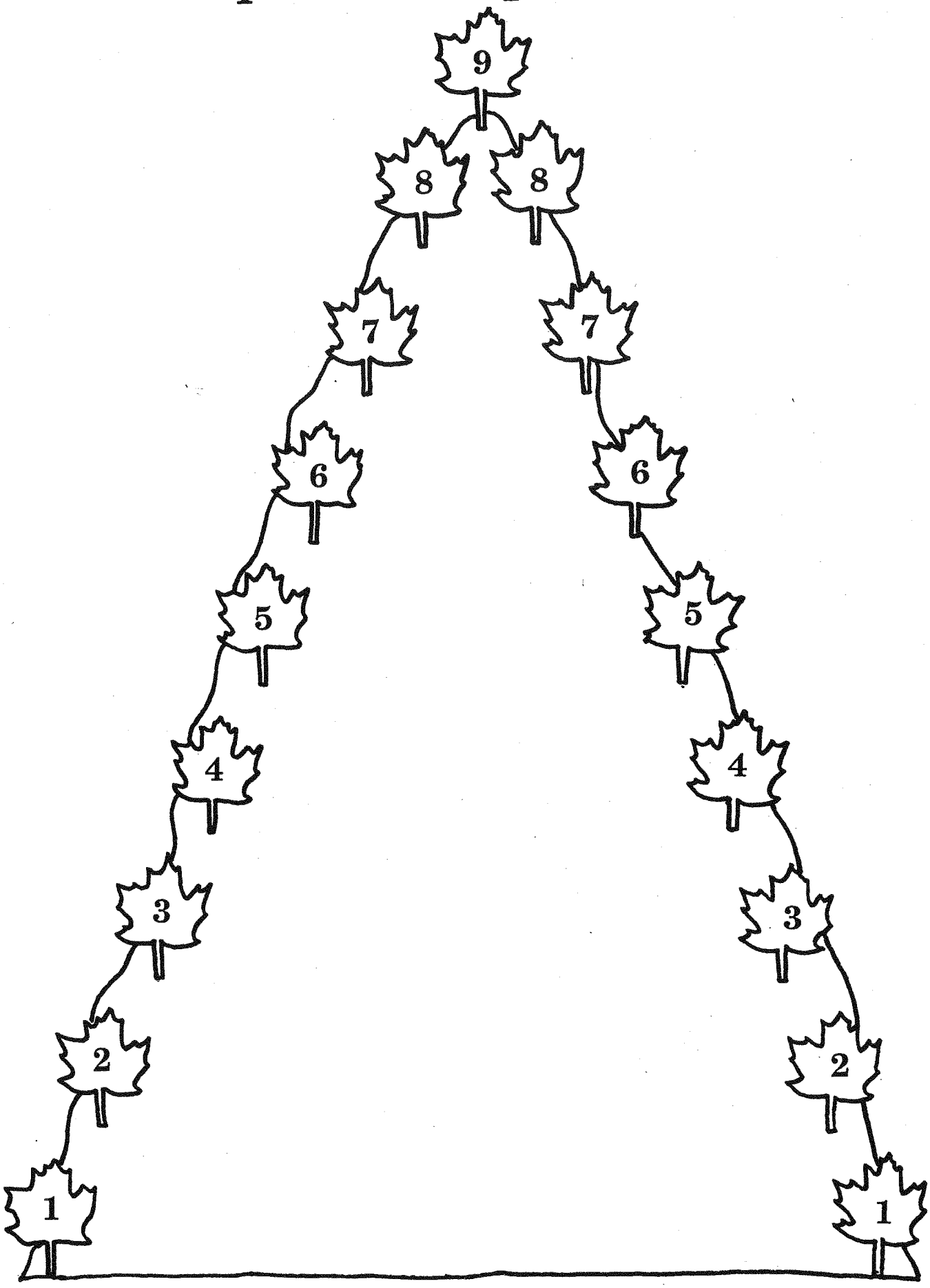
1. Have 4-H members briefly summarize what they learned this meeting.
2. Review the "Before the Next Meeting" activity. (page 11)
3. Remind the 4-H members to wear appropriate clothing if the club is going to a sugar bush next meeting.

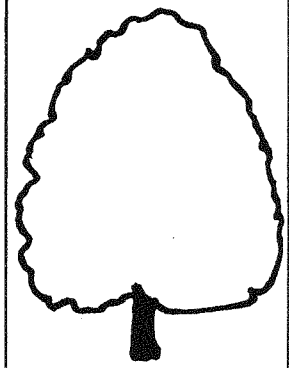
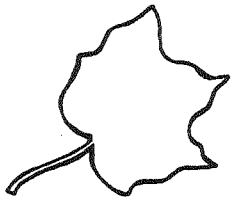
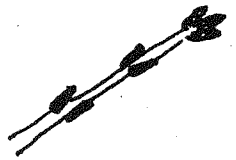
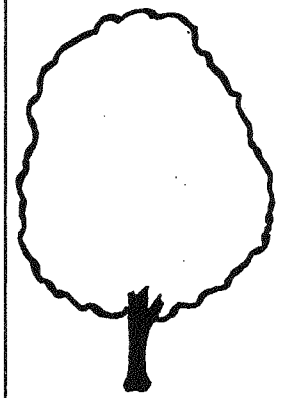
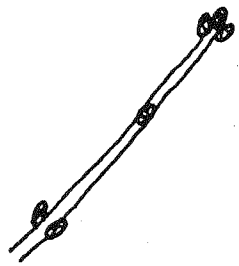
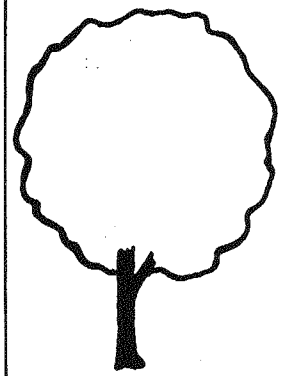
Maple Mountain

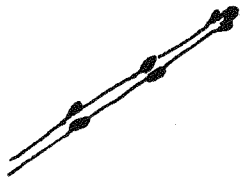
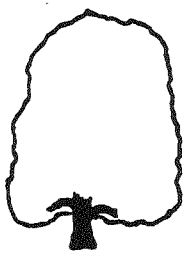
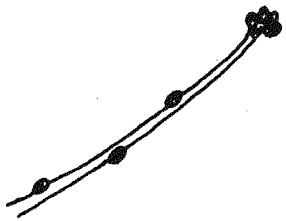
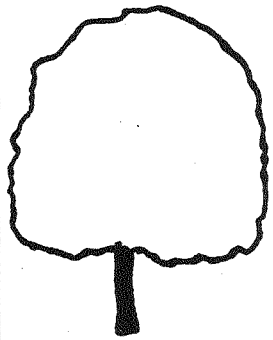
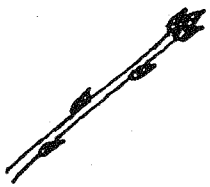
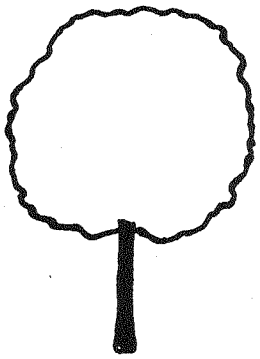
Quiz Questions and Answers

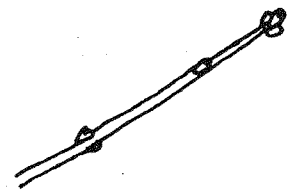
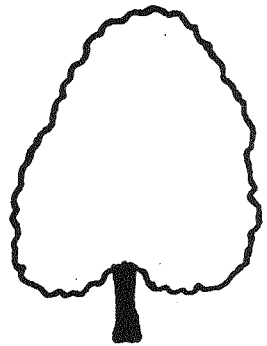
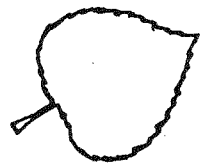
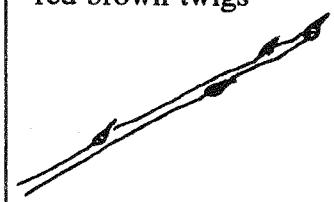
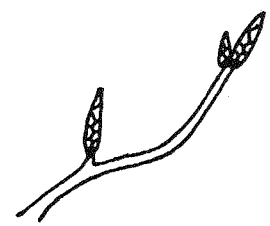
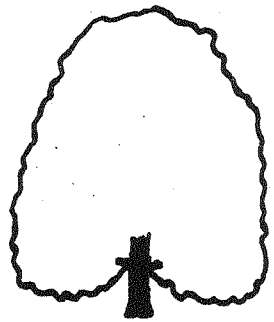
1. Name one way you can identify a tree. (leaves, bark, shape, fruit, buds, location)
2. What kind of fruit does an oak tree have? (acorn)
3. Describe the bark of a sycamore tree? (dark and light patches, mottled)
4. Name a type of tree that has keys for fruit. (maple)
5. How can you find the age of a tree that has been cut down? (count the growth rings)
6. Are the buds on a maple twig located right across from one another or are they further up and down the twig? (right across – opposite)
7. What should you count to find the age of a twig? (bud scars or description of what a bud scar looks like)
8. What does a maple seedling need to grow ? (sunlight, water, nutrients, carbon dioxide)
9. What kind of tree is most often tapped? (sugar maple)
10. What kind of maple has the sweetest sap? (black maple)
11. What is it called when a tree's buds grow right across from each other? (opposite)
12. How can you tell the difference between a leaf and a leaflet? (There is no bud at the base of a leaflet.)
13. What other kind of tree has leaves shaped like sycamore leaves? (maple)
14. Does the sugar maple have U-shaped or V-shaped notches in its leaves? (U-shaped)
15. How long does a maple tree have to grow before it is big enough to tap? (accept any answer between 40 and 100 years)

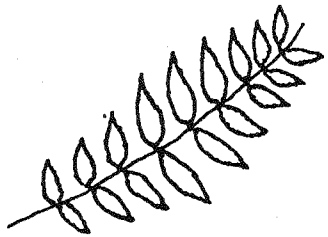
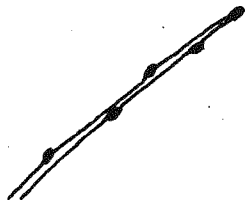
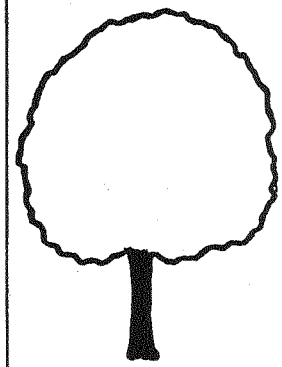
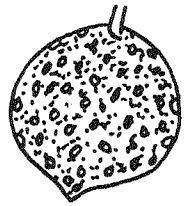
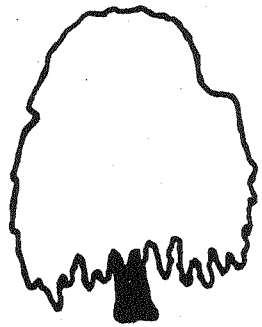
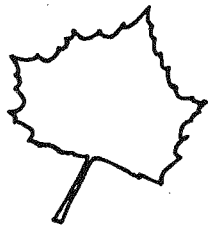
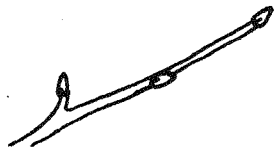
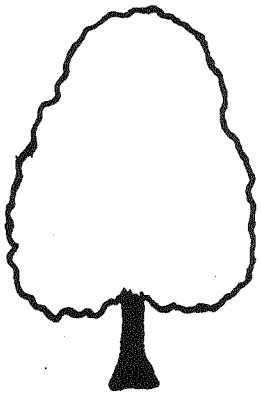
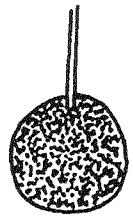
Conquer the Maple Mountain!



TREE	LEAF	BUDS AND TWIGS	BARK	SHAPE	FRUIT
Sugar Maple	-large teeth -U-shaped notches between lobes 	-opposite buds -pointed, hairy, scaly buds -brown-red twigs 	-rough grooves going up and down -dark brown		-maple keys 
Black Maple	-wavy, almost no teeth -drooping leaves -3 lobes -soft hair on lower side 	-opposite buds -large, dull buds -dark brown twigs 	-deep furrows -nearly black		-maple keys 
Red Maple	-many small teeth -V-shaped notches between lobes -veins and leaf stem are red in the summer (leaf is all red in fall) 	-opposite buds -bright red, scaly, oval buds -red twigs 	-long scaly plates -dark grey		-maple keys 

TREE	LEAF	BUDS AND TWIGS	BARK	SHAPE	FRUIT
Silver Maple	-uneven, large teeth -deep indents between lobes -bright green on top, silvery below 	-opposite buds -reddish, scaly, blunt buds -dark brown twigs 	-long scales -red-brown	-smaller branches grow downwards and then curve up 	-maple keys 
White Oak	-rounded lobes 	-alternate buds -round, red-brown buds -red-grey twigs 	-slightly shaggy -light grey		-acorns 
Red Oak	-pointed lobes 	-alternate buds -large, pointed buds -dark brown twigs 	-smooth between black furrows -dark grey		-acorns 

TREE	LEAF	BUDS AND TWIGS	BARK	SHAPE	FRUIT
White Ash	-5 to 9 leaflets -pointed tips -shiny, green on top 	-opposite buds -rounded, heart shaped, brown buds -nearly white twigs 	-ridged bark forms a diamond shaped pattern -grey		-single winged fruit which hang in clusters 
Quaking Aspen	-fine rounded teeth -nearly round shape -flattened stem 	-alternate buds -pointed, waxy, red-brown buds -red-brown twigs 	-rough and furrowed -grey	-narrow 	
American Beech	-coarse teeth -dark, leathery green leaves 	-alternate buds -long, sharp, scaly, light-brown buds -grey twigs 	-smooth cement-like texture -light grey	-spreading branches close to the ground 	-small nut 

TREE	LEAF	BUDS AND TWIGS	BARK	SHAPE	FRUIT
Black Walnut	-fine teeth -yellow-green leaflets -15-23 leaflets 	-alternate buds -small, round, grey-haired buds -brown-orange twigs 	-diamond-shaped furrows with rounded ridges -dark brown		-nut covered by a warty green skin 
Willow	-fine teeth -narrow leaf 	-alternate buds -slim, pointed, brown-red bud with only one scale -smooth, yellow-brown twigs 	-furrowed -blackish-brown	-long, drooping branches 	
Sycamore	-looks like maple leaves -thick leaves -soft hair on bottom 	-alternate buds (opposite on maple) -cone-shaped, glossy brown buds with only one scale -yellow-brown twigs 	-dark and light patches (mottled)		-in winter, ball-like fruit hangs from tree 

Meeting 3 Tapping Trivia

Objectives

1. To examine the weather patterns that bring about the flow of sap.
2. To practise properly tapping a tree.
3. To understand the relationship between tree size and the number of taps.
4. To compare the bucket method of collecting sap with the tubing method of collecting sap.
5. To realize that sap can spoil and it must be stored properly and processed promptly.

Special Notes For This Meeting

Location and Time

Some of these activities are best carried out in a sugar bush (eg. measuring the diameter of trees and tapping them). However, this meeting can be carried out indoors with some extra preparation (eg. getting logs to tap). Remember, that outdoor meetings should be scheduled when there will be enough sunlight in the sugar bush.

In a Nutshell

Roll Call	5 min.
The Maple Syrup Season	20 min.
Tapping:	
How Do You Tap a Tree?	20 min.
How Many Tapholes in a Tree?	15-30 min.
Buckets or Tubing	15 min.
Sap Collection and Storage	5 min.
Wrapping it Up	5 min.
TOTAL	85-100 min.

Preparation & Equipment

Depending on the selection of activities, you and a Youth Leader should prepare the following.

Maple Syrup Season

- 4-H members bring own weather charts or copy one mock weather chart (page 44 of this Guide) for every 3 members. You will also need scrap paper and markers.

How Do You Tap a Tree?

- You will need several trees or stumps to tap (enough trees to support one hole for each member is best). Other supplies: one brace with an 11 mm (7/16 ") bit and one hammer for every 3 members, a spile for each member, pails (if you are tapping live trees, one for each member) and measuring tapes.

- **Indoors:** Get logs from someone who cuts wood for a fireplace or woodstove (1 log for every 3 members). The logs should be at least 25 cm in diameter. Make sure you pick pieces that can stand up on one end. Other supplies: one brace with an ll mm (7/16 ") bit and one hammer for every 3 members, a spile for each member.

How Many Tapholes in a Tree?

- Supplies: measuring tapes (one for every three members), maple trees and tree marking paint or ribbons to mark the number of tapholes.

- **Indoors:** You will need measuring tapes (one for every three members) and 6 or more tree cross sections or paper circles (different diameters that would require 0, 1, 2, 3 and 4 taps).

Buckets or Tubing?

- If you are going to collect sap, it would be great if you could use gathering pails and a gathering tank.

- **Indoors:** You will need scrap paper and markers.

Collection and Storage of Sap

- **Indoors:** You could show pictures of different storage tanks (optional).

Roll Call
(5 minutes) page 12

Ask each member to answer the roll call. Provide positive reinforcement to each member for his/her answer.

Maple Syrup Season
(20 minutes) page 12

1. For this activity, use either the self-made weather charts or the mock weather chart on page 42 of this Guide.

2. Divide the members into groups of three based on hair colour, eye colour, clothing colour, shoe size, freckles, glasses etc... **(not body size)**.

3. Give each group 10 minutes to examine the mock or self-made weather charts. Ask them to write down their conclusions about the relationship between weather and sap flow. Circulate amongst the groups to help them see patterns and get them thinking.

4. Before calling the groups back together, have each group designate one spokesperson to present their results.

5. After all groups have reported, discuss differences in findings. Conclude by summarizing the club's investigation of weather patterns and sap flow.

How Do You Tap a Tree?

(20 minutes) page 13

Outdoors

1. Demonstrate how to tap a tree. It is important to stress safety when using a brace and bit. Before letting the 4-H members try tapping themselves, ask them to review or describe the sequence of steps. This will show that they know what they are supposed to be doing.

2. Have each 4-H member drill one hole. 4-H members will work in groups of three. The number of trees will depend on how many tapholes each tree can support. The appropriate number of tapholes for each tree should have been determined in the "How Many Tapholes" activity.

Indoors

1. Refer to #1 in the outdoor version.

2. Have each 4-H member drill one hole. This means 3 members will drill into one log. Two members can hold the log upright and steady while another member drills the taphole. The log is held upright so that it is as much like drilling a live tree as possible.

How Many Tapholes In a Tree?

(15-30 minutes) page 14

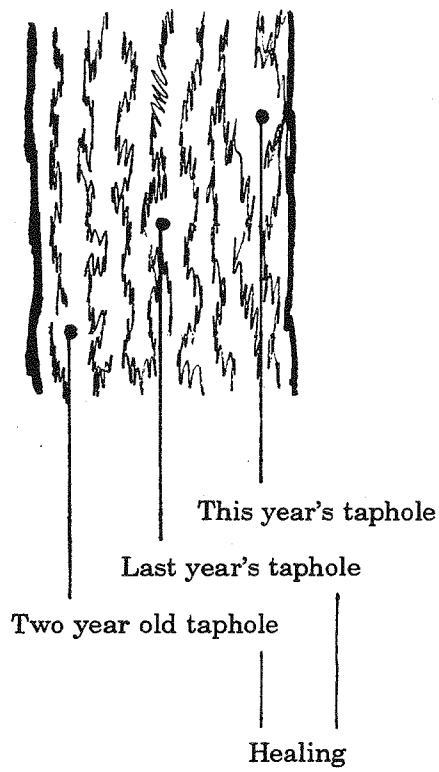
Outdoors (30 minutes)

1. Have the 4-H members search for the tree with the most taps and the fewest taps. Ask them why they think some trees have more taps than other ones? See if they can come up with the relationship between the size of the trunk and the number of taps.

2. Demonstrate how to measure the diameter of a tree (see page 14). Distinguish between the circumference and the diameter. Remember, tree diameter should be measured 1.4 m above the ground. Compare the tree circumference to measuring your waist size, and the diameter of the tree to measuring your width from your left side to your right side. Explain that producers measure trees about every 5 to 10 years to make sure the number of taps is right for the size of the tree.

3. Explain how to use the chart (on page 14) to determine the number of taps. Give each group of three members a measuring tape and challenge the groups to find a tree that is the right size for 0, 1, 2, 3 and 4 taps.

CORKSCREW OR SPIRAL TAPPING PATTERN



4. Fourth, get the members to measure the trees they plan to tap and determine the appropriate number of tapholes. Mark the number of tapholes on the tree with tree marking paint or simply tie a certain number of ribbons on the tree.

5. Fifth, explain that overtapping or drilling holes too close together can make a tree's trunk weak. This means the tree might blow over in the wind or be infected by a disease. Explain how producers drill tapholes in a corkscrew pattern to avoid problems with closely spaced tapholes (page 14). Challenge the 4-H members to find examples of overtapping or corkscrew tapping.

Indoors (15 minutes)

1. First, ask the 4-H members how many taps they think should go in a tree. How many taps would be too many? Discuss how the size of the trunk determines the number of taps.

2. Next, demonstrate how to measure the diameter of a tree (page 14). Show the diameter on a circle or on a cross section of a tree. (Refer to #2 in the outdoor version of this activity for further instructions).

3. Refer to the instructions in #3 of the outdoor version. Instead of real trees, use tree cross sections or paper circles that are the right size for 0, 1, 2, 3 and 4 taps.

4. Refer to the instructions in #5 of the outdoor version. Refer to the diagram of corkscrew tapping on this page.

Buckets or Tubing

(15 minutes or more) page 15

Outdoors

First, review both the bucket method and tubing method of collecting sap. Get members to briefly explain each of the methods. Discuss how often the sap must be collected.

It would be great if you could actually gather sap from the buckets. If the sugar bush has tubing you could follow the tubing from the tree all the way to the sugar shanty. If you can't collect sap, then do the indoor activity for "Buckets or Tubing."

Indoors

1. Have a member volunteer to explain the process of collecting sap by buckets and another member describe how sap is collected with pipeline. Discuss how often sap must be collected and processed.

2. Divide the club into pairs to brainstorm the advantages and disadvantages of buckets and tubing. They should write down their ideas on a piece of scrap paper.

3. Give the groups 5 to 7 minutes to come up with ideas and jot them down. Circulate amongst the groups. Ask them questions to get them thinking (eg. Which method would work better on flat land?, Which one would be more costly?, Which one seems like less work? etc...).

4. Form a large group again. Have members share their ideas. Ask one of the members (or a youth leader) to write down a master list of all of the ideas (putting the same idea down only once). If they haven't covered all of the advantages and disadvantages, continue to ask questions to draw out the information.

Sap Collection and Storage

(5 minutes) page 16

Outdoors

If you are at a sugar bush, find the storage tank where the sap is kept until it is processed. What do members notice about the tank? If they don't notice anything, get them thinking by asking questions (Is it in the direct sunlight or is it in the shade? Is the snow banked up around it? What is the tank made of? Why would the producer want the sap in the shade and the tank banked with snow?) Discuss how sap spoils faster when it gets warm so it is important to keep it cool.

Indoors

Discuss the need to keep sap cool, and the location of the storage tank. If available, show some pictures of storage tanks. This would be useful to give members an idea of what you are talking about.

Wrapping It Up

(5 to 10 minutes)

1. Have members summarize what they learned.
2. Review the "Before the Next Meeting" activity. (page 16)
3. Remind 4-H members to wear appropriate clothing if the club is going to a sugar bush next meeting.

Weather Patterns and Sap Flow

DATE	March 26	27	28	29	30	31	April 1	2	3	4	5	6	7	8
Mid-day (High) Temperature	+3	+6	+5	+4	+6	+10	+7	+11	+8	+10	+7	+2	+5	+9
Evening (Low) Temperature	0	+3	-1	-3	0	+1	-2	+5	0	+2	+2	-3	-6	+2
Wind Speed km/h and Direction	SE 11	E 15	SE 11	SE 11	W 26	W 15	NW 15	S 19	NW 22	SW 19	N 9	NE 15	NW 24	SE 19
Weather:														
Cloudy	Partly ✓		✓	✓			✓	✓	✓		✓	✓	Partly ✓	
Sunny	✓				✓	✓	✓			✓			✓	✓
Rain		✓							✓		trace	✓		
Snow				✓					trace			✓		
Sleet														
Sap Flow (fast, slow or none)	slow	–	med.	fast	slow	–	fast	–	–	–	–	fast	fast	–

Meeting 4

From Sap to Syrup – The Sappy Story

Objectives

1. To understand the process of evaporation.
2. To become familiar with the parts of the evaporator and how it works.
3. To realize how much sap it takes to make a small amount of syrup.
4. To become familiar with the three ways you can tell if the syrup is done.
5. To practise judging syrup samples.
6. To become familiar with the overall process (boil, filter, grade, can).

Special Notes For This Meeting

Location and a Guest

Ideally, the recommended boiling and canning activities would be completed at an operating sugar shanty. This would avoid having to bring all of the equipment to a meeting place. However, if this is not possible, invite a producer to visit your club.

In a Nutshell

Roll Call	5 min.
Full Steam Ahead - Evaporation	15 min.
The Evaporator	10 min.
How Much Sap?	5 min.
When is the Syrup Done? (may take longer)	30 min.
Filtering and Canning	10 min.
-Filter Experiment	10 min.
Grading & Judging	30 min.
Wrapping It Up	5 min.
TOTAL	120 min.

Preparation & Equipment

Depending on the selection of activities, you and a Youth Leader should prepare the following.

Full Steam Ahead

- You will need a small drinking glass and a sauce pan or electric kettle.

Evaporator

- You will need pictures or diagrams of an evaporator (indoors) or a real evaporator (at a sugar shanty).

How Much Sap?

- Provide 40 pop cans (indoors) or 40 sap pails (sugar bush).

When Is the Syrup Done?

- If using an evaporator and starting with sap:
  -evaporator, sap, hydrometer, thermometer, table of temperature corrections (page 47 of this Guide), skimmer.

- If finishing watered down syrup over the stove:
  -pure maple syrup (at least 500 mL), water (at least 500 mL), large sauce pan, thermometer, hydrometer, table of temperature corrections, long handled spoon.

Filtering and Canning

- Supplies: clean jar; filter fabric (a piece of felt, flannel or cotton) a little larger than the top of the jar; clothespins to attach fabric to top of the jar; 2 jars or bottles with lids; masking tape and a marker to label the jars "extra dense" and "proper density."

Filter Experiment

- Supplies: 6 jars **or** pails **or** mixing bowls; measuring cup; water (3 L); potting soil (600 mL); a piece of light-coloured felt, flannel and cotton (the three pieces of fabric should be large enough to fit over the top of the jar); enough clothespins to attach each piece of fabric to the jar.

Grading & Judging

- You will need:
  -4-H Judging Handbook (4-H-1550-91) Give a copy of page 34 and 35 to each group of 3 members
  -3 different maple syrup samples that the 4-H members can judge. (Samples must be large enough to take a hydrometer reading and so members can taste test. Put samples in clear jars and label them A, B and C.)
  -hydrometer, thermometer, cloth or soft tissue to dry hydrometer between each measurement, table of temperature corrections (page 47 of this Guide), colorimeter (grading set), tasting cups or toothpicks or spoons to taste syrup with, paper to write down scores and reasons.

Roll Call

(5 minutes) page 17

Ask each member to answer the roll call. Provide positive reinforcement to each member for his/her answer.

Full Steam Ahead - Evaporation

(15 minutes) page 17

The best way to help members understand evaporation is to actually show it happen. The Roll Call should reveal that both the water in the drinking glass and the water in the shallow pan disappeared. The water in the shallow pan should have disappeared first. Now, you should show that the water disappears even faster when it is heated. Boil a drinking glass full of water in a sauce pan or in an electric kettle. Have the

4-H members watch to see what happens. The water will disappear.

Ask the 4-H members if they know what happened to the water? Then, ask them why the water in the shallow pan evaporated quicker than the water in the drinking glass, and why the heated water evaporated quickest of all. (The water in the shallow pan evaporates more quickly because more of it is in direct contact with the air. The heated water evaporates even quicker because the heat makes the water molecules move so rapidly that they break away from the surface of the liquid.) This discussion leads into a discussion of the evaporator.

The Evaporator

(10 minutes) page 17

Have the members relate their new evaporation knowledge to the design of the evaporator. Refer them to diagrams of an evaporator or examine a real one. Ask the participants to think about the size of the evaporator pans versus cast iron kettles. In the evaporator pan, more of the sap is in direct contact with the air so the water evaporates faster. A hot fire in the arch heats the sap. The hot fire makes the water evaporate more quickly too! This method is substantially faster than using heated stones. Briefly discuss the parts of the evaporator and how the sap moves from the storage tank to the finishing pans.

How Much Sap

(5 minutes) page 18

If you are at the sugar bush, get the 4-H members to count out the number of sap pails they think it would take to make 1 pail full of syrup. (Remember, it takes about 40 parts of sap to make 1 part of syrup.) If you are holding your meeting indoors, count out 40 pop cans. Emphasize that 38 or 39 cans of water would be boiled away, leaving only one pop can of syrup.

When is the Syrup Done?

(30 minutes or more) page 18

Refer to OMAFRA Factsheet, Maple Syrup: Measuring Density (Agdex 310/70).

The best way to learn to tell when the syrup is done is to actually **boil some sap**. Your club could finish syrup outdoors in an evaporator, on a propane stove, over an old woodstove or on a barbecue. Clubs working at another time of year or without access to the above equipment, can finish watered down syrup over an indoor stove but, remember the vapour will be sticky. Take a small amount of pure maple syrup (500 mL) and add (500 to 750 mL) of water to it. This waters down the syrup. Then, you can boil that water off and show how syrup is finished.

If the members made maple taffy in the first meeting, they should be familiar with finding the boiling point of water. They should **find the boiling point of water** for the day and then add 4C° (7F°) to this point. Explain that at this specific temperature, the syrup should contain the right amount of sugar. This is one way to tell that the syrup is done.

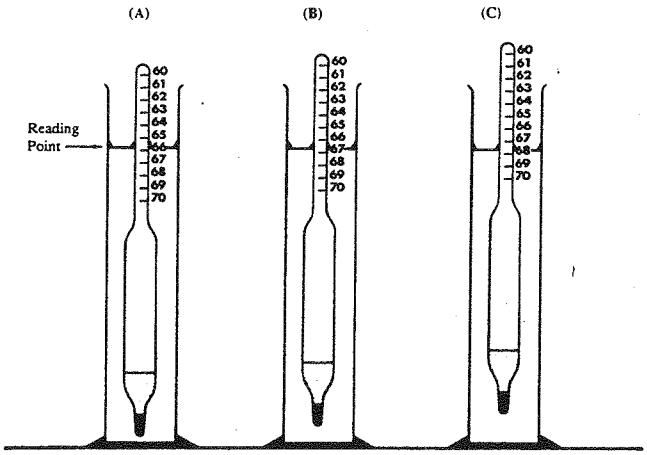
Before starting, show the members how to use a **hydrometer** to measure the amount of sugar in the watered-down sample or sap. Note that the best syrup has between 66.5 and 67% sugar. Demonstrate how to use the **table of temperature corrections** (page 47, this Guide). Lead the members through the steps, but let them do most of the work. Measuring the density at the beginning should show the members that the sample does not yet have the right amount of sugar. Explain that syrup with a low percentage of sugar does not keep well. (If you are starting with fresh sap, measure the density several times throughout the boiling process.)

Start boiling the syrup or sap. Have the members frequently check the thermometer. While the mixture is boiling, you should note the steam or vapour coming off the liquid. This is the water **evaporating**. Also, note the stickiness of the vapour and how things in its way become coated with a sticky film. You should dip a spoon into the syrup and show how the syrup is so thin that it drips off the spoon in separate drips.

When the temperature indicates that the syrup is close to being done, have the members watch the boiling syrup. Can they see the change in the **appearance** of the bubbles and how the syrup now falls off the spoon in one continuous sheet or stream?

Remove the syrup from the heat when the **temperature** reaches 4C° (7F°) **above the boiling point of water**. Then, ask the members to measure the syrup's **density**. Hopefully, it will be between 66.5 and 67% sugar.

Boil some of the syrup for longer. Then, measure the density of this syrup. The 4-H members will see that syrup boiled for too long has a higher percentage of sugar.



Temperature of syrup 28°C (82°F) Observed Density 65.8° Brix Density Correction +0.7 True Density 66.5° Brix

Temperature of syrup 20°C (68°F) Observed Density 66.8° Brix Density Correction 0 True Density 66.8° Brix

Temperature of syrup 8°C (46°F) Observed Density 67.5° Brix Density Correction -1.0 True Density 66.5° Brix

The true density measurements of maple syrup depends on the syrup's temperature. The observed density reading has to be adjusted according to the temperature correction

Corrections to Apply to Observed Brix Readings of Maple Syrup to compensate for Effects of Temperature

Temperature of syrup in Hydrometer cup or on Refractometer in degrees Celcius (°C) and degrees Fahrenheit (°F)		Corrections to Subtract from (–) or Add to (+) Observed Brix Reading
°C	°F	Correction
0	32	-1.4
2	36	-1.3
4	39	-1.2
6	43	-1.1
8	46	-1.0
10	50	-0.8
11	52	-0.7
12	54	-0.6
13	55	-0.5
14	57	-0.4
15	59	-0.4
16	61	-0.3
17	63	-0.2
18	64	-0.1
19	66	-0.1
20 *	68	0
21	70	+0.2
22	72	+0.3
23	73	+0.3
24	75	+0.3
25	77	+0.4
26	79	+0.5
27	81	+0.5
28	82	+0.7
29	84	+0.8
30	86	+0.9
31	88	+0.9
32	90	+1.0
33	91	+1.1
34	93	+1.1
35	95	+1.2
36	97	+1.3
37	99	+1.3
38	100	+1.5
39	102	+1.6
40	104	+1.7
41	106	+1.7
42	108	+1.8
43	109	+1.9
44	112	+2.0
45	113	+2.1
46	115	+2.2
47	117	+2.3
48	118	+2.3
49	120	+2.4
50	122	+2.5
52	125	+2.7
54	130	+3.0
56	133	+3.2
58	136	+3.3
60	140	+3.5
62	144	+3.7
64	147	+3.9
66	150	+4.1
68	155	+4.4
70	158	+4.6
72	162	+4.8
74	165	+5.0
76	169	+5.3
78	172	+5.7
80	176	+5.9

**Most hydrometers and refractometers are calibrated at exactly 20°C.*

Filtering and Canning

(10 minutes) page 20

Explain the need to filter sugar sand out of the syrup. Then, let the 4-H members filter both their extra dense syrup and the syrup with the proper density. You can use filters and filter paper designed for syrup production or you can make your own filter. Use clothespins to attach a piece of felt, flannel or cotton to the top of a clean jar. Then, **slowly** pour the syrup onto the fabric. The syrup will drip through the fabric to the jar below. As in the hydrometer demonstration, let the 4-H members do as much as possible with you as a facilitator.

Once the syrup is filtered, the participants should proceed to bottle it. It is important to stress that syrup must be bottled or canned when it is hot (between 83 and 93°C). You might have to reheat the syrup to this temperature, then pour it into a clean jar or bottle. Turn the container on its side or upside down. The hot syrup will seal the container. Remember to avoid "stack burn," you must space out the hot containers. Label the jars so you know which is which. Bring the jars to the next meeting. The members can then see how the extra dense syrup crystallizes at the bottom of the jar. The club can use the finished syrup at their baking meeting.

Filter Experiment (10 minutes)

A youth leader might like to organize and lead this activity. Have the members experiment with different filter materials. Set up three different filter stations (cotton, felt and flannel) as above with clothespins and pails. Then, the 4-H members can mix up three pails of dirt water (1 litre of water with 200 mL of potting soil). They should pour the mixture slowly into each filter and wait for the mixture to drip through. Ask the members to note which filter finished dripping first, which pail has the clearest water, which one has the most dirt on the fabric, and which one is easiest to wash out. Then, the participants can decide what fabric they would recommend for filtering syrup.

Grading & Judging

(30 minutes) page 20

Refer to the 4-H Judging Handbook (4-H-1550-91) (page 34 and 35).

The purpose of this activity is for the members to judge syrup samples and place them based on the criteria laid out in the Judging Handbook.

Set-Up

1. Set up three different stations, with one syrup sample at each station. The samples should already be labelled A,B and C. You will need to place tasting spoons or cups at the stations too. The groups will travel from one station to the next.

2. Since you likely won't be able to get more than one hydrometer and one colorimeter (grading kit), it is suggested that you set them in a central location. When a group is ready to measure the density they can bring the sample to the hydrometer or similarly to the colorimeter.

Judging

1. Ask the members to pretend they are famous judges of maple syrup. The famous judges should describe the specific features that separate the best from the worst syrups. Then, referring to the Judging Handbook discuss and *demonstrate* how maple syrup is judged on four criteria.

2. You can break the members into 3 groups based on the distance they travelled to get to the meeting. For instance, the people who travelled the farthest are in one group, the people who travelled the shortest distance are in another group and the middle distance people form the third group.

3. The groups should then begin judging their first sample (writing their scores on a piece of paper). When all groups seem to be completed, they can move to the next station and so on until they have judged all three samples.

4. When completed, the groups should pick the first, second and third place syrups. They should report their choices to the rest of the club and give reasons for their choices.

Wrapping It Up
(5 minutes)

1. Have 4-H members briefly summarize what they learned this meeting.
2. Review the "Before the Next Meeting" activity. (page 21)
3. Ask for volunteers to bring pure maple syrup and syrup substitute containers to the next meeting.

Meeting 5 Maple Marketing

Objectives

1. To learn how to identify pure maple syrup from syrup substitutes.
2. To become familiar with the features of syrup that people are attracted to.
3. To learn about advertising tactics that are used to sell syrup.
4. To discover where pure maple products are sold in your area.

Special Notes For This Meeting

A Guest

Your club members might decide that they would like a guest speaker from the advertising or marketing field. It would be a good idea to share the information in the members' manual and this Guide with the guest speaker. You may need to adjust the activities below to accommodate the guest speaker.

In a Nutshell

Roll Call	5 min.
Can You Tell the Difference?	10 min.
The Super Syrup Challenge	15 min.
Commercial Capers or Marketing Charades	20 min.
Advertising Blitz or Alternate Activities	30 min.
Where are Maple Products Sold	5 min.
Wrapping It Up	10 min.
TOTAL	95 min.

Preparation & Equipment

Depending on the selection of activities, you and a Youth Leader should prepare the following.

Can You Tell the Difference?

- Supplies: scrap paper and pencils, pure maple syrup and syrup substitute containers (empty or with syrup in them). Try to have a variety of sizes and types of containers and labels. Members should be able to bring in some. A grocery store may be willing to let you borrow several containers for your meeting.

The Super Syrup Challenge

- Supplies:
  -one comparison chart for each member (page 56 of this Guide)
  -a container of pure maple syrup (with enough syrup to fill a small paper cup for each member)

-a container of maple syrup substitute (with enough syrup to fill a small paper cup for each member)
-the retail price of both syrup containers
-small paper cups about the size of coffee creamers (2 for each member)
-2 markers (different colours)
-calculators might be necessary for some members to figure out the cost of syrup per mL

- Before the meeting you should mark the "pure" cups with a marker of one colour and the "substitute" cups with a marker of another colour. This prevents the members from mixing them up in the taste test. You should also fill the cups prior to the meeting so that the members don't see which cup holds which kind of syrup.

Commercial Capers

- Before the meeting, you or your youth leader should tape 7 - 10 T.V. commercials. Try to include a commercial for a maple syrup substitute (eg. Aunt Jemima, Mrs. Butterworth's). Pick commercials which depict some of the advertising techniques mentioned by Addy on pages 22-23.

- Set up T.V. and V.C.R.

OR

Marketing Charades

- Before the meeting you will have to cut out the advertising technique cards (page 57 of this Guide).

Advertising Blitz

- Supplies: instruction cards for each centre (copy and cut up page 58 of this Guide); lined paper, 2 tape recorders, 2 tape cassettes, blank paper for Artist's Ally, erasers, pencils, pencil crayons and markers.

Project Completion Summary

- Read the note on page 61, this Guide. If you want members and parents/ guardians to complete the Project Summary sheet, give out copies at this meeting.

Alternate Activities:

Exhibit Extravaganza

- You will need supplies to create an exhibit:
-paper, construction paper, bristol board, markers and pencils, scissors, stencils, rulers, stapler, glue, tape, tacks and exhibit board.

Maple Sugar Skits

- Video camera (if available).

Bake Sale Advertising

- You will need supplies to make posters:
  -scrap paper for rough draft, large sheets of heavy paper or bristol board, markers or pencil crayons, stencils for lettering, rulers.

Syrup Festival Advertising

- See "Bake Sale Advertising" above.

Roll Call

(5 minutes) page 22

Ask each member to show his/her ad and answer the roll call. Provide positive reinforcement to each member for his/her answer.

Can You Tell the Difference?

(10 minutes) page 22

This activity should help the 4-H members become wise buyers of syrup. Before starting, number the syrup containers and display them on a table.

1. Ask each member to write the numbers down the side of a sheet of paper.

2. Instruct them to move around the table and examine the containers. Their objective is to note (beside the numbers on their papers) whether the container would hold pure maple syrup or not.

3. When the members are finished examining the containers call the group back together. For each container tally the number of people who think it holds pure maple syrup or not. If members disagree, have them give reasons for their decision. See if the group can then come to an agreement on the contents.

4. Before completing this activity, summarize (or have members summarize) ways to tell the difference between pure syrup and syrup substitutes. Emphasize the way the syrup is labelled (eg. pancake, table, maple flavoured or pure maple). The label will also state where the syrup is made.

The Super Syrup Challenge

(15 minutes)

Blind Taste Test

Give each member a "pure" cup and a "substitute" cup. Members should taste each syrup to decide which one is the substitute and which one is pure. Then, they can begin to fill out the comparison chart (page 56 of this Guide).

Comparison Chart

After the blind taste test, display the container from each syrup. Members can use the "Super Syrup Challenge" Chart (page 56 of this Guide) to help them compare the features of the two syrups. You might have to help them figure out the cost of the syrup per millilitre (mL). Show them that they need to divide the cost by the number of mL in the container. If the container is marked in Litres (L) they will have to multiply the number of litres by 1000 because there are 1000 mL in 1 L.

Examples: 250 mL of syrup cost $ 5.99
$ 5.99 ÷ 250 mL = $ 0.024 per mL

1 L of syrup cost $ 15.00
1 L x 1000 mL = 1000 mL then,
$15.00 ÷ 1000 mL = 0.015 per mL

If the members don't feel comfortable doing the math on paper, let them use a calculator, or help them figure it out. Another option is to forget about the exact figures and let them estimate which is cheaper by comparing the prices and sizes.

Commercial Capers
(20 minutes)

This activity is for clubs who have access to a T.V. and V.C.R. If you don't have these items you can do the "Marketing Charades" activity. Ask a guest speaker to take part in or lead this activity. Show the first commercial. Ask the members what techniques were used to sell the product it was advertising. (Did this commercial use a celebrity to endorse the product? Did this commercial use symbols, bright colours, jingles or slogans to catch your attention? Does this commercial try to promote a brand name?) Continue to show the commercials and review the advertising techniques. Ask the 4-H members to think of other products that use the same techniques. Pay particular attention to the commercial for the maple syrup substitute.

OR

Marketing Charades
(20 minutes)

The purpose of this game is for members to become familiar with ways that syrup producers can catch a buyer's attention. In this modified game of charades, members can draw, hum or act out the advertising technique. The member chooses the method he/she thinks will be best. The advertising technique and some ideas will appear on a card that the member will

draw from a pile. (The cards are on page 57 of this Guide). The member picks one of the ideas or uses his/her own and hums, draws or acts out the technique. The other members try to guess the product and the advertising technique being shown. After the club guesses the technique and the product, ask them to think of other products that use the same technique. Discuss the technique and whether it helps sell products.

Advertising Blitz
(30 minutes)

The members will choose from three possible centres. Each centre will have written instructions for what to do and things to keep in mind (see page 58 in this Guide for instructions). The leader should briefly introduce the centres. Members go to the centre that interests them. They might want to look at the instruction cards at each centre before they decide what they will do. If members want to work in groups, encourage them to do so (most advertisers work as part of a team). If a member completes an activity quickly, encourage him or her to try another centre. Signal to the members when there is about 5 minutes left of activity time. Then, form a large group again. The members can *volunteer* to show what they have completed at the centres. Volunteering is an option and some members may not want to share their results.

OR

Alternate Activities
(30 minutes)

The following activities are alternatives to the Advertising Blitz. Choose the most appropriate activity for your club.

Exhibit Extravaganza

If your club is doing a maple syrup or 4-H exhibit for your achievement program or for a fair, choose this activity instead of the activity centres. Members should apply their new advertising knowledge to their exhibit design. Get the club to make a list of the features of a good exhibit and the features of a bad exhibit. A good exhibit uses a catchy title, headings and subheadings, colour and symbols. The message is short and to the point. Brainstorm what they would like to include in their exhibit. Remind them that when brainstorming, every idea is worthwhile, no matter how crazy (sometimes these turn out to be the best ones)! Vote on ideas and make decisions as a group. Then members can begin to put together their masterpiece.

Maple Sugar Skits

If your club is doing a presentation at a syrup festival or for syrup producers, choose this activity. Challenge the members to create a skit(s) on maple syrup. It could be a commercial for maple syrup or it might show people in the grocery store deciding which syrup to buy (pure or substitute). Have them apply their new advertising knowledge to the skits. Stress the best points about maple syrup (see page 23). Work in small groups on several skits or involve the club in one skit. Video tape the skits if you wish.

Bake Sale Advertising

If your club is having a maple bake sale for their achievement program, choose this activity. Have the members design an advertising campaign for their bake sale. The group can decide where and when they will hold it, where they should advertise and how. Members can apply their new advertising knowledge to create the advertisements (posters or newspaper ads).

Syrup Festival Advertising

If your club is helping a local syrup festival advertise by making posters, choose this activity. Challenge the members to make original posters advertising the festival. Provide the members with "where, when, what time" details. Encourage them to use some of the new advertising techniques they discussed. To avoid spelling mistakes or other problems have them do a rough copy first.

Where Are Maple Products Sold?
(5 minutes)

Discuss where maple products are sold in your area.

Wrapping It Up
(10 minutes)

1. Have 4-H members briefly summarize what they learned this meeting.
2. Review the "Before the Next Meeting" activity. (page 24)
3. If members are choosing recipes to make next meeting, do so at this time. Also, assign responsibility for getting ingredients or equipment.

The Super Syrup Challenge

FEATURE	PURE MAPLE SYRUP	SUBSTITUTE:_____
Colour (eg. golden, chestnut, dark etc...)		
Texture (eg. thick, thin, runny etc...)		
Label -What is the syrup called (table, pancake, or maple syrup)? -Does it say if the syrup is pure? -Is it colourful? etc...		
Ingredients -Is there artificial colour or flavour added to the syrup?		
Cost -What is the cost for 1 millilitre (mL)?		
Taste (eg. bitter, smoky, burnt, buttery etc...)		

What syrup would you buy? Why?

Marketing Charades Advertising Technique Cards

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE A CARTOON CHARACTER TO PROMOTE A PRODUCT
Bart Simpson and Butterfinger chocolate bars
Jolly Green Giant and vegetables
Pillsbury Doughboy (Poppin Fresh) and baked goods
Flintstone Vitamins
Ronald McDonald

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE A CATCHY SONG (JINGLE) TO PROMOTE A PRODUCT
California grapes and "I Heard it Through the Grapevine"
Coke or Pepsi theme songs
Jello "Of all desserts, I love the one, that tastes so good..."
Oscar Meyer Wieners "I love my Oscar Meyer wiener..."

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE A FAMOUS PERSON TO PROMOTE A PRODUCT
Bill Cosby and Jello
Michael Jordan and Nike
Cliff and Norm (from "Cheers") and Pepsi Max

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE A HAPPY CUSTOMER TO PROMOTE A PRODUCT
A happy customer at Big V Drugstore
A happy customer at Home Hardware

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE A SYMBOL TO PROMOTE A PRODUCT
4-H symbol and 4-H
Cotton symbol and cotton clothes
Maple leaf symbol and Canadian-made products
Eco logo and ecologically friendly products
The golden arches and McDonald's

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE A CATCHY SLOGAN TO PROMOTE A PRODUCT
Speedy Muffler King (At Speedy, you're a somebody.)
Zellers (Where the lowest price is the law!)
Eggs (Get Cracking...)
Ford (Quality is Job 1!)

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE HEADINGS AND SUBHEADINGS IN A WRITTEN AD
newspaper ad
poster
flyer

Draw, hum or act out **one** of the ideas here or think of your own. Others will guess what product and technique you are showing.

USE BRIGHT COLOURS TO PROMOTE A PRODUCT
Tide Laundry Detergent Box
Coke Can
Written Ads

Advertising Blitz: Activity Centre Cards

Centre 1: It's a Jingle Jungle Out There!

Your challenge is to create a song or jingle to promote maple products. Remember, jingles are short and have a good beat. Use everything you know about maple syrup and what makes people buy it. Record your jingle on a tape cassette.

Centre 2: Syrup for the Stars

Pick your favourite athlete, actor, musician or local celebrity to promote maple syrup. Write a script that tells what he or she would say about maple syrup. Use what you know about maple syrup and what makes people buy it. Make sure the words sound like something your famous person would say. Read your script and record it on a tape cassette.

Centre 3: Artist's Ally

Get out your pencils and erasers! This is your chance to create the first cartoon character for maple syrup. Use what you know about maple syrup to develop your character. Think of characters that are used to promote other products (eg. Jolly Green Giant, The Snap, Crackle and Pop Characters, Ronald McDonald etc...).

OR

If graphic symbols are more up your ally, try making an Ontario maple syrup logo. First, think of symbols that are used to promote other products (eg. 4-H symbol and McDonald's golden arches). Then, think of all the tools and objects that are related to maple syrup. Let your imagination run like the sap in the spring!

OR

Better yet, design a rough ad or poster for maple syrup. Use a catchy title or slogan. Slogans should be short, simple and fun. Remember to use headings and subheadings to catch people's attention and make it easy to read. Use bright colours to make your ad stand out.

Meeting 6 MMMMarvelous Maple

Objectives

1. To become familiar with the variety of maple products available.
2. To learn how to properly store maple syrup.
3. To make recipes which use maple syrup in different ways.
4. To evaluate the project.
5. To prepare for the Achievement Program.

Special Notes For This Meeting

Group Size

This meeting focuses on the preparation of a number of maple recipes. The ideal group size is 2 or 3 people per preparation group. If you have a large club, it is best to increase the number of groups rather than group size. You might let these additional groups try making pure maple products or recipes that are favourites in your local area.

Youth Leader Preparing Crossword

Instead of, or in addition to the Maple Word Scramble, your club might enjoy doing a crossword. The youth leader could design a simple crossword to match the ability level of the general members. Show the youth leader the crossword in the Advanced Members' Manual to give him/her some ideas.

In a Nutshell

Roll Call	5 min.
How Are Maple Products Used?	10 min.
Storing Maple Syrup	10 min.
Let's Bake	70 min.
Maple Syrup Scramble or Crossword	10 min.
Taking Care of Business	10 min.
Wrapping It Up	5 min.
TOTAL	120 min.

Preparation & Equipment

Depending on the selection of activities, you and a Youth Leader should prepare the following.

How Are Maple Products Used?

- If possible, bring in some maple butter and maple sugar.

Let's Bake

- Before the meeting, review recipes (pages R7 - R16, Recipe Booklet). Select recipes based on the baking/cooking experience of the members.

- Check to make sure you have all equipment and ingredients.

Maple Syrup Scramble

- Copy one word scramble for each member **or** write the word scramble on a chalk board or chart paper. Then, the members can use scrap paper to figure out the words.

Roll Call
(5 minutes) page 25

Ask each member to answer the roll call. Provide positive reinforcement to each member for his/her answer.

How Are Maple Products Used?
(10 minutes) page 25

Referring to the answers the members provided in the roll call, discuss the different ways that syrup can be used. Mention that there are other pure maple products available (eg. maple butter and sugar) that can be made from maple syrup. If possible, show and let the members taste some maple butter and maple sugar. Recipes, page R3 and R4.

Storing Maple Syrup
(10 minutes) page 26

As a Before the Next Meeting activity, the members were asked to find out where and how their family stored maple syrup. Start this discussion by asking the members what they found out. Note that maple syrup substitutes can be stored on the shelf, but maple syrup should be stored in the refrigerator.

Let's Bake
(60 minutes)

Break the members into baking groups. Assign recipes considering the baking/cooking experience of members.

What you make will also depend on the size of your group. If you have a small number of members you may wish to choose only two or three of these recipes. Large groups could try to make one of the pure maple products.

Maple Syrup Scramble or Crossword
(10 minutes)

The purpose of this activity is to briefly review some of the things that have been discussed during this project. You can do the scramble altogether as a group or the cooking groups could do it when they have time between preparing, cooking and eating.

Answers to the Scramble:

1. pancakes
2. spile
3. bucket
4. evaporator
5. tubing
6. sap
7. boil
8. sugar maple
9. taffy
10. spring

Taking Care of Business

(10 minutes)

Project Completion

A Certificate of Completion and a Project Summary have been included in this Guide, pages 64 - 65. Your signature on either of these indicates you feel the member has completed the project to the best of his/her ability. Space is provided for you to add some individual comments to offer encouragement to the member. The Project Summary sheet also asks for written feedback from the member and his/her parents/guardians. (The questions on this sheet have been selected from the informal evaluation sentences, listed below.) Select whichever sheet best meets your needs and make copies for the members.

It is recommended that the certificates not be awarded until the Achievement Program. If you give them out before this time, some members mistakenly assume that they don't need to participate in the program.

It Worked For Us!

Your experience in leading this club would be helpful to another leader in your area. You are encouraged to make some comments about the project, what resources you discovered locally and the members' feelings about the project and pass this information on to your 4-H Association. The Resource Development Subcommittee of the Ontario 4-H Council is interested in your comments too. Their address is in this Guide, page 11.

Informal Evaluation

Take a few minutes at the last meeting to do an informal evaluation with members. One way to do this is to ask them to complete one/all of the following sentences. Remind the 4-H members to give honest answers.

- I joined this club because ...
- I really enjoyed ...
- I didn't enjoy ...
- I had a hard time ...
- The best meeting was...
- The worst meeting was...
- My favourite meeting activity was ...
- My least favourite meeting activity was ...
- If I was to take this project again, I would change ...
- My favourite recipe was ...

- My least favourite recipe was ...
- I learned ...
- I've changed ...
- I'm glad ...
- Overall, I would rate this project _ out of 10.

Wrapping It Up
(5 minutes)

1. Have 4-H members briefly summarize what they learned this meeting or during this project.
2. Remind 4-H members of the location, time and their responsibilities for the Achievement Program.
3. Remind 4-H members to complete their special activity.

THANK YOU FOR BEING
A VOLUNTEER 4-H LEADER!

Maple Syrup Scramble

1. ncesaakp ⇨ _____
2. ilpse ⇨ _____
3. cuktbe ⇨ _____
4. reatropova ⇨ _____
5. gbutin ⇨ _____
6. aps ⇨ _____
7. ilbo ⇨ _____
8. gruas lempa ⇨ _____
9. yfatf ⇨ _____
10. rpsnig ⇨ _____

MAPLE SYRUP - GENERAL

Congratulations on successfully completing this 4-H project.

_____

_____

_____

_____

_____

_____

_____ _____

Date Club Leader's Signature

PROJECT SUMMARY - MAPLE SYRUP

(complete at the end of the project)

A. Member Comments:

1. I joined this club because ... _____

_____

_____

2. I really enjoyed ... _____

_____

I didn't enjoy ... _____

_____

3. If I was to take this project again, I would change ... _____

_____

_____

4. I learned ... _____

_____

5. I'm glad ... _____

_____

B. Parent/Guardian Comments: _____

_____

_____

C. Leader Comments: _____

_____

_____

This project has been completed satisfactorily.

Member _____ Leader _____

Date _____ Leader _____

Maple Syrup

General

Name _____ Age _____

Club _____

Ontario
4-H Council

Ontario
Ministry of Agriculture,
Food and Rural Affairs

4-H 1700 95 MEI

THE 4-H PLEDGE

"I pledge:
My Head to clearer thinking
My Heart to greater loyalty
My Hands to larger service
My Health to better living
For my club, my community and my country."

TABLE OF CONTENTS

This project was prepared by
Julie Cameron, Watford
for the Ontario 4-H Council.
Special Thanks to the Advisory Committee:

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John Butler	Maple Syrup Advisor	Barrie
Lorraine Cherry	4-H Leader	Killaloe
Kathe Davidson	4-H Leader	Ilderton
Laura Pilkey	4-H Member	Burgessville
Bruce Quinn	Agriculture in the Classroom Education Consultant	Ridgetown
Lois Steed	4-H Leader	Indian River
Cheri Vasey	Rural Community Advisor	Brockville
Maria VanGrinsven	4-H Leader	Killaloe

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MAPLEGM

ISBN 0-7778-3797-8

The primary purpose of the 4-H program is the personal development of youth in rural Ontario.

Introduction

The Maple Syrup Project

Maple trees and maple syrup making are unique parts of Canada's history and culture. Have you ever wondered how the watery sap of the maple tree is made into thick, sweet syrup? It is an amazing process and this club will help you learn all about it! You can learn about the tapping process, the gathering process, and the boiling process and about advertising maple products. You can also practise identifying trees and judging maple syrup. In one of the meetings, your club may even make and taste great foods made with maple products. Mmmmmm!

Objectives

You will be able:

- To describe the major steps in making maple syrup and the equipment used in the process (past and present)
- To identify a maple tree suitable for tapping
- To identify pure maple syrup from syrup substitutes and understand how advertising is used to sell these products
- To make recipes which include maple products
- To have fun and make new friends.

General Requirements

A member will complete a project satisfactorily by:

1. participating in at least 2/3 of his/her own club meeting time;
2. completing the project requirements to the satisfaction of the club leader(s);
3. taking part in an Achievement Program.

Meeting Schedule

	DATE	TIME	PLACE
MEETING ONE			
MEETING TWO			
MEETING THREE			
MEETING FOUR			
MEETING FIVE			
MEETING SIX			
ACHIEVEMENT PROGRAM			

The 4-H Resource Development Subcommittee of the Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address.

4-H Resource Development Subcommittee
c/o Guelph Agriculture Centre
P.O. Box 1030
Guelph, Ontario
N1H 6N1

Get Involved

Be willing to let your name stand for an executive position. It is a rewarding and fun experience. Following your club's elections, complete this club executive chart.

CLUB EXECUTIVE:

	Name	Phone
PRESIDENT	_____	_____
VICE-PRESIDENT	_____	_____
SECRETARY	_____	_____
TREASURER	_____	_____
PRESS REPORTER	_____	_____
OTHER	_____	_____

CLUB MEMBERSHIP:

Members, Phone	Members, Phone
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

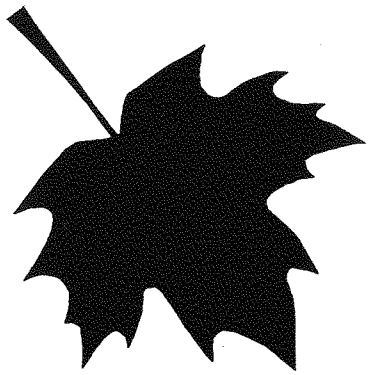
Leaders, Phone	Leaders, Phone
_____	_____
_____	_____

OMAFRA Contact, Phone	4-H Association Contact, Phone
_____	_____

The Search For Sugar

Roll Call

When you see the maple leaf symbol, what do you think of?



Where Does Maple Syrup Come From?

Maple syrup is made from the sap of the maple tree. Sap looks like water and tastes a little bit sweet. Usually, sap contains only 1 to 4% sugar. 96 to 99 percent of sap is water!

HOW IS THE SUGAR IN SAP MADE?

The maple leaves are sugar making factories. Inside tree leaves, there is a green substance called chlorophyll. Chlorophyll is like the boss. It has to be there for any work to get done. The factory needs carbon dioxide from the air and water from the roots in order to make its major product – sugar. The factory gets its energy from sunlight.

All summer long, the chlorophyll works hard making sugar. This sugar-making process is called photosynthesis.

Carbon Dioxide + Water $\xrightarrow[\text{chlorophyll}]{\text{sunlight}}$ Sugar + Oxygen

HOW DOES THE SUGAR GET TO OTHER PARTS OF THE TREE?

In the leaves, the sugar mixes with water to become sap. The sap moves from the leaf to other parts of the tree. The sugar can't be stored in the leaves because maples lose their leaves in the fall. Instead, the sap is stored in the wood of the tree for the winter. The sugar gives the tree extra energy to grow and to make new leaves in the spring.

How Was Maple Syrup First Found?

Have you ever wondered how maple syrup was first found? Here are some old legends or stories that people tell about discovering maple syrup.

SQUIRREL LEGEND

A long time ago, a man was walking through the woods. He stopped to watch some squirrels playing in a tree. Then, one of the squirrels began to lick a tender twig. The man wondered why the squirrel would do such a strange thing. The man made a cut in the tree and tasted the liquid himself. It was a little bit sweet. He waited for some sap to drip into a bowl and took it to share with his friends. They all tasted it. He was right, it was a sweet drink. Later, the man left the bowl of the sap in the sun. To his surprise, the warm sun had turned the sap into a thin sweet syrup. Imagine, a squirrel helped to find maple syrup!

HATCHET LEGEND

One day a young Native boy was sent to get a bowl of water for his mother. To get the bowl of water, he had to walk through the woods to the river. He started on his way with a bowl and his hatchet. After walking for a while, the boy got bored. He looked at the tree ahead. He thought it would make a good target for his hatchet. He put down his bowl and aimed at the tree. He counted to three and threw the hatchet. Bull's-eye, he had hit his mark! He ran to get the hatchet but it was high above his head. He jumped and jumped but he could not reach it. The boy got tired and sat down beside the tree. Soon he had fallen asleep.

His mother became worried. Her son had been gone far too long. Off she went to look for him. The boy was surprised when his mother shook his shoulder to wake him. He was even more surprised when he looked down and saw his bowl full of water. He wondered how it got there. He didn't dare tell his mother that he hadn't reached the river. The boy and his mother took the water home to cook some stew for supper. It was the sweetest stew they had ever tasted! Do you know what had dripped into the bowl?

OLD MOTHER EARTH'S GRANDSON

A long time ago, pure maple syrup poured from the maple tree. People could get syrup any time they wanted and they didn't even have to boil it. Old Mother Earth's Grandson was worried. It was too easy to get the syrup. He thought that people might waste the syrup. Even worse, people might get lazy because they didn't have to work for the sweet treat. He had to do something to prevent this from happening. But what could he do? He climbed to the top of a maple tree. When he got to the top, he sprayed the tree with water. Clear, watery sap began to drip from the tree. He was very pleased with what he had done. Now, people would have to boil away the water to make syrup!

Three Stages of Syrup Making

Maple syrup making can be split into three main stages. They are the **tapping**, the **collecting**, and the **boiling** stages. The methods and tools used in each of these stages have changed over the years to make better syrup or to save time.

TAPPING (THEN AND NOW)

The tapping stage means making a cut into the tree so that sap can drip out. A spout-like device (called a spile) is put into the hole. A spile in a tree works like an eaves trough on the roof of a house. It helps the sap drain away from the tree.

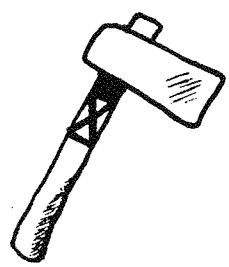
NATIVE METHODS: Native people were the first people to tap trees. They used a hatchet to slash the bark of the tree. A piece of reed or bark was put into the hole to help the sap drip away. This method of tapping was hard on the tree. The gash made with the hatchet never healed and the tree might die a few years later.

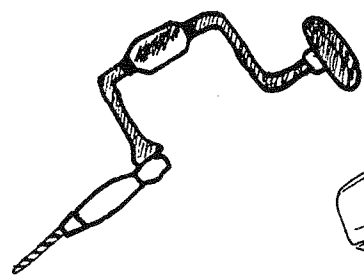
PIONEER METHODS: New settlers learned how to make syrup from Native people. The pioneers had brought different materials to Canada, and also had metal and woodworking skills. Because of this, they were able to design new tools for tapping. Pioneers carved wooden spiles with sharp knives. Later, they made metal ones. To make a hole in the tree's bark, pioneers used a hand drill (called a brace and bit). Some producers still use this method.

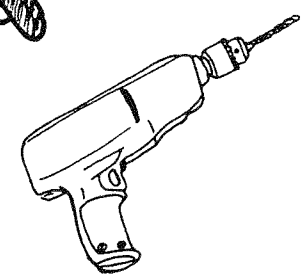
MODERN METHODS: Today, some producers use power drills to tap trees. Some producers are also using plastic spiles.

Changes in tapping tools:

reed or pieces of bark ⇨	wooden spiles ⇨	metal spiles ⇨	plastic spiles
hatchet ⇨	brace and bit ⇨	power drill	







COLLECTING (THEN AND NOW)

The collecting stage means catching and gathering the sap.

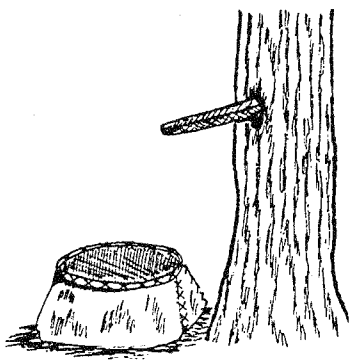
NATIVE METHODS: Native people let the sweet sap drip into bark containers. These containers, which sat on the ground, were called mokuks. Sap in the mokuk was poured into a hollowed out log. The log would serve as the boiling pot.

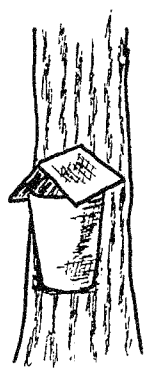
PIONEER METHODS: Pioneers used wooden buckets or metal pails to gather sap. The buckets were hung on hooks just below the spile. To keep out rain, snow, leaves, and dirt a lid was designed for the bucket. The sap in the buckets would be poured into larger gathering pails. Pioneers would empty the gathering pails into a gathering tank. Horses or tractors would pull the gathering tank on a sled or wagon. This method is still being used.

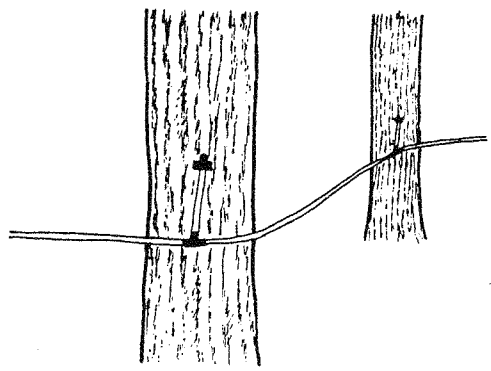
MODERN METHODS: Large producers have changed to using plastic tubing to gather sap. The sap is drawn through a network of tubes to a large storage tank. Gravity or a vacuum pump is used to pull the sap through the tubing.

Changes in collecting tools:

bark mokuks ⇨ wooden buckets ⇨ tin buckets ⇨ plastic or aluminum buckets ⇨ plastic tubing







BOILING (THEN AND NOW)

The boiling stage means heating the sap for a long time. The methods and equipment used to boil sap have changed over the years. But, the goal has always been to evaporate or remove some of the water.

NATIVE METHODS: Native people cooked their sap in a hollowed out log. Stones were heated in a fire and placed into the log. The heat from the stones helped to evaporate the water in the sap. It took a very long time for the water to evaporate. Native people also let the sap freeze at night. In the morning, they would pick the ice off the top of the sap. This got rid of some of the water before boiling began.

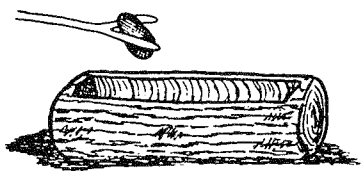
PIONEER METHODS: The pioneers boiled their sap in a large kettle. The kettle sat right above an open fire. This method was quicker

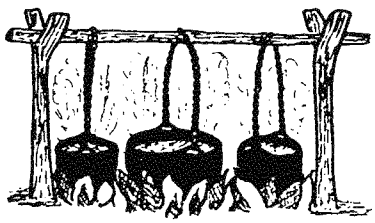
than the Native method. With only one kettle, the pioneers found that the syrup at the bottom sometimes got burnt. They started using three or four kettles. They moved the sap from one pot to the next. The sap thickened in the smaller pots but was removed from the heat before it burned. Later, a flat bottomed pan was designed. In this kind of pan the sap could lie in a thin layer. The sap cooked faster and more evenly in flat bottom pans.

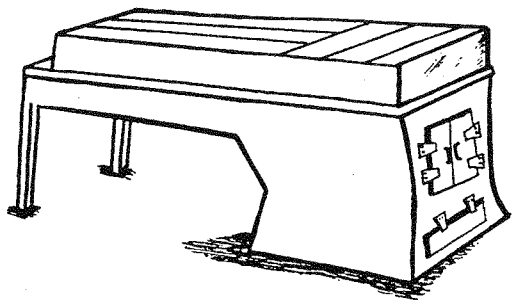
MODERN METHODS: Today, producers use an evaporator to boil the sap. An evaporator has both flat bottomed and corrugated pans. An evaporator pan has many sections. The sap enters the evaporator at one end and moves towards the other. A fire burns under the evaporator in an enclosed firebox. The enclosed fire and the large boiling area help cook the sap faster.

Changes in boiling equipment and heating methods:

hollowed out log ⇨	1 cast iron ⇨ kettle	group of ⇨ kettles	pan (flat ⇨ bottom)	pan with ⇨ sections	evaporator
stones ⇨	open ⇨ fire		enclosed fire		







BEFORE THE NEXT MEETING

Do weather patterns affect the flow of sap? If it is syrup season, find out, by filling in all or some of the sections in the weather chart. Ask your leader to give you a copy of the chart. Your club will decide which sections to fill in. This information will be used in a later meeting. Your leader will contact a local sugar bush to find out how well the sap flows each day (unless someone in your club can track that too)!

OR

Take a walk through your yard, neighbourhood or local park. Think about ways you can tell one kind of tree from another kind. For example, how is a maple tree different from a pine tree? etc...

Barking Up The Right Tree

Roll Call

If you were a tree, what kind of tree would you like to be? Why?

Where Is Syrup Made?

Canada has long springs with freezing nights and warm days that make sap run. Most other places in the world don't have this kind of climate. Maple trees grow all over the world, but it is here in Canada that the most syrup is made. Within Canada, Quebec produces the most syrup, followed by Ontario.

Can This Tree Be Tapped?

The sugar maple is most often tapped. Sugar maples grow all over Southern Ontario and also in parts of northern Ontario.

The tree with the sweetest sap is the black maple. It takes less time to make this sap into syrup. Black maples grow in the most southern parts of Ontario.

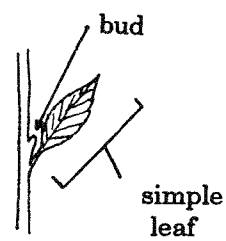
Sometimes producers tap silver and red maples. Also, years ago, producers would make syrup from ash, box elder, walnut and birch trees. The syrup from these trees tasted different. It also took a lot longer to make this sap into syrup. This is because these trees have sap with a lower sugar content.

How Can You Identify A Tree?

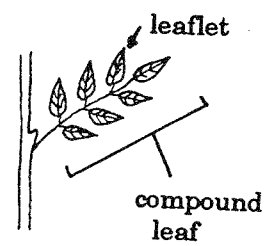
Names, fingerprints, birthmarks and appearances are special features that we use to identify people. A maple syrup producer needs to know how to identify trees. It would be rather embarrassing to be caught tapping an oak tree! To help you identify trees, you should learn about their special features.

LEAVES

Looking at leaves is one way to identify a tree. You might need to know how to tell the difference between a leaf and a leaflet. Check for a bud at the base of the stem. A leaf always has a bud at the base of its stalk, a leaflet doesn't! Identifying trees by their leaves alone, is sometimes tricky. So you should learn about other tree features too!



LEAF



LEAFLET

BARK

Bark can be smooth, rough, flaky or furrowed.

SHAPE

Look at the overall shape of a tree. Some have round tops, others have an oval or a triangular top. Some trees have branches that reach straight to the sky. Other trees have branches that droop towards the ground.

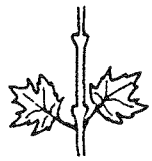
FRUIT

Some trees have unique fruits (nuts, acorns, maple keys) that can help to identify them.

BUDS AND TWIGS

In the fall or winter, check a tree's buds. Buds can be found at the ends and along the sides of most twigs. The buds are small bumps which will become leaves and/or flowers.

Many tree buds alternate. This means there is a bud at one height and the next bud is further along the twig. But, maple trees have an opposite bud pattern. Opposite buds grow right across from one another.



OPPOSITE LEAF/BUD PATTERN

ALTERNATE LEAF/BUD PATTERN

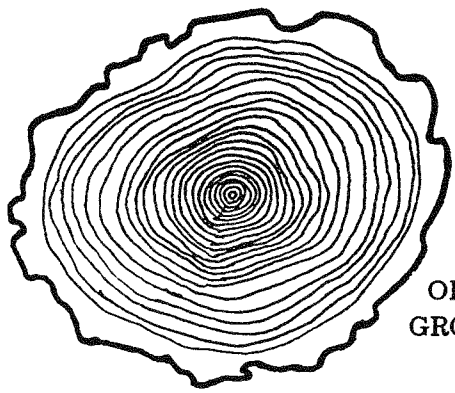
There are four common trees that have an opposite bud pattern. "MAD Horse" is a good way to remember these four trees – Maple, Ash, Dogwood and Horse Chestnut.

LOCATION

Where a tree grows can sometimes help you identify it. Do you have a palm tree growing in your backyard? How many oak trees grow in the desert? See how location can help?

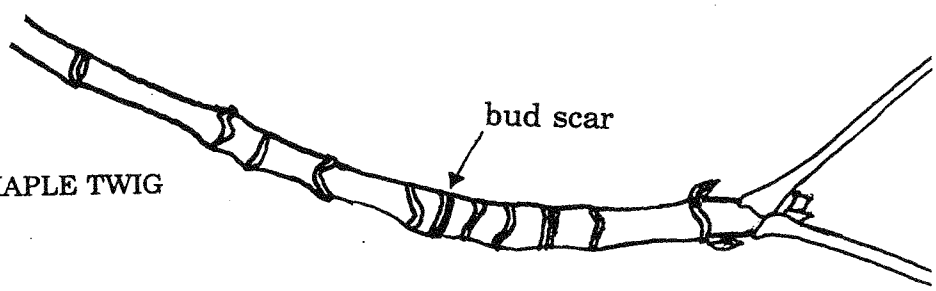
Has Finding The Age Of A Tree Got You Stumped?

Look at the top of a cut stump. You will see many rings of wood. You can count these rings to find the age of a tree. This works because a new layer of wood usually forms once a year. One light and one dark ring makes one year's growth. The dark rings are slow growing summer wood and the light rings are quick growing spring wood. To find the age, it is easiest to count every dark ring.



CROSS SECTION OF TREE SHOWING GROWTH RINGS

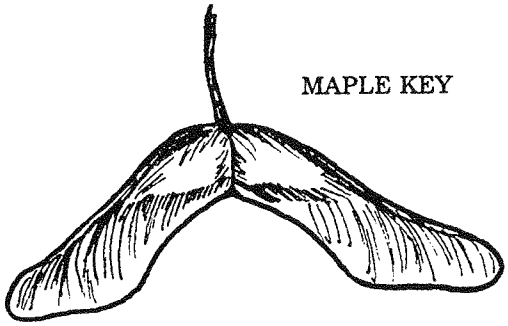
You can also find out how old a twig is. If you look at a twig, there will be places along its length that are a little thicker and rough. This is a bud scar. The scars are places where the large bud at the end of the twig once grew. The distance between two bud scars is one year's growth. Count the bud scars and then subtract one. This is the age of the twig.



MAPLE TWIG

How Long Does It Take To Grow A Sugar Bush?

You've likely seen maple keys before. There is a seed at the end of each key. Maple trees grow from these tiny seeds. Maple keys fall off trees in the summer or autumn and the seeds begin growing the next spring.



MAPLE KEY

If you planted maple seeds right now, it would take between 40 and 80 years before you could tap the tree. That's a long time to wait for tasty syrup! Because it does take so long, producers should promote the growth of young trees.

To grow well, maple seeds and young trees need direct sunlight. A producer needs to cut down old trees or groups of trees to make sure that enough sunlight gets to the forest floor for new trees to grow. If there isn't much new growth, when the trees in the bush get too old, the producer won't have younger trees to replace them. A producer needs to aim for between 175 and 225 tapholes per hectare. This gives enough space in the forest covering for the sunlight to reach growing seeds and trees below. Then, a young forest can begin to grow. The young trees of today, will be the sugar bushes of tomorrow.

BEFORE THE NEXT MEETING

If it is syrup season, keep on filling out your weather chart. You will examine the patterns in the next meeting.

OR

Find out how popular the sugar maple tree is in your neighbourhood. How many sugar maples can you find? How far is it from your home to the closest sugar maple? Is it 20 steps, 1 block, or 3 fields?

Tapping Trivia

Roll Call

What do you have in common with a tree?

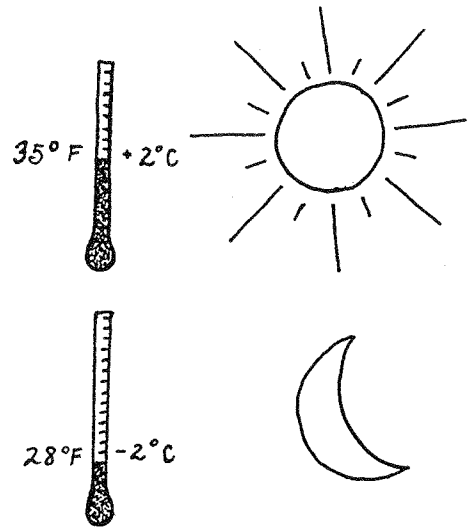
The Maple Syrup Season

Sap usually flows in the month of March and the first two weeks of April. If you live north of Lake Nipissing, you might find that the sap flows later. Syrup season is over when the tree buds begin to swell. Sap collected then, makes syrup with a buddy or bitter taste. Normally, the season lasts anywhere from 3 to 6 weeks. Longer seasons often mean more syrup and more money for producers.

MAPLE SYRUP WEATHER

Like all farming, maple syrup production depends a lot on the weather. When people first started gathering maple syrup, they didn't know this. They looked for patterns in bird migration, sunshine, rain, snow, temperature and the moon.

The sap will flow when there is a cold night (below -2°C or 28°F) followed by a warm, sunny day (above 2°C or 35°F). If the temperature gets really low (below -7°C or 20°F) or really high (above 7°C or 45°F) the flow will likely stop. The speed of flow can change from hour to hour and day to day depending on the weather.



During maple season, the sap freezes at night and thaws during the day. This causes pressure to build in the tree. When the tree is tapped, the pressure pushes the sap out the hole. Later, in the spring season, the temperature will stay above freezing. This stops the pressure build-up, and in turn, the sap stops dripping.

THE YEAR BEFORE

Did you know that syrup production can depend on the weather as far as a summer before syrup season? A hot sunny summer with plenty of rain results in the tree's leaves making a lot of sugar. The sap also flows best when the ground does not freeze too deeply over the winter.

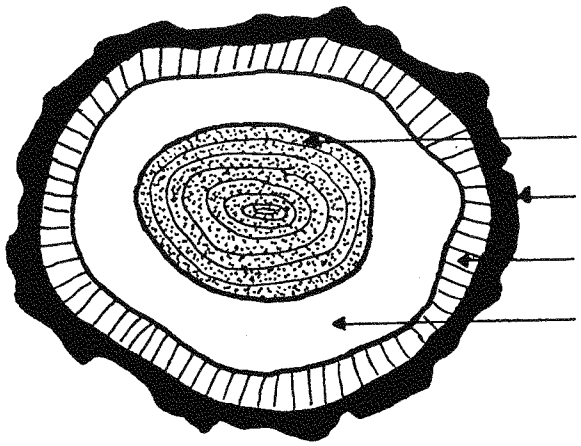
Tapping

WHERE IS THE SAP IN THE TREE?

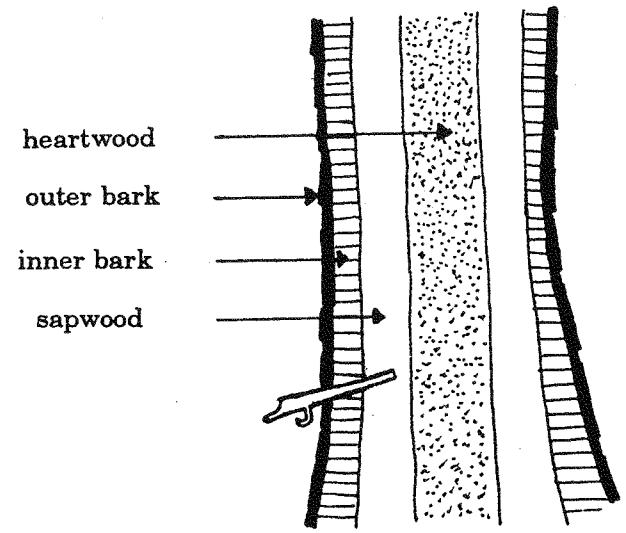
Sap can be found in a tree's branches, roots and trunk. The trunk is tapped because it is easy to reach.

A tree has different layers of wood within the trunk. Sap flows in the sapwood layer of the tree. You should not drill a taphole any deeper than 8 cm (3"). This is deep enough to pierce the sapwood layer but will avoid hitting the heartwood on most trees.

INSIDE A MAPLE TREE



CROSS SECTION OF A TREE



SIDE VIEW OF A TREE

WHICH SIDE SHOULD YOU TAP!

Tapping trees early in the spring is important. This way, you won't miss the sweetest sap. Although sap usually runs on the south side of the tree first, you should tap all sides. You could damage a tree if you tapped only one side all the time. Besides, by the end of the season, taps on all sides of a tree end up producing about the same amount of sap.

HOW DO YOU TAP A TREE?

Most producers want to have between 175 and 225 tapholes in a one hectare woodlot. That is about 70 to 90 tapholes per acre. Can you imagine drilling that many holes? Here is a guide for drilling a taphole.

EQUIPMENT:

- Measuring tape, a hand or power drill with a sharp 11 mm (7/16") bit, a spile, a hammer and a pail.

INSTRUCTIONS:

1. Check to make sure the temperature is above -4°C (25°F). Don't try to tap a tree if the temperature is below this. Bark and wood splits easily when it is frozen.

2. Choose a healthy maple tree that is at least 25 cm (10") in diameter. This means the width of the tree straight across (not all the way around).

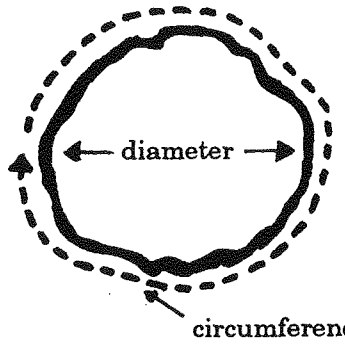
3. The taphole should be drilled about 1 m (3-4 ft.) above the ground.

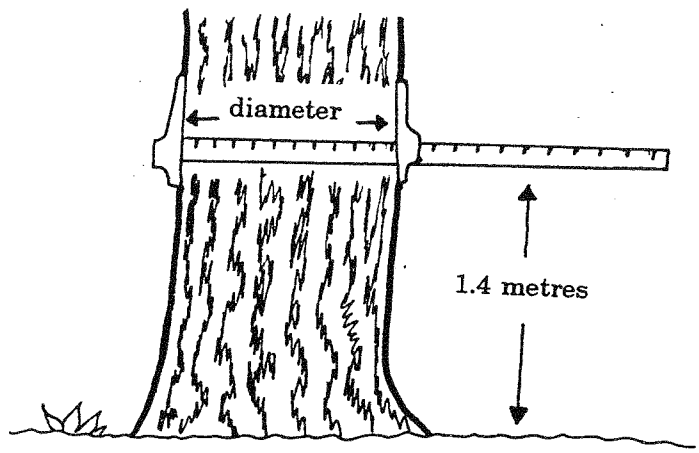
4. Drill the taphole. The best taphole is 6 cm (2.5") deep. Drill the hole so that it slants a bit upwards. This way the sap will flow down the hole to the outside.

5. Clean out the hole.

6. Hammer the spile into the taphole. Hammer gently. Don't hammer the spile too hard or too far into the hole. The bark could split or crack.

7. Hang a clean pail from the spile and put on the lid. Now, all you have to do is wait for the sap to run.





WHAT IF THE TREE HAS BEEN TAPPED BEFORE?

It takes 2 to 3 years for a taphole to heal. Healing tapholes should not be disturbed. Drill tapholes in a spiral or corkscrew pattern. This means that a new taphole should be drilled at least 15 cm (6") away from an old open one or 60 cm (2 ft.) higher up. Drilling tapholes too close together puts the tree at risk of decay or infection.

HOW MANY TAPHOLES IN A TREE?

Putting too many taps in a tree can also cause damage. The table below shows how many taps you should drill depending on the size of the tree. Note that a tree must be at least 25 cm (10") in diameter to be tapped. Also, a tree should have no more than 4 taps.

Diameter of Tree (centimetres)	**Diameter of Tree** (inches)	**# of Tapholes**
smaller than 25 cm	smaller than 10 "	0
25 - 36 cm	10 - 14 "	1
37 - 48 cm	15 - 19 "	2
49 - 61 cm	20 - 24 "	3
larger than 62 cm	larger than 25 "	maximum 4

DOES TAPPING HURT A TREE?

If tapping is done properly it should not hurt a tree. Tapping a tree takes just a bit (one tenth) of a tree's sap. This will not hurt a tree unless the tree is already stressed. However, improper tapping can hurt a tree. See the instructions above to avoid overtapping or putting tapholes too close together.

Buckets Or Tubing?

Buckets have been replaced by tubing in most large farms. Before looking at the chart below, see if you can think of some "pros" and "cons" of tubing.

Feature	**Buckets and Tubing Compared**
Labour or work hours	• Tubing saves you the hard work of lifting and dumping heavy pails full of sap. The sap runs to the storage tank on its own or with the help of a pump. However, tubing takes more time to set up.
Expense	• Producers using buckets have to buy buckets, lids and spiles for each tap (total about $4.50/tap). • Producers using pipeline must buy tubing and if they have more than 500 taps they often buy a vacuum pump (total $3.50-4.00/tap + $2000-3000 for a pump). The pump pulls the sap through the tubing.
Sap	• A tubing system keeps the sap cleaner. There is no chance for dirt or leaves to get in it. • Sap is often lost when a bucket tips or overflows. With tubing, sap is less likely to get lost.
Damage to trees	• With buckets, trees can be damaged by tractors in the bush. • With tubing, there is not as much traffic in the bush.
Sugar bush suitability	• Tubing is not fit for all bushes. If trees are too far apart, it costs too much for tubing. • Tubing systems work best on land with some slope. Level ground is better for gathering with buckets. • Buying pumps and tubing is too costly for some small farms.
Problems	• Squirrels often bite through tubing to get to the sweet sap. Tubing with holes has to be replaced. Producers can coat tubing with a peppery paste to prevent squirrel damage. • Sometimes air bubbles get caught in tubing. The sap will not flow until the air is removed.

Sap Collection And Storage

You should collect sap often. Sometimes, this means more than once a day. There are two reasons for this. First, sap can spoil (just like milk). Sap, kept for longer than one day, may start to sour. You need to collect the sap and get it to a cool place. Second, on a warm day, sap may fill the buckets and overflow. This means that you are losing sap that could be made into sweet syrup.

Most producers try to have about 9 litres (2 gallons) of storage for every tap. Storage tanks must be clean and should be approved for use with food. Most often they are made of plastic or stainless steel. They come in all shapes and sizes. Sap in the storage tank must be kept cool until it is boiled. To do this, place the tanks or pails in a shaded area and bank snow up around them.

BEFORE THE NEXT MEETING

Before the next meeting, try the following water experiment. Depending on the time of year, it might take as long as 6 days to see some results.

You will need:
- 1 small drinking glass or cup
- a shallow pan (eg. a pie plate or cake pan)
- water

Fill the glass with water to the top. Pour this water into the shallow pan. Put the pan in a safe place in your house (so that your pets can't drink it or knock it over).

Now, fill the glass to the top again. The pan and glass will have the same amount of water in them. Put the glass full of water in the same place as the shallow pan.

Now, wait and watch. Check the experiment once a day for a week. Report to your club about what happened to the water.

From Sap to Syrup – The Sappy Story

Roll Call

Report on what happened in your water experiment. What happened to the water in the glass and the shallow pan? How long did it take for something to happen?

Full Steam Ahead – Evaporation

The boiling stage requires heating the sap for a long time. The sap is boiled to evaporate or remove some of the water.

Evaporation is when the liquid water in sap changes into a water vapour. Then, the water vapour rises into the air. A sugary syrup is left behind. Heating the sap makes evaporation happen faster.

HOW LONG CAN YOU WAIT BEFORE YOU BOIL THE SAP?

Producers try to boil the sap the same day it is collected. The sooner, the better. Fresh sap makes better syrup. Sap, kept for longer than one day, may start to sour. Warm weather may speed up the souring process. Beware!

The Evaporator

Most producers now use evaporators to boil sap. There are three main parts to the evaporator.

ARCH

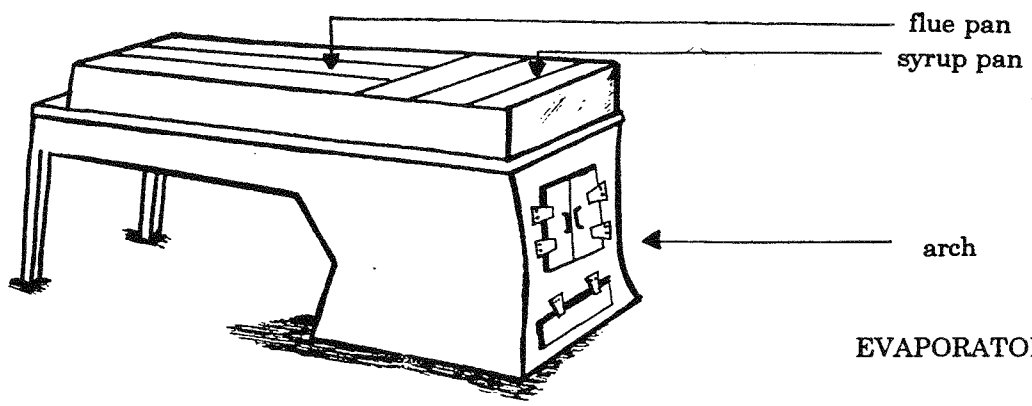
The arch is really the fireplace or fire-box. This is where the heat is produced to boil the sap. Most producers use wood as fuel, some use oil, only a few use gas. The pans fit directly on top of the arch.

FLUE PAN

The flue pan is where sap first enters the evaporator from the storage tank. It has a wavy bottom. A wavy bottom has a larger surface area than a flat bottom. This means more of the sap will be close to the heat. Dividers run the length of the flue pan.

SYRUP PAN

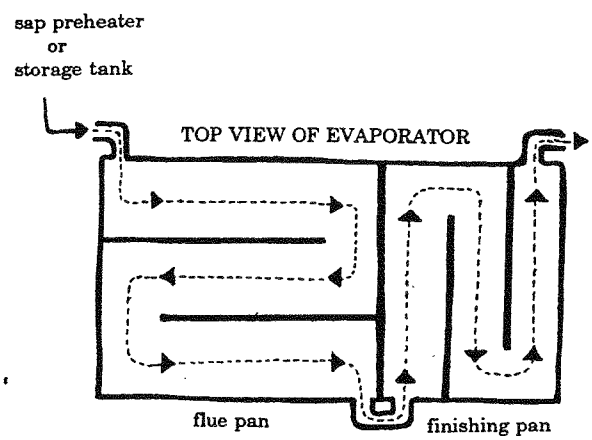
The syrup (or finishing) pan is where the sap is finished into a thick syrup. It is right over the firebox where it is very hot. The syrup pan has a flat bottom. It is also divided into sections.



EVAPORATOR

HOW DOES THE SAP MOVE THROUGH THE EVAPORATOR?

The sap enters the flue pan directly from the storage tank or from a preheater hood. Syphons and floats work to make sure that a certain level of sap is in each section. Basically, water evaporates fastest in the smaller syrup pans. This causes the level of syrup in these pans to drop. Sap moves from the pan behind to replace the evaporated water. In turn, sap is drawn from the storage tank to keep the right level of sap in the flue pan. Also, the pan is built so that it slopes towards the syrup pan. This helps the movement of sap from one end of the evaporator to the other.



HOW DO YOU KEEP THE SYRUP FROM BOILING OVER?

Did you know that butter, vegetable oil and commercial defoamers can be used to keep syrup from boiling over? You can also add cold sap to boiling syrup. The cold sap cools the syrup down. If syrup does boil over the sides of the pan, it makes a big mess. Empty pans are likely to burn too! Most importantly, boiling over means less sweet syrup is produced.

How Much Sap?

To make one pop can of maple syrup, you might need as many as 40 pop cans of sap. That's a lot of sap! 38 or 39 of these pop cans would be water that would have to be boiled or evaporated away. This is why it takes so much sap to make a little bit of maple syrup.

When Is The Syrup Done?

To see if the syrup was done, people used to drop a spoonful of syrup into a bowl of cold water. If it floated, they would keep boiling the syrup. If it sank, this meant the syrup was done.

Today, you can use several ways to check to see if the syrup is done. Check the **temperature**, **look** at the syrup and measure the **density** of the syrup.

TEMPERATURE

The syrup is done when the temperature is 4°C (or 7°F) above the boiling point of water. At this temperature, the syrup should contain the right amount of sugar. The boiling point of water changes from day to day. The boiling point changes if the air pressure changes or if you boil water at a high altitude. To check the boiling point of water, you will need to boil some water over the stove. When the water comes to a steady, gentle, boil; check the temperature. This is the boiling point of water on that day.

APPEARANCE

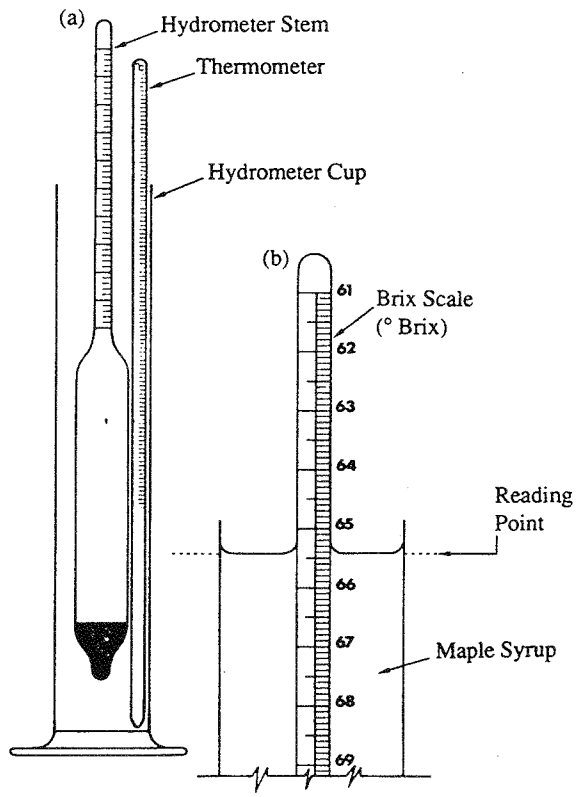
You can look to see if the syrup is a golden colour. This means it is close to being done. Also, look at the bubbles. Producers say that just before the sap turns to syrup, the bubbles get really tiny and then all of a sudden get huge. One other thing you can look for is "sheeting." You can do this by dipping a spoon into the syrup. If the syrup runs along the edge of the spoon and does **not** drop off in **separate** drips, then it is "sheeting" or "aproning." This means it is done.

DENSITY/SUGAR CONTENT

Maple syrup must be at least 66% sugar. This means if you had 100 mL of syrup, 66 mL of it would be sugar. The best maple syrup is between 66.5 and 67% sugar. To measure the sugar content, you can use a hydrometer.

HOW TO USE A HYDROMETER

1. Fill a tall, skinny container with syrup. Stop about 2.5 cm (1 inch) from the top.
2. Take the temperature of the syrup.
3. Lower the hydrometer into the syrup. It should **not** be touching the sides of the container.
4. Wait 30 seconds. The hydrometer should stop moving or be at rest.
5. Read the number where the surface of the syrup touches the stem. Your eyes should be level with the top of the container.
6. The reading you took in #5 is not the true density of the syrup (unless the syrup's temperature was 20°C). The reading needs to be changed to include the temperature that you took in #2. You will have to add or subtract a certain number if the temperature you took is above or below 20°C. Use a temperature correction table to find the true density. Your leader has a copy of this table.



Filtering

Once the syrup is done, it's filtering time. Filtering gets rid of sugar sand. Sugar sand is minerals which have formed into fine grains during cooking.

Native people filtered their syrup through woven grasses. Pioneers would attract sand from the boiling sap by putting an egg and milk mixture into the kettle. Then, the mixture was skimmed off using a big spoon. Sometimes the syrup was put in settling tanks where the sand would sink to the bottom.

A quicker and more modern way to filter sap is using a felt, cotton or flannel filter. The filter can be in the shape of a cone or it can be flat. Flat ones have a larger surface for filtering. The filters are sometimes lined with heavy paper to get even clearer sap. Remember, the best syrup is crystal clear!

Canning

Filtered syrup should be packed in sterilized bottles or tins. The syrup's temperature should be between 83°C and 93°C when it is poured into the tins. Filled tins should be turned on their sides. The hot syrup seals the container. This way the syrup will keep for many months. Note: Never stack containers while the syrup is hot. The syrup will get an off-taste called "stack burn."

Grading Maple Syrup

Maple syrup in Ontario must be graded. It requires a grade (eg. No.1, No.2 or No.3) and a colour class (eg. extra light, light, medium, amber or dark). The following table shows the grades and colour classes for maple syrup.

Grade	Colour Class	Taste	Use
Canada No. 1	extra light light medium	maple taste	table use (eg. pouring over pancakes)
Canada No. 2	amber	stronger maple taste than No.1	cooking and baking (eg. maple baked beans)
Canada No. 3	dark	strong maple flavour with a slight caramel, buddy or bitter taste	commercial use only (eg. used to flavour ice cream, candy, bacon, etc)

***NOTE: All grades must be free from any bad smells or tastes other than those stated above. Canada No. 1 and Canada No. 2 must not be cloudy and must be the same colour throughout. As well, these grades of syrup must not show any bubbles or greyish mold on the surface. This would mean that the maple syrup is spoiling.

WHAT MAKES THE SYRUP COLOUR?

The longer you boil the syrup, the darker its colour will be. The heat burns the sugar crystals and turns the sap a brown colour. Sap gathered late in the season has a lower sugar content. It must be boiled longer to reach the goal of 66% sugar. Thus, syrup made late in the season is darker and has a stronger maple taste.

A grading kit (colorimeter) is used to decide what colour class the syrup is in. A grading kit has a jar for each colour grade. You compare your syrup to the jars in the kit. If your syrup's colour is between two classes, then you pick the darker class.

Judging Maple Syrup

You might like to know how to decide what the best syrup is within a certain grade. The highest score a maple syrup sample can receive is 100 points. This would mean the sample had a perfect score in all four judging areas. See the table below.

To learn more about how to judge syrup samples, see your 4-H Judging Handbook.

Judging Feature	Out Of	What Is Best?
Density	30	66.5 ⇨ 67.0 % sugar (° Brix)
Flavour	30	Maple Flavour
Colour	25	Lighter is better
Clarity	15	Clear with no sugar crystals or foreign material
TOTAL	100	

BEFORE THE NEXT MEETING

1. Find a food advertisement which catches your attention in some way. You can find food ads in magazines, flyers and newspapers. Bring the ad to the next meeting.

2. Bring pure maple syrup and/or syrup substitute containers to the next meeting (if you volunteered for this job).

Maple Marketing

Roll Call

Share your food ad and tell how it caught your attention.

Can You Tell The Difference?

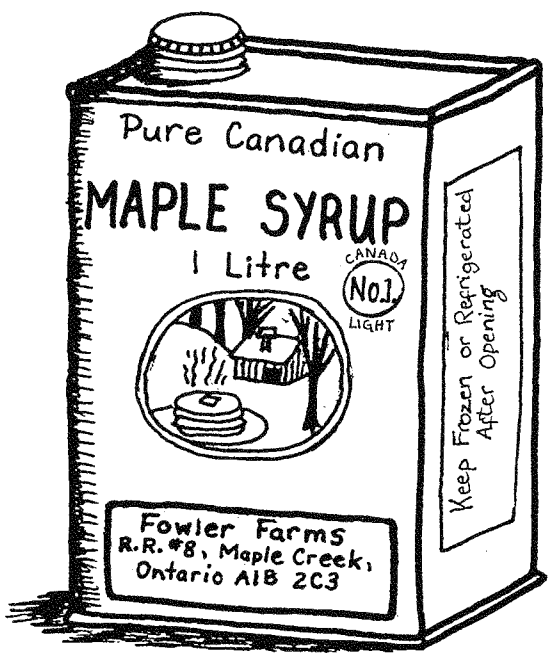
MAPLE SYRUP

To spot real maple syrup look for containers that say "Pure Maple Syrup" or "Maple Syrup."

The container must be marked with the amount of maple syrup in litres (L) or millilitres (mL).

To be sure the syrup is from Ontario, look for the name and address of an Ontario packer or producer.

Pure maple syrup must have its grade and colour class clearly marked.



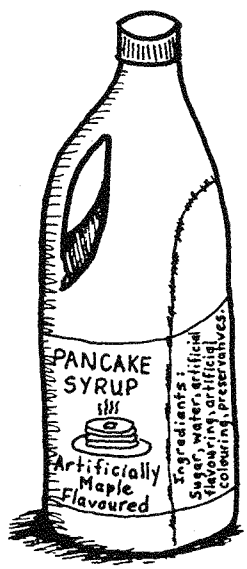
MAPLE SYRUP SUBSTITUTES

A substitute means that it is not the real thing. A maple syrup substitute is not pure maple syrup.

To spot a substitute look for labels that say "syrup," "pancake syrup," "table syrup" or "maple flavoured syrup."

The ingredients of substitutes must be marked somewhere on the container.

The word maple can only be used on the label if it says "artificially maple flavoured," "artificial maple flavouring," or states the amount of real maple syrup in the product.



Addy's Ad-Vice Column

Dear Addy:

We want to know where syrup producers can advertise their products. Can you tell us?

Sincerely,
We want to know in Ontario!

Dear We want to know in Ontario!:

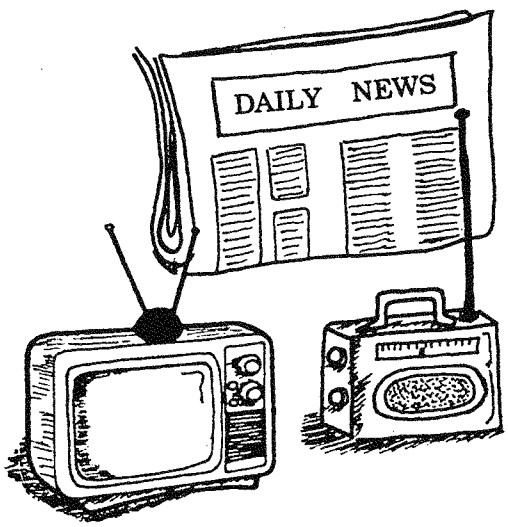
Syrup producers like to get past customers to buy more syrup and like to attract new customers. Sometimes they do this by advertising.

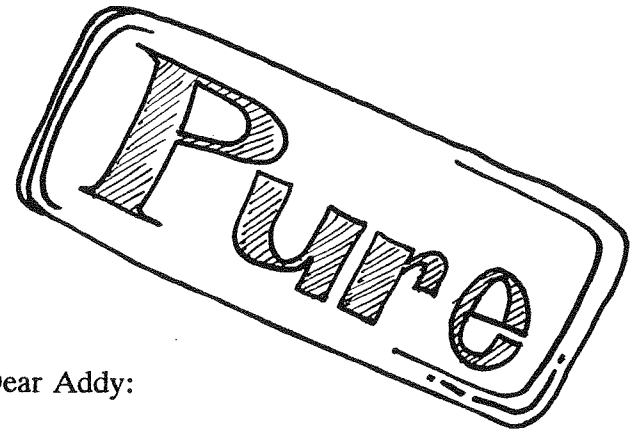
Syrup producers can promote their products using:

- T.V. and radio commercials
- newspaper and magazine ads
- billboards and posters
- flyers and pamphlets
- roadside signs.

Some of these methods cost more than others. T.V. commercials would be most expensive. I hope this helps you out.

Yours truly,
Addy





Dear Addy:

What is the most important thing to remember when advertising?

Sincerely,
We want to know in Ontario!

Dear We want to know in Ontario!:

You must remember to stress the best points about your product. But, you also need to tell the truth. Can you think of something good you could say about a maple product? Look at the list below, it might get you started.

Things that might attract buyers:

- Colour
- Texture (thick or thin)
- Price
- Taste
- Brand name
- What does the bottle or tin look like? How big is it? Is it easy to open and use?
- Is it good for you? (Does it have vitamins or minerals? Is it pure or does it have things added to it?)

Pick one or two good points about the product and focus on them. Remember you want **your** maple product to stand out from the rest. Be creative!

Good Luck,
Addy

Dear Addy:

We want to know how we can make our ads stand out from others. Can you give us some hints on how to do this?

Sincerely,
We want to know in Ontario!

Dear We want to know in Ontario!

There are some key things you should think about when creating ads. See the list below.

- Use a catchy title or slogan (It should be short, simple and fun.)
- Use headings and subheadings (They catch people's attention. They also make your ad easy to read.)
- Use bright colours (Make sure your writing and ad stand out.)
- Make up or use a symbol that people will notice (eg. the 4-H emblem is a symbol)

- Use a famous person or a happy customer to promote your product. They can say that they like your syrup!
- Make up a catchy song (Songs made for commercials are called jingles. They should have a good beat and be no longer than 30 seconds.)
- Develop a cartoon type figure (eg. Poppin' Fresh® and Little Sprout® are registered trademarks of The Pillsbury Company.)

Always remember that your message should be short and to the point. People don't want to have to work to find the important stuff. I hope this helps you get started on advertising in Ontario.

Happy advertising!
Addy

Where Are Maple Products Sold?

Ontario maple syrup farms are generally smaller than maple syrup farms in Quebec. Because of this, most of Ontario's maple syrup is sold at the "farm gate." This means that the customer buys the syrup from the person who made it. The producer should be able to answer any questions customers may have about the product. Ontario pure maple syrup and other products can also be purchased at local food stores, farmers' markets, syrup festivals, fall fairs and craft fairs.

BEFORE THE NEXT MEETING

1. If you use maple syrup at home, find out how and where your family stores it.
2. Bring your assigned recipe ingredients and/or equipment to the next meeting.

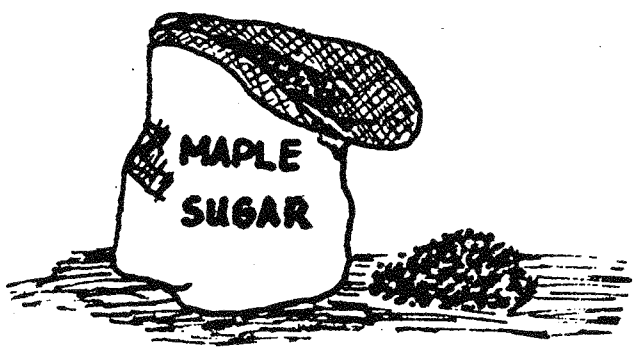
MMMMarvelous Maple

Roll Call

Name a recipe that has maple syrup in it or something you would like to try with maple syrup on it.

Maple Products

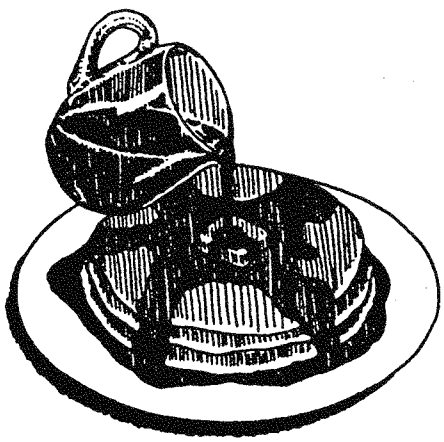
You can boil maple syrup down to make other **pure maple** products. These products are made by boiling away more water and then cooling or stirring the mixture. Maple butter, soft maple sugar, stirred maple sugar and hard maple sugar are examples of pure maple products. Turn to the recipe section pages __ to __ to find out how to make these yummy treats!



How Are Maple Products Used?

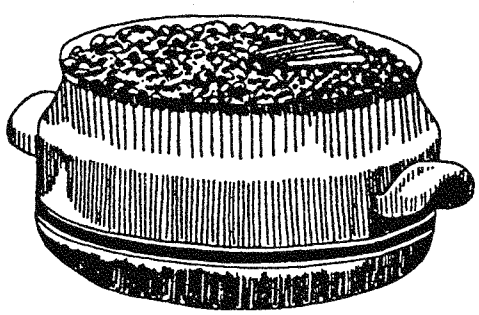
Maple syrup makes things taste sweet and has an added special taste. Today we use white and brown sugar to sweeten most of our food. But in the 1800s, most families used maple sugar. At that time, other sugars cost too much money and were hard to get. Natives and pioneers used solid maple sugar because it was easier to store and move. Today, Canadians use liquid maple syrup most often.

Can you think of any food that you eat with maple syrup? One of the first things that come to mind is pancakes. Syrup is poured over pancakes, waffles, french toast, johnny cake and even ice cream!



Syrup is also used as a glaze. Carrots and ham are most often combined with syrup. Don't forget other vegetables and fruits like squash and peaches.

Desserts, drinks and main dishes are sweetened with maple syrup. Maple baked beans were a pioneer favourite. How about maple apple crisp or maple milkshakes?



You might like to be creative and find other ways or recipes in which to use maple syrup. Try looking through cookbooks to get some ideas.

Storing Maple Syrup

Maple syrup substitutes can be stored on the shelf, but opened containers of pure maple syrup should be kept in the refrigerator. Tins of syrup that have not been opened can be stored in a cool place.

If you have a lot of syrup that won't be used for a long time, it is best kept in the freezer. Then, you can thaw the syrup when you need it. Maple syrup can be frozen and refrozen. If you want, you can put the syrup in clean, smaller jars. Then, you can just take out a small jar at a time. Don't fill the jars to the top. Leave about 2.5 cm (1 inch) of space at the top. This lets the syrup expand when it freezes.

In general, you should only store the amount of syrup you can use in one year.

Is Maple Syrup Good For You?

As you know, maple syrup is a pure product. It has nothing added to it. You also know that maple syrup is mostly sugar. In 100 spoonfuls of syrup there would be 66 spoonfuls of sugar. Sugar gives trees energy to grow. Sugar provides energy for you, too! Did you know that maple syrup also contains vitamins and minerals? This doesn't mean you should live on maple syrup. Maple syrup can be part of your healthy diet, but you need to eat a variety of foods. This way your body gets all the things it needs to stay healthy.

BEFORE THE NEXT MEETING

1. Make final preparations for the Achievement Program. Be sure that you know what you are responsible for.

2. Complete your special activity if one was required.

4-H 1700 95 RE

Maple Syrup

Recipe Booklet

Pure Maple Products

Recipes

Miscellaneous

✓ = recipes recommended for more experienced cooks

WHAT GRADE OF SYRUP SHOULD BE USED?

Maple taffy can be made with Canada No. 1 medium syrup. Maple butter and maple sugars should be made from Canada No. 1 (extra light or light) syrup. For table use, such as pouring over Oat Pancakes or Johnny Cake, choose Canada No. 1 (extra light, light, or medium) syrup. Canada No. 2 Amber syrup has a stronger maple flavour. It is the best syrup to use for cooking and baking, but lighter syrups will also work.

MAPLEREC.

ISBN 0-7778-3866-4

Pure Maple Products

FINDING THE BOILING POINT

The boiling point of water changes from day to day. To check the boiling point of water, you will need to boil some water over the stove. When the water comes to a steady, gentle boil; check the temperature. This is the boiling point of water on that day. It is very important that **this step not be skipped** during the butter, candy or sugar making process. Accurate temperatures are necessary for a successful end product.

USING A CANDY THERMOMETER

Putting a cold thermometer in very hot syrup can break it! To avoid this, you should place the thermometer in a pan of warm water. Then, bring the water to a boil. This process prepares the thermometer for a sudden dip in hot syrup.

Place the thermometer in the centre of the pan to take a reading. Don't let it touch the bottom of the pan! Keep the thermometer upright, otherwise you will get a false reading. To get the best reading, you should read the thermometer at eye level.

HOW TO KEEP THE SYRUP FROM BOILING OVER

You don't want the syrup to boil over the top of the saucepan. This wastes the syrup and makes a big mess. To keep the syrup from boiling over, you can do three things.

1. Choose a large enough saucepan. The pan should hold about four times more syrup than what you plan to put into it.
2. You can add a bit of butter or vegetable oil to the hot syrup. The butter or vegetable oil will reduce foaming.
3. You can turn down the heat.

THINGS TO KEEP IN MIND

- It is a long process to make any of these pure maple products. Bringing the syrup to the correct temperature doesn't require constant stirring but, it does require your constant attention to keep it from boiling over.
- When heating the syrup you are trying to evaporate some of the water that is still in the syrup. **Do not put the lid on the saucepan for any of the pure maple product recipes.**
- The syrup will get **very hot** so handle it carefully!
- Read the directions carefully and pay special attention to the temperatures that must be reached. Sometimes it will be a certain number of degrees above the boiling point of water. Other times a specific temperature will be given.
  For example:
  - heat to **10C° above** the boiling point of water
  - cool to **10°C**
    These are not the same temperature.

Maple Taffy on Snow (or Crushed Ice)

500 mL syrup
ice cubes or snow outside

Yield: you can determine the number of pieces by the number of strips you make on the snow and how much you roll up into one piece.
Time: 1 hr, 15 min. to heat syrup
Equipment:
cookie sheet for snow
or heavy plastic bag
cutting board
hammer
cake pan
medium saucepan
liquid measuring cup
potholders
candy thermometer
wooden spoon
forks or sticks

1. **Read** recipe and gather equipment you will need.

2. **Find** an area with clean snow. Press a cold cookie sheet down on top of the snow to pack it. To get the cookie sheet cold, place it in the freezer or leave it outside before using it.

   If there is no snow, you can fill a large cake pan with crushed ice. To crush ice, place ice cubes in a heavy plastic bag. Place the bag on a cutting board and use a hammer to crush the ice into little pieces. Then, place the ice in the cake pan. Put the filled cake pan in the freezer until the syrup is ready.

3. **Put** 500 mL of water into the saucepan and find the boiling point of the water (see page R1). Discard the water and pour the syrup into the saucepan.

4. **Heat** the syrup to a temperature 12 to 18C° **above the boiling point of water.** Syrup will constantly have tiny bubbles all over the surface. If you want hard taffy, heat the syrup to the higher temperature.

5. **Pour** the hot syrup in strips onto the well-packed snow (or crushed ice in the cake pan).

6. **Pick** the taffy up by rolling it on a stick or fork. Make each piece about the size of a gumball. Mmmmmm!!!

Maple Butter ✓

500	mL	maple syrup
		ice, snow or cold water
10	mL	maple butter

Yield: approx. 500 mL
Time: 1 hr., 40 minutes total
Equipment:
2 medium saucepans
liquid measuring cup
potholders
candy thermometer
cake pan
wooden spoon

1. **Read** recipe and gather equipment you will need.

2. **Put** 500 mL of water into the saucepan and find the boiling point of water (see page R1).

3. **Discard** the water and pour the syrup into the saucepan. Heat the syrup until it reaches a temperature 12 to 13C° **above the boiling point of water.** This will take about 65 minutes.

4. **Remove** the syrup from the heat and **quickly** cool it **to 10°C.** To quickly cool the syrup, pour it into another saucepan. Place the cold saucepan (with syrup in it) into a cake pan or sink filled with snow or ice. As this melts, replace with more ice, snow or cold water. This will take about 15 minutes.

5. **Add** a small amount of maple butter (if available) to the cooled syrup. This will help small crystals to form and cuts down the stirring time. Begin to stir the syrup. It will get thick and creamy like butter. This will take about 20 minutes or longer if you don't have any maple butter to start with. Pour immediately into sterilized container. Keep maple butter refrigerated.

Soft Maple Sugar ✓

500	mL	maple syrup

Yield: 8 tart shapes
Time: 1 hour, 25 minutes total
Equipment:
1 medium saucepan
liquid measuring cup
potholders
candy thermometer
wooden spoon
approx. 8 ungreased tart tins

1. **Read** the recipe and gather the equipment you will need.

2. **Put** 500 mL of water into the saucepan and find the boiling point of water (see page R1).

3. **Discard** the water and pour the syrup into the saucepan. Heat the syrup until it reaches a temperature 18C° **above the boiling point of water.** This will take about 75 minutes.

4. **Remove** the syrup from the heat. Cool the syrup slowly **to 100°C** by placing the saucepan on a wire rack.

5. **When** small crystals of sugar **begin** to form and the mixture becomes dull (this should take less than 5 minutes), the syrup should be **quickly** poured into ungreased tart tins. The sugar will take on the shape of the tart tins. You can smooth the top with a spoon if desired. To serve, cut with a knife.

Stirred (Granulated) Maple Sugar ✓

500 mL maple syrup

Yield: about 250 mL
Time: 1 hour, 40 minutes
Equipment:
medium saucepan
liquid measuring cup
potholders
candy thermometer
wooden spoon
heavy plastic bag
hammer or mallet
flour sifter

1. **Read** the recipe and gather equipment you will need.

2. **Put** 500 mL of water into the saucepan and find the boiling point of water (see page R1).

3. **Discard** the water and pour the syrup into the saucepan. Heat the syrup until it reaches a temperature 22 to 25C° **above the boiling point of water.** This will take about 90 minutes.

4. **Remove** the syrup from the heat. **Stir it at once.** Stir **constantly** until all of the syrup has become grains or crystals of sugar. This will take about 5 - 8 minutes. As this gets drier you will find it hard to stir but, make sure you are stirring everything in the saucepan.

5. **Put** the sugar in a heavy plastic bag and hit it with a hammer or mallet to break up any large lumps that have formed.

6. **Sift** the sugar through a flour sifter to create sugar crystals of about the same size.

Hard Maple Sugar ✓

500	mL	maple syrup

Yield: 6 - 8 small tart tins
Time: 1 hour, 35 minutes total
Equipment:
medium saucepan
liquid measuring cup
potholders
candy thermometer
wooden spoon
ungreased tart tins

1. **Read** the recipe and gather the equipment you will need.

2. **Put** 500 mL of water into the saucepan and find the boiling point of water (see page R1).

3. **Discard** the water and pour the syrup into the saucepan. Heat the syrup until it reaches a temperature 22 to 25C° **above the boiling point of water.** This will take about 90 minutes.

4. **Remove** the syrup from the heat and cool it to about 15C° **above the boiling point of water.** To cool, place the saucepan on a wire rack. Then, stir the syrup **at once.** It will become cloudy and **very thick.** Place the thick syrup into ungreased tart tins. To serve, it can be broken into chunks or try grating it for cereal.

Johnny Cake

250	mL	flour
175	mL	cornmeal
50	mL	sugar
15	mL	baking powder
5	mL	salt
1		egg
250	mL	milk
50	mL	vegetable oil
		maple syrup to pour

Yield: 9 servings
Preparation Time: 20 min.
Equipment:
mixing bowls
dry measures
small measures
fork
liquid measure
rubber spatula
20 x 20 cm greased cake pan

1. **Read** recipe and gather equipment you will need.
2. **Preheat** oven to 200°C (400°F).
3. **Mix** flour, cornmeal, sugar, baking powder and salt together in one mixing bowl using a fork.
4. **Beat** egg, milk and vegetable oil together in second bowl.
5. **Pour** liquid ingredients into dry ingredients and stir lightly just until ingredients are moistened.
6. **Pour** into greased cake pan.
7. **Bake** in a preheated oven 35-45 minutes until firm.
8. **Serve** warm with maple syrup.

> The pioneers were taught by Native people to parch (dry or roast) corn and to make thin corn cakes which were baked over an open fire. Hunters took the corn cakes on long journeys. The cakes soon became known as "journey cakes," and then later as "johnny cakes."

(Adapted recipe courtesy of Old Fort William.)

Maple Bran Muffins

175	mL	natural wheat bran
125	mL	milk
125	mL	maple syrup
1		egg
50	mL	vegetable oil
250	mL	whole-wheat flour
15	mL	baking powder
2	mL	salt
75	mL	chopped walnuts

Yield: 12 medium muffins
Preparation Time: 20 min.
Equipment:
muffin tin
paper liners
mixing bowls
dry measures
small measures
wooden spoon
knife to level off measures
spatula

1. **Read** the recipe and gather equipment you will need.
2. **Place** paper liners into muffin tin.
3. **Preheat** the oven to 200°C (400°F).
4. **Combine** bran, milk and maple syrup in a mixing bowl. Add egg and oil. Mix well.
5. **Mix** together whole-wheat flour, baking powder, salt and chopped walnuts in another mixing bowl.
6. **Stir** the flour mixture into the bran mixture. Stir just until everything is moist.
7. **Spoon** batter into paper cups in muffin tin. Fill each about two-thirds full.
8. **Bake** in preheated oven for 20-30 minutes or until done. Muffins are done when a tester comes out clean. Place pan on wire rack to cool.

Maple Glazed Carrots

750	mL	carrots, cut in diagonal slices (8 medium carrots)
25	mL	butter or margarine
50	mL	**maple syrup**
		pinch of dry mustard

Yield: 4 servings
Preparation Time: 15 min.
Equipment:
- vegetable peeler
- knife
- cutting board
- medium saucepan
- skillet
- small measures

1. **Read** recipe and gather the equipment you will need.

2. **Cover** carrots with water in the medium saucepan. Bring the water to a boil. Cook carrots in boiling water for 5 minutes. Carrots should be just fork tender.

3. **Drain** the carrots.

4. **Melt** 25 mL of butter in a skillet. Add maple syrup, dry mustard and carrots. Cook over low heat about 10 to 15 minutes. The liquid will almost disappear and the carrots will be shiny with the glaze. Serve while hot.

Maple Granola

1750	mL	rolled oats (large flake)
250	mL	wheat germ
125	mL	sunflower seeds
125	mL	sesame seeds
250	mL	desiccated unsweetened coconut
125	mL	brown sugar
100	mL	**maple syrup**
50	mL	vegetable oil
1	mL	salt
2	mL	vanilla

Yield: 2800 mL of granola
Preparation Time: 45 minutes
Equipment:
* mixing bowls
dry measures
liquid measure
small measures
wooden spoon
2 cake pans (7 1/4" x 11")

1. **Caution**: This recipe makes a large amount of granola. Cut the recipe down if you wish to make less.

2. **Read** recipe and gather equipment you will need.

3. **Preheat** oven to 140°C (275°F).

4. **Mix** rolled oats, wheat germ, sunflower seeds, sesame seeds, coconut and brown sugar together in an extra large mixing bowl.

5. **Mix** the maple syrup, vegetable oil, salt and vanilla together in another bowl. Then, add the liquid to the dry mixture above. Mix well.

6. **Spread** 500 mL of granola into a thin layer on the bottom of each cake pan.

7. **Bake** the granola in preheated oven for about 35 minutes. Stir the granola several times during cooking to make sure it gets toasted evenly. The granola is done when it is lightly toasted. Watch for burning!

8. **Repeat** steps 5 and 6 until all of the granola has been cooked.

9. **Eat** the granola by itself or try it over ice cream or yogurt.

* You need an extra large mixing bowl to hold the ingredients. Use a large roasting pan if you can't find a bowl big enough.

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Maple Vegetable Dip

5	mL	dill weed
5	mL	parsley
25	mL	onion flakes
25	mL	**maple syrup**
250	mL	sour cream
125	mL	mayonnaise

Yield: 400 mL
Preparation Time: 10 minutes
Equipment:
mixing bowl
dry measures
small measures
spatula

1. **Read** recipe and gather equipment you will need.
2. **Combine** ingredients and mix well.
3. **Serve** with vegetables and/or plain crackers.

Maple Fruit Dip

250	mL	thickened yogurt*
100	mL	maple syrup

Yield: 350 mL
Time: 5 minutes
Equipment:
mixing bowl
dry & liquid measures
spatula

1. **Read** recipe and gather equipment you will need.
2. **Combine** ingredients and mix well.
3. **Serve** with sliced apples and pears. (To prevent fruit slices from going brown, dip fruit in a mixture of water and lemon juice, drain and then arrange on serving plate.)

* If you cannot purchase commercially thickened yogurt you can start with plain yogurt. Place 500 mL (double the amount of thickened yogurt required) of yogurt in cheesecloth lined sieve set over a bowl. Cover and refrigerate for 4 hours or until yogurt is reduced to about half. Discard the liquid and use the thickened yogurt as described in the recipe.

Maple Popcorn in the Oven

2000	mL	popcorn (50 mL unpopped)
50	mL	margarine or butter
75	mL	brown sugar (packed)
50	mL	**maple syrup**
1	mL	salt
1	mL	baking soda

Yield: 6-7 small servings
Preparation Time: 20 minutes
Equipment:
hot air corn popper
dry measures
liquid measure
small measures
medium saucepan
wooden spoon
spatula
one large roasting pan

1. **Read** recipe and gather equipment you will need.
2. **Preheat** oven to 100°C (200°F).
3. **Pop** corn in a hot air corn popper until you have 2000 mL of popcorn.
4. **Place** popcorn in a large roasting pan.
5. **Melt** butter over medium heat in saucepan. Then, add sugar, maple syrup and salt. Do not add the soda yet! Stir until bubbly around the edges.
6. **Cook** 5 minutes over medium heat. Keep stirring often.
7. **Remove** mixture from heat. Stir in soda. The mixture should become foamy.
8. **Quickly**, pour sauce on popcorn and stir until well coated. Try to keep most of the sauce on the popcorn rather than on the bottom of the pan.
9. **Bake** the coated popcorn in preheated oven for 45 min. Stir every 15 min.
10. **Have** a popcorn party! Mmmmmm!

French Canadian Baked Beans ✓

(NOTE: It takes 6 to 7 hours to prepare and cook this recipe!)

1	454 g pkg.	white pea beans
1250	mL	cold water
1		large onion, chopped
5	mL	salt
10	mL	cider vinegar
2	mL	prepared mustard
1	170 mL	can tomato paste
75	mL	brown sugar
25	mL	**maple syrup**
4-6		slices of bacon

Yield: 8 servings
Time: 6-7 hours (includes soaking & baking)
Equipment:
large saucepan, bowl or casserole
liquid measure
dry measures
small measures
large casserole
cutting board
knife
wooden spoon

1. **Read** recipe and gather equipment you will need.

2. **Soak** beans using one of the following methods.

   Quick Soak: **Bring** water and beans to boil in a large pot. Cover and boil for 2 min. Remove from heat and let stand 1 hour. Drain. Proceed with recipe.

   OR

   Overnight Soak: **Combine** beans and water in large bowl. Let stand overnight in refrigerator. Drain. Proceed with recipe.

   OR

   Microwave Soak: **Heat** water in a large microwaveable casserole until hot using 100% power for about 5 min. Add beans. Cover. Heat on 100% power for 15 min. or until boiling. Let stand 1 hour. Drain. Proceed with recipe.

3. **Combine** beans in casserole with all remaining ingredients except bacon slices. Stir well.

4. **Cover** with water. Place bacon slices on top of casserole.

5. **Cover** and bake in a slow oven, 150°C (300°F), for 4-5 hours. Add more water if necessary during cooking to give desired consistency.

Oat Pancakes

375	mL	rolled oats
500	mL	milk
250	mL	all purpose flour
30	mL	brown or granulated sugar
30	mL	baking powder
2	mL	salt
3		eggs
50	mL	vegetable oil
		maple syrup to pour

Yield: 16 pancakes
Preparation Time: 15 min.
Equipment:
- mixing bowls
- dry measures
- liquid measures
- small measures
- wooden spoon
- griddle or frying pan
- lifter

1. **Read** recipe and gather equipment you will need.

2. **Mix** oats and milk in a small bowl. Set aside until milk is absorbed.

3. **Combine** flour, sugar, baking powder and salt in a mixing bowl. Mix well.

4. **Add** eggs and oil to oat mixture. Beat well.

5. **Add** oat mixture to flour mixture all at once. Mix until smooth.

6. **Grease** and preheat the griddle or frying pan. Pour 50 mL of batter, for each pancake, onto the hot griddle or pan. Bake until fluffy and bubbles break on surface. Turn the pancakes over and cook the other side.

7. **Serve** the pancakes hot with maple syrup. Mmmmmm!

(Recipe courtesy of Robin Hood.)

Blender French Dressing With Maple Syrup

125	mL	ketchup
50	mL	**maple syrup**
50	mL	cider vinegar
2	mL	salt
75	mL	vegetable oil
		dash pepper
1	mL	dry mustard
1	mL	ginger powder

Yield: 250 mL
Time: 10 minutes
Equipment:
liquid measure
small measures
blender or food processor
spatula

1. **Read** recipe and gather equipment you will need.

2. **Combine** ingredients in a blender. Cover and blend on high speed for 20 seconds.

3. **Serve** over salad.

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Maple Apple Crisp ✓

1500	mL	sliced apples (8 medium apples)
75	mL	**maple syrup**
125	mL	all purpose flour
125	mL	rolled oats
125	mL	brown sugar
1	mL	salt
125	mL	**cold** butter or margarine

Yield: 9 servings
Preparation Time: 40 minutes
Equipment:
vegetable peeler
paring knife
square baking pan (8 inch or 2 L)
dry measures
liquid measure
mixing bowl
small measures
pastry blender

1. **Read** recipe and gather equipment you will need.
2. **Preheat** oven to 190°C (375°F).
3. **Peel** and slice apples. Arrange in greased baking pan.
4. **Pour** maple syrup over apples.
5. **Combine** flour, rolled oats, brown sugar and salt. Use a pastry blender to cut in **cold** butter until the mixture looks like coarse bread crumbs.
6. **Sprinkle** topping over apples.
7. **Bake** in preheated oven until apples are tender and topping is lightly browned (about 35 minutes).

Other Serving Suggestions!

- **Pour** maple syrup over fresh fruit or breakfast cereal.
- **Sweeten** plain yogurt with maple syrup.
- **Blend** maple syrup, a small amount of vinegar and a bit of Dijon mustard together. Use to glaze a baked ham.
- **Sweeten** whipped cream with maple butter. Then, dip fresh fruits in this easy to make fruit dip.
- **Add** maple syrup to cooked squash, turnip, parsnips or sweet potatoes.
- **Glaze** peaches, pears or other fruits with maple syrup.
- **Pour** maple syrup over puddings (rice and bread), pie (pumpkin or apple), custards and ice cream.
- **Butter** toast and then sprinkle granulated maple sugar and cinnamon over top.
- **Add** maple syrup to a milkshake.
- **Mix** maple syrup with chopped nuts and butter. Place the mixture in the bottom of a cake pan. Pour the cake mix over top to make a maple syrup upside-down cake.
- **Spread** maple butter on toast.
- **Add** maple syrup to canned beans. Heat and serve.

Substituting Maple Syrup for Other Sweeteners

REPLACING GRANULATED SUGAR WITH MAPLE SYRUP

Here's how you can use maple syrup instead of sugar in a recipe.

1. **Check** to make sure the recipe has a liquid other than melted fat or oil. (eg. milk, water, juice)

2. **Use** the same amount of syrup as the recipe calls for of sugar. So if the recipe says 100 mL of sugar, you use 100 mL of syrup. If the recipe calls for 250 mL of sugar, you use 250 mL of syrup.

3. **Since** maple syrup has water in it, you need to decrease the amount of liquid in the recipe. Here is a quick way to figure out how much less liquid you should use.

   Take the amount of syrup in mL and multiply that number by 0.46. This tells you how much **less** liquid you need. Subtract this amount from the amount of liquid the recipe calls for.

Amount of syrup (mL) =	250
	x0.46
Amount to subtract from liquid (mL) =	115

Recipe calls for 300 mL of liquid	300
	-115
Amount of liquid to use (mL) ⇨	185

REPLACING HONEY OR CORN SYRUP WITH MAPLE SYRUP

To use maple syrup instead of honey or corn syrup in a recipe, just use the same amount. So if the recipe calls for 100 mL of corn syrup, you can use 100 mL of maple syrup.

Meeting One

Brainstorm

Materials required:

1. Paper (flipchart)
2. Markers

Have members brainstorm the reasons they joined this club, as well as activities, tours, or questions they would like answered by the end of the club.

Introductory Picnic

No materials required.

Have members sit in a circle and introduce themselves by saying my name is _____. I am going on a picnic and I am going to bring a banana. The next person will introduce themselves and say I am going to your picnic and I will bring an apple.

The catch is that the item the members have to 'bring' has to start with the last letter of the item that the previous member stated. For example, banana ended with an 'a' and the next person used 'a' for apple. To make this game more challenging, you can tell members they may only 'bring' items related to maple syruping, or perhaps items you can eat with maple syrup.

Comic Strip Frame-up

Materials required:

1. Comic strips cut up into their individual frames **or**
2. Different maple syrup labels cut up into sections

Depending on the number and size of the group cut out several comic strips (or cut up several different maple syrup labels, enough for each member to have one piece). Put the pieces into a hat.

Members must then draw a piece of the comic / label from the hat. They hold up their arms, mingle and match up with everyone with the same comic strip / label.

Groups can then read their comic strips at the end, or discuss the picture / design of their label – what image is their label trying to portray?

Meeting Two

Group Puzzlers

Materials required:

Pictures of maple syrup cut up into puzzle pieces

Select pictures from a magazine of maple syrup production or a maple syrup product. Cut the pictures into puzzle pieces and mix them up in a container.

Members then draw a piece from the container with the challenge of finding others with pieces from the same picture. When they find each other, they put the pieces of their picture back together.

History Lesson

No materials required

Ask members what they know about the history of maple syrup production. Using the information on the next page, ask members to do a short skit, PowerPoint slideshow, or Bristol board display about the history of maple syrup production. If you are pressed for time, ask members to take turns reading the page aloud to the group, using different dramatic styles (e.g. one sentence very happy, one sentence very sad, one very excited etc.)

Find the Same Tree

Materials required:
Page 4 & 5 of this supplement photocopied for members (or make up one of your own with local trees).

Do this exercise outside in a forest or bush. Members must take the handout of these trees and try to find each tree throughout the forest, working either alone or in pairs. Depending on your region, you might not be able to find all of these trees, or may want to add more for members to find.

Be sure to do this exercise while it is still light out, and that you have proper supervision – you may want to pair up older members and younger members.

The History of Maple Syrup – from Past to Present

Before Europeans came to Canada, Native people were tapping maple trees. An Iroquois legend states that maple syrup was discovered by a young boy. The young boy watched a squirrel bite off a twig from a sugar maple tree and drink the sap that leaked out of it. The boy tried it himself and realized how sweet and tasty the sap really was.

Observing the method of sap collection among the Natives, it is easy to see how the European settlers adopted many of the ideas they had which later became the bucket system that we have come to know. Natives extracted the sap from the tree by making a V-shaped gash in the trunk of a sugar maple tree. They then inserted curved pieces of wood or bark, which is a primitive form of the presently used spile. The sap then dripped out of the tree into buckets made out of birch bark hollowed out logs or even clay pots. The sap was usually left for several nights and therefore froze. The Natives would then remove the ice and reduce the water content in the sap. They would add heated stones into the containers steaming off the remaining water. By doing this repeatedly, they would be left with maple sugar. The discovery of maple syrup by the Natives was also the beginning of finding a cure for scurvy. Scurvy was an illness that was known as the 'spring sickness'. It made the Natives ill each year as they suffered from a lack of vitamin C during the winter, since it was hard to store fresh fruit and vegetables during the cold winter. Through the discovery of sap and its high content of vitamin C, the Native boy also discovered the cure for the 'spring sickness'.

The early settlers observed the sugaring-off process. They would drill holes in the trees and push in hollowed stems to extract the sap. The sap was collected in buckets and carried by horse drawn sleighs to a sugar camp. At the sugar camp, the sap would be boiled in large cast-iron pots. This method is still used by some maple syrup produces. Most of the maple sugar bushes today use evaporators, plastic tubes and vacuum pumps in the process of making maple syrup. The old way is often only sued to show people traditional maple syrup production. Today producers use a sap collecting system in which plastic piles are inserted into the trees and connected through a 'closed system' of plastic tubing. The tubes are then attached to a larger network of tubes that meet up with larger lines and eventually empty out into a collection tank. Vacuum pumps are used with the tubing system, applying suction to increase the amount of sap from each tree. Both the 'old' and 'new' ways have positive and negative aspects and play an important role in the production as well as the history of maple syrup.

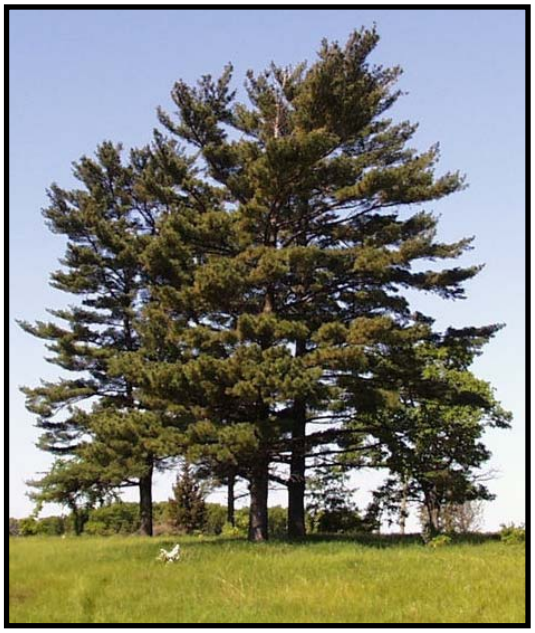
Developed for the Ontario Maple Syrup Producers Association
By: Lois deWit & Ag Business Centre, Ridgetown College, September 2005

Sugar Maple

Acer saccharum - "Displaying spectacular colours in autumn and chosen as Canada's national tree, its leaf is displayed on the centre of the Canadian flag. Renowned as the source of the sugary sap used for maple syrup. Its hardwood is valuable in the construction of furniture and production of plywood". – from http://www.queensu.ca/pps/grounds/arboretum/sugarmaple.htm

White Pine

Betula papyrifera
"Found throughout Canada, a delicate and picturesque tree. Often associated with its pliable, white bark used in the construction of canoes. The sweet sap can be fermented to obtain alcoholic beverages or used as a shampoo. Its wood is a commercial source of pulpwood and veneer". From http://www.queensu.ca/pps/grounds/arboretum/whitebirch.htm



White Birch (*Betula papyrifera)*

"Found throughout Canada, a delicate and picturesque tree. Often associated with its pliable, white bark used in the construction of canoes. The sweet sap can be fermented to obtain alcoholic beverages, or used as a shampoo. Its wood is a commercial source of pulpwood and veneer". – from http://www.queensu.ca/pps/grounds/arboretum/whitebirch.htm

c. Wing Chi-Poon, http://creativecommons.org/licenses/by-sa/2.5/

White Fir

Abies concolor

Resilient to drought and shade, the white fir is native to the western United States. It is favoured in Canada as an ornamental tree because of its attractive needles, which appear silver in colour. Native Canadian fir trees produce a liquid from blisters on the bark which when extracted is sold as "Canada balsam". – from http://www.queensu.ca/pps/grounds/arboretum/whitefir.htm

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Meeting Three

Buckets or Tubing Debate

No materials required.

Assign members a method to research at the previous meeting so they are prepared for the debate.

Use the following information to guide a debate between the members.

Tubing – Advantages

- More hygienic
- Uses gravity
- Flexible and can run from each individual tree and meet up into larger lines that eventually go to the collection tank
- Allows for a decrease in labour and labour costs
- Time efficient
- Vacuum pumps are used that apply suction and increase the yield from each tree

Buckets – Advantages

- Maple syrup producers are able to better monitor the health of the trees, as they can see which trees are producing the most sap and which trees may not be producing any sap
- Easier to control temperature – cold temperatures at night freeze the sap in the buckets and the next day, when the temperature rises and the sap flows, the frozen sap keeps the new sap dripping and chilled
- Has a higher quality than sap collected through sap lines

Tubing – Disadvantages

- Sometimes it's hard to find a leak, if one develops
- Squirrels can bite through the tubing to get a drink of sap
- Airlocks can form in the tubing and sap won't flow until the airlock is removed
- The sun shining on the tubes can warm the sap, which can cause the quality of the sap to decrease

Buckets – Disadvantages

- Have to constantly be kept clean
- Hard to scrub the buckets
- Lots of labour needed (emptying pails, carrying pails), thus making it costly.
- Very tedious and time consuming

Weather and Sap Flow

Materials required:

1. Current newspapers
2. Chart paper
3. Large permanent marker
4. Graph paper

Ask the members what they know about maple syrup and the production of maple syrup. Ask them to brainstorm what factors affect the production and amount of sap that will flow in a maple tree (make sure thy include weather as being a factor).

Explain to the members that to produce the best sap flow, you need a hot sunny summer with a good amount of precipitation. As well, you need a winter during which the ground is not too deeply frozen and warms up gradually as spring draws near. The most important time however, is the springtime. Ideal weather conditions include cold nights, just below freezing and warm days with temperatures around 5 - 8 degrees Celsius.

At the previous meeting, have members make a prediction of what the weather will be like for the rest of the week. Have them record their predictions in a notebook.

Using the newspapers collected during the week, record the daytime and nighttime temperatures of each day on the graph they have set up in their books, using the graph paper provided. Is it good for sap flow? Repeat each morning of the week.

At the end of the week, look at the graph and draw conclusions. Answer questions such as – was this week an optimal one for sap flow? What are the differences between your predicted forecast and the actual forecast? How important is the weather forecast for a person in the maple syrup production business?

Two Truths and a Lie

No materials required.

Have members sit in a circle. Each member must tell three pieces of information about maple syrup production or maple syrup products.

Two pieces of information must be true and one of them must be a lie. The trick is to make the lies believable, so that it is difficult for the members to guess which one is truth, and which is a lie.

Meeting Four

From Sap to Syrup

Materials required:

1. Pot
2. Sap
3. Stove (outdoors)

Start this activity by reviewing the methods of separating the components of mixtures (evaporation, sifting, filtration, distillation, and magnetism).

Next, find out what members know about the production of maple syrup. Generate a group discussion by asking the following questions: where does sap come from? How do we get it out of a tree? Once it's been removed from the tree, what happens to it?

Ask the members if any of the methods of separating the components of mixtures occurs in the production of maple syrup. Make sure the members touch on the fact that through evaporation, sugar and water in sap can be separated leaving maple syrup or even maple sugar if all the water is evaporated.

Make sure members understand that sap consists of 40 parts water and 1 part sugar. Tell them that today they will make their own sap and syrup!

Decide how much syrup you want to end up with. Measure that amount of syrup. Then ask the members how much water will be needed (1 part syrup to 40 parts water). Write a few examples and have them figure it out (e.g. for ½ cup syrup, how much water?)

Mix the water and syrup in the pot. After the sap is made, ask the members what process can be used to separate the water from the sap – boil the mixture. Have them comment on what's happening by answering the following questions – how is the water changing state? From what state to what state is the water changing? What effect is the heat having on the motion of particles? Explain how the heat is transmitted by conduction, convection and radiation.

The sap should start to turn a light amber colour, then start to bubble and foam. This means that the sugar content is getting higher than the water content. Make sure you continuously stir – boil the syrup until it is thick enough that it will coat a spoon.

Talk to the members about hydrometers and what their purpose is (to compare the densities of liquid and see how much of the sap still contains water, and how much is sugar).

Cool the syrup so that the members can try a little bit. Ask the members what would happen if they continue to boil the syrup (produce maple sugar).

If there is time, continue to boil the syrup until it turns to small grains in the bottom of the pot. Give the members the chance to try some of the maple sugar.

While they are eating their maple treats, ask them to answer the following questions:

How is the water component of the sap changing state? What state does it start in and what state does it change to? What change of state can occur to the sugar?

What effect does heating the sap have on the motion of particles?

Explain how heat is transmitted by A) conduction, B) convection and C) radiation.

Description Duet

Materials required:

1. Flash cards with the following items written on them: evaporator, maple syrup, sugar, maple tree, tap, buckets, hydrometer, etc.

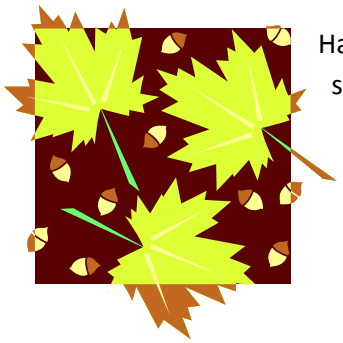
Set the stage my holding up a card with a word written on it (for example, pencil) and ask the members to pretend they don't know how to use it. How would they describe it to someone else? What would they say about it? They might say "it's long, thin and bright yellow. It has a sharp point on one end and soft rubber on the other".

Have members sit in a large circle. Each member gets a card with a maple syrup term written on it and they have to describe the term to the group.

Maple Mural

Materials required:

1. Large piece of paper (chart or banner) to create the mural on
2. Markers
3. Pencil crayons
4. Crayons



Have members make a large mural that depicts the process of making maple syrup. Each member can illustrate a phase of the process.

Add captions to accompany the illustrations. Identify the many jobs involved.

Meeting Five

Maple Syrup Taste Test

Materials required:

1. Several different varieties of maple syrup for the members to try
2. Containers / spoons to serve the maple syrup

Have the members try each brand of maple syrup and write down comments on what they thought about the flavour or smell.

Have members read their reasons aloud and discuss why they liked / disliked different brands / grades.

What's Your Pitch?

Materials required:

1. Several items that are used in the production of maple syrup, e.g. a bottle, filter

Members draw an item out of a bag and are given 2 minutes to think of a potential commercial for this item.

They should use their imaginations to think of humorous, catchy and informative commercials.

Making Effective Posters

Materials required:

1. Scrap paper
2. Pencil
3. Poster paper
4. Markers
5. Computer (optional)

The goal of this exercise is to have the members create posters to sell a new type of maple syrup that is sweeter, thicker and better than all the other varieties on the market right now. The poster could also be advertising an event at which this maple syrup will be sold / unveiled.

Instruct the members to aim their posters at their audience! If they want to attract a particular group of people, choose the appropriate design, colours and wording to catch their eye. Have them include the 5 Ws – who, why, where, when and what. Also have them use colour wisely and attractively – choose colours that stand out and can be read easily. Legible and clear writing should be used.

They should use their imaginations to create a fun product!

Meeting Six

Pass the Spile

Materials required:

1. Spile
2. Tape / CD of music
3. CD / tape player

With members sitting in a circle, pass around the spile while playing music from a cd or tape player. When you stop the music, whoever has the spile becomes the first 'storyteller'. They must start telling a story about maple syrup production.

After a few lines, the storyteller passes on the spile to the person to their right. This person adds a few more lines to the story. AT each pass of the spile the plot thickens as each member adds on to what was said before. The challenge is to keep telling the story no matter how quickly the spile is passed.

Roll Out

Materials required:

1. Roll of toilet paper

Ask members to sit in a circle so they can all see each other. Have them pass the roll of toilet paper around the circle.

Instruct members to take as many pieces of toilet paper as they think they will need. Once they have done so, instruct them to tell the group one thing they learned in the club for each square of paper they took.

Who Am I?

No materials required.

Have members pick a partner and then give them 15 minutes to answer the following questions:

- I came to this club because:
- I learned how to:
- Some things I could show others now that I have completed this club are:
- Skills I have gained from other members are:
- The next club I am interested in taking is:
- Things I plan on doing in the future:
- My favourite hobby is: