

# Trees and Forests



Name: \_\_\_\_\_

\_\_\_\_\_

## Trees and Forests- Unit Objectives

Name: \_\_\_\_\_

-Self-Assessment or Teacher Assessment (Circle One)

I Can Statements	Yes	Sort Of	No
1) I can describe characteristics of trees and the interactions of trees with other living things			
2) I can identify reasons why trees and forests are valued			
3) I can describe kinds of plants and animals living in, under and among trees and can identify how trees affect and are affected by those living things			
4) I can describe the role of trees in the nutrient cycle and in the production of oxygen.			
5) I can list characteristics that distinguish deciduous and coniferous trees.			
6) I can identify characteristics of at least 4 trees that are found in Fort McMurray.			
7) I can describe and classify leaf shapes, leaf arrangements, branching patterns and the overall form of a tree.			
8) I can interpret the growth pattern of a young tree, distinguishing this year's growth from the years before.			
9) I can recognize differences in coloration and texture of new growth and old growth and locate scars.			
10) I can identify human uses of the forest and can compare modern and historic patterns of use.			
11) I can identify human actions that enhance or threaten the existence of forests.			
12) I can identify an issue regarding forest use, identify different perspectives and identify actions that might be taken regarding the issue.			



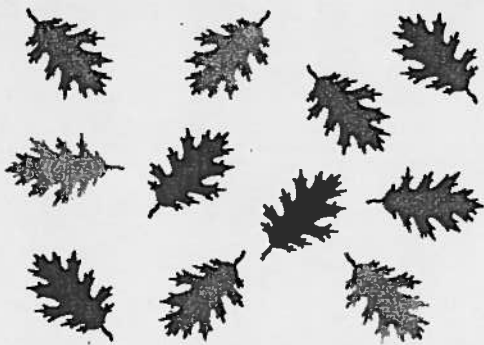
## - Glossary -

<b>Abiotic:</b>	Non-living components of an environment.
<b>Adaptation:</b>	Modification of an organism so that it adjusts to a new or altered environment.
<b>Allowable Cut:</b>	The amount of trees which can be taken from the forest annually without significantly altering the balance.
<b>Bark:</b>	The visible outer covering of a tree which protects the inside.
<b>Biodiversity:</b>	Many different species living in balance with their environment.
<b>Biotic:</b>	Living components of an environment.
<b>Cambium:</b>	The growing part of the tree where cells form wood.
<b>Canopy:</b>	The top branches and leaves of the trees in a forest.
<b>Carbon Dioxide:</b>	A gas composed of carbon and oxygen, produced during respiration.
<b>Carnivore:</b>	A meat eating organism.
<b>Cellular Respiration (aerobic):</b>	The chemical process of releasing energy from sugar and other organic molecules by combining it with oxygen to produce carbon dioxide and water as wastes.
<b>Chlorophyll:</b>	Green substance in the leaves of plants that traps light energy used in photosynthesis.
<b>Clearcutting:</b>	A method of harvesting trees where all standing trees are removed from a section of forest at one time.
<b>Cones:</b>	Small, woody structure of coniferous trees which produce the seeds.
<b>Conifer:</b>	A tree which bears cones and has needles or scale-like leaves. Examples are pine, spruce, fir or cedars. Often referred to as evergreens or softwoods.

<b>Consumer:</b>	An organism which feeds on other organisms in an ecosystem. Herbivores, carnivores and omnivores are consumers.
<b>Crown:</b>	The top of a tree which forms the canopy.
<b>Deciduous:</b>	Trees and plants which lose their leaves annually every autumn.
<b>Decomposer:</b>	An organism which breaks down material and litter.
<b>Direct Seeding:</b>	Putting seeds directly into the forest floor rather than planting seedlings.
<b>Ecosystem:</b>	An area of living and non-living components which form an environment.
<b>Evergreen Tree:</b>	A tree which does not lose its leaves.
<b>Food Chain:</b>	A representation of "who eats who" in an ecosystem (these do not really exist but serve as a simplistic view of a part of a food web).
<b>Food Web:</b>	Feeding relationships in an ecosystem, the transfer of energy throughout an ecosystem. It is an inter-related network of food chains.
<b>Forest:</b>	A group of trees.
<b>Forest Floor:</b>	The area around the base of the trees, usually covered with leaves, moss and other plants.
<b>Forest Management:</b>	The care and use of forests. Forest management works to protect the forests.
<b>Forest Products:</b>	Products produced from trees.
<b>Forestry:</b>	The practice of managing, conserving and creating forests.
<b>Growth Ring:</b>	Rings which are present on a cross-section of a tree trunk which represent and determine the age of a tree.
<b>Habitat:</b>	A preferred place where an animal or plant lives.

<b>Hardwood:</b>	Wood made by broad-leafed, deciduous trees (aspen, birch and poplar).
<b>Harvesting:</b>	The removal of trees for a variety of uses.
<b>Heartwood:</b>	The non-living wood making up most of a tree stem which gives the stem strength.
<b>Herbivore:</b>	A plant eating organism.
<b>Inner Bark:</b>	The inner layer which serves to take food from the leaves to parts of the tree.
<b>Interdependence:</b>	The state of being dependent upon each other; interconnected.
<b>Lichens:</b>	The organism resulting from the relationship between an alga and a fungus.
<b>Log:</b>	The stem of the tree after it has been felled.
<b>Logging:</b>	The cutting and transporting of trees to the mill to make products.
<b>Omnivore:</b>	An organism which eats both plants and animals.
<b>Park:</b>	Forested area used for recreation.
<b>Phloem:</b>	The inner bark tissue that transports nutrients down to the roots and back up.
<b>Photosynthesis:</b>	The process by which a tree produces its own food (sugar).
<b>Producer:</b>	Any organism which uses energy from the sun to produce its own food.
<b>Pulp:</b>	The soft, moist, soupy mass of wood fibres which paper is made from.
<b>Recreation:</b>	Activities which are done for leisure.
<b>Reforestation:</b>	The building of a new forest by planting or reseeding.

<b>Regeneration:</b>	The process of growing back what has been lost. Forests regenerate after a fire with growth of new seedlings.
<b>Respiration:</b>	The process of exchanging gases with the environment.
<b>Sap:</b>	The fluid part of a plant rich in sugar and starch which moves up and down the plant in the phloem tissue of the bark.
<b>Sapling:</b>	A young tree.
<b>Sapwood:</b>	The softer outer layer of the wood in the stem between the cambium and heartwood, responsible for the nutrient transportation.
<b>Seedling:</b>	A very young tree.
<b>Seedtree Method:</b>	Method of harvesting forests where a few scattered trees are left standing in order to seed new trees.
<b>Selective Harvesting:</b>	A method of harvesting where certain trees are selected for cutting. Only these trees are taken.
<b>Shrub:</b>	A low growing perennial plant.
<b>Snags:</b>	A standing tree which has begun to decay or a tree which has been felled but has caught itself on the way down.
<b>Stand:</b>	A group of trees in a given area.
<b>Stomata:</b>	Little holes on the underside of leaves which allow gases to pass.
<b>Strip-cutting:</b>	Method of harvesting forest in strip like sections, trees left standing are intended to reside.
<b>Transpiration:</b>	The loss of water through the pores (stomata) in the leaves.
<b>Tree:</b>	A perennial woody plant having a well-defined stem at least 3 m high.
<b>Xylem:</b>	Microscopic tubes running the length of a plant's trunk that conduct water and minerals upward from the roots. Xylem makes up the wood of the stem.



## TREES - PRE-TEST

Marks  
(6)

1. Make a list: Why are **t r e e s** important?

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(10)

2. Name all the parts of a **t r e e** you can think of. What is the function of each part?

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<hr/>	<hr/>
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(4)

3. What things can be determined from a cross-section of a **t r e e** trunk?

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(2)

4. How does a "classification key" work?

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(2) 5. How would you measure the height of a **t r e e**?

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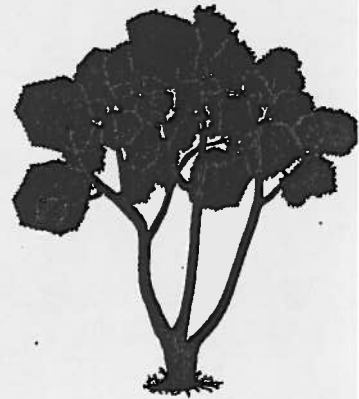
(3) 6. What happens to a stand of **t r e e s** over a number of years?  
(Say 100-200 years)

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(2) 7. Give an example of a forest food chain.

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(1) 8. Name an example of a decomposer.

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TOTAL           
30

Name: \_\_\_\_\_

**Master #2**

Date: \_\_\_\_\_

## The Forest Ecosystem (cont'd)

1. How do trees affect each of the following factors in the forest?

<b>Abiotic Factor</b>	<b>Effect Trees Have on The Factor</b>	<b>What Trees Do To Affect This Factor</b>
Temperature		
Soil		
Wind		
Moisture		

2. What affect does each organism have on trees?

<b>Organism Living In The Forest</b>	<b>Affect Organism Has On Trees</b>
Tent Caterpillar	
Leaf Miner	
Deer	
Yellow Bellied Sapsucker	
Blight (on leaves)	

# Task: Why Trees and Forests are Important

Name: \_\_\_\_\_

Date: \_\_\_\_\_

On the blanks below describe/explain how trees and forests affect our lives and the environment.

## 1. *Ecology and Quality of Life*

(how living things interact and support one another in the natural world)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## 2. *Wildlife*

(how plants and animals use forests)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

3. **Recreation**

(how people use their free time to have fun)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

4. **Economy**

(how people, government, and businesses earn and spend money)

a. Forests provide **jobs** for

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

b. Forests provide **products** such as

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

c. Forests provide raw materials to **manufacture**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



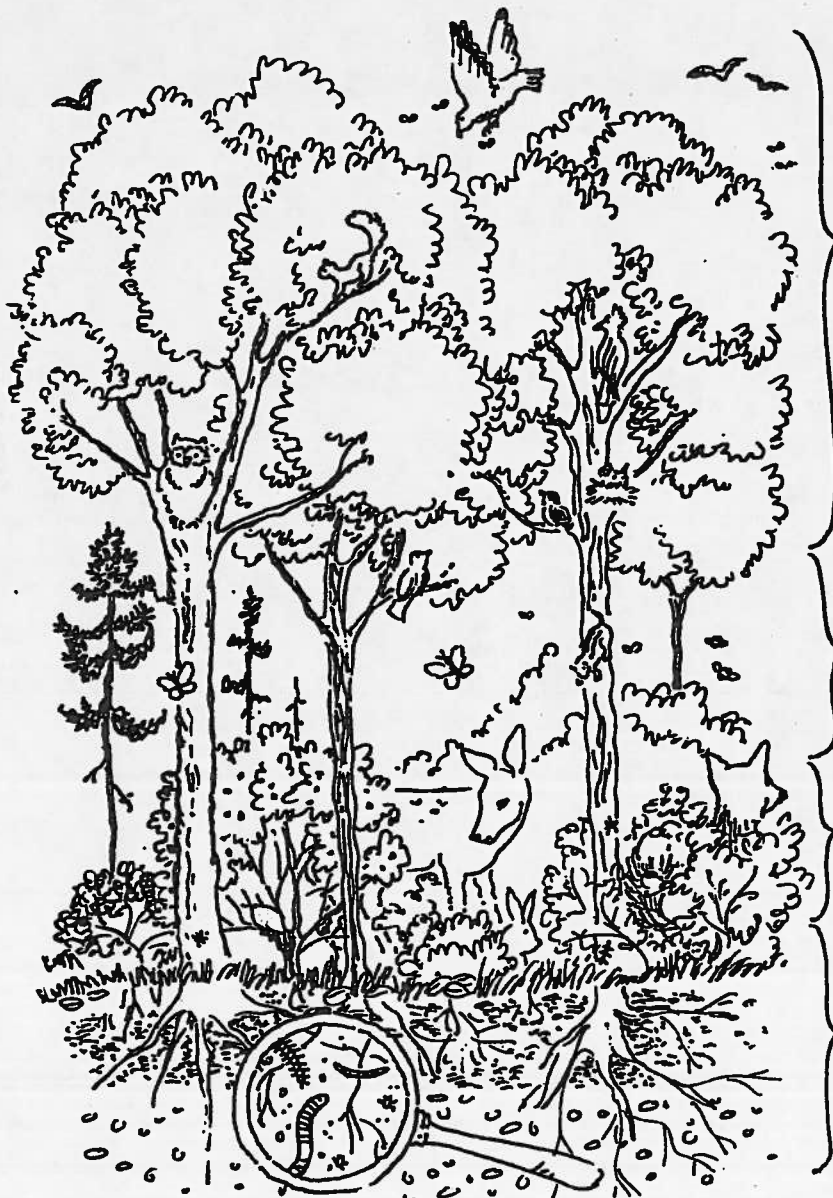
Name: \_\_\_\_\_

**Master #3**

Date: \_\_\_\_\_

## Levels of the Forest

In a forest ecosystem, there are several levels of vegetation. Different plants and animals live in each level. Label the 4 levels of this forest and name one plant and one animal found in each level.



Level \_\_\_\_\_  
plant \_\_\_\_\_  
animal \_\_\_\_\_

Level \_\_\_\_\_  
plant \_\_\_\_\_  
animal \_\_\_\_\_

Level \_\_\_\_\_  
plant \_\_\_\_\_  
animal \_\_\_\_\_

Level \_\_\_\_\_  
plant \_\_\_\_\_  
animal \_\_\_\_\_



# Task: Sort the Cycle

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Byron heard the environmentalist explain that all living creatures depend on each other.*

A. Sort the following living things into one of the nutrient cycle groups: producers, consumers or decomposers.

wild rose	owl	grass	bacteria	earthworm
fox	fir	willow	conch	lichen
mushroom	birch	deer	mouse	grasshopper

Producers	Consumers	Decomposers
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____
4. _____	4. _____	4. _____
5. _____	5. _____	5. _____
6. _____	6. _____	6. _____

**B. Add two additional living things to each of the categories.**

<b>Producers</b>	<b>Consumers</b>	<b>Decomposers</b>
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____

**C. Choose four of the living things from your table and draw a food web below showing how your four choices are connected.**

**Challenge Question:**

**D. You could have had difficulty placing one or more of the living things from the list in a column. Explain why that could be.**

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E. Share your table with two other people to make one large table of a food web. Draw this web below.

I made my food web with \_\_\_\_\_ and \_\_\_\_\_.

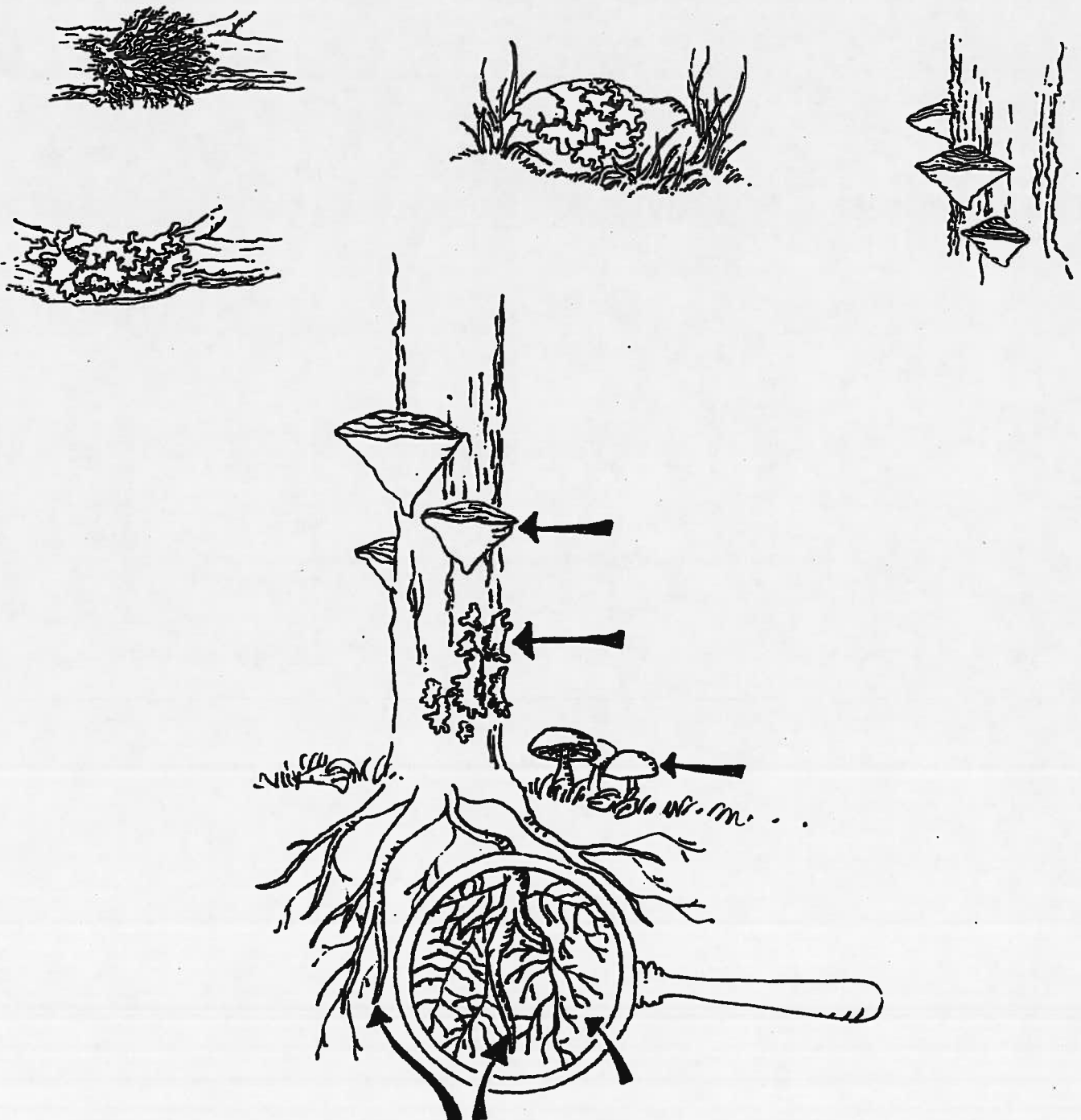


Name: \_\_\_\_\_

**Master #4a**

Date: \_\_\_\_\_

## Fungus, Lichen & Conks



Name: \_\_\_\_\_

Date: \_\_\_\_\_

## **Fungus, Lichen & Conks Who Am I?**

I grow on the roots of trees and use some of the sugar in the roots to grow. In return, I help the roots take in food from the soil. I also help to enrich the soil.

\_\_\_\_\_

I grow very, very slowly and may live for a very long time.

\_\_\_\_\_

I have growth rings like a tree, but I'm not a tree.

\_\_\_\_\_

I live on the forest floor.

\_\_\_\_\_

I can be found in the understory and herb or shrub levels of the forest.

\_\_\_\_\_

You know the air in the forest is quite clean and free of pollution if you see me on the trees.

\_\_\_\_\_

I look soft, but I am really quite hard.

\_\_\_\_\_

I am made up of two plants. I am formed by one plant that collects water and nutrients and another plant which contains chlorophyll.

\_\_\_\_\_

Sometimes I am poisonous. Other times, I can be eaten by animals and/or people. **BE CAREFUL! YOU MAY NOT KNOW IF I'M SAFE TO EAT!**

## Task: Trees of Life

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Byron knows that some animals depend on the forest to live. Choose one insect, one bird, and one mammal that live in Alberta's forests and describe two ways the survival and well-being of that animal is linked to trees.

A. Insect: \_\_\_\_\_

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

B. Bird: \_\_\_\_\_

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

C. Mammal: \_\_\_\_\_

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

**D. What if...**

**Describe what would happen to these creatures if all the trees in the forest were destroyed.**

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**E. Large populations of tent caterpillars can have a devastating effect on poplar trees in Alberta, wiping out all the leaves in stands of trees in a short time. The following year trees will grow secondary leaves which are fewer in number and smaller in size. The trees will not survive two successive summers of tent caterpillars. If a forest was infested with tent caterpillars for two years in a row, what effect would it have on the forest ecosystem? Provide specific examples.**

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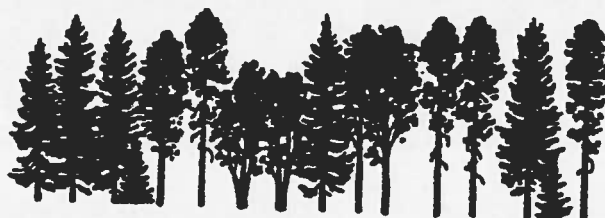
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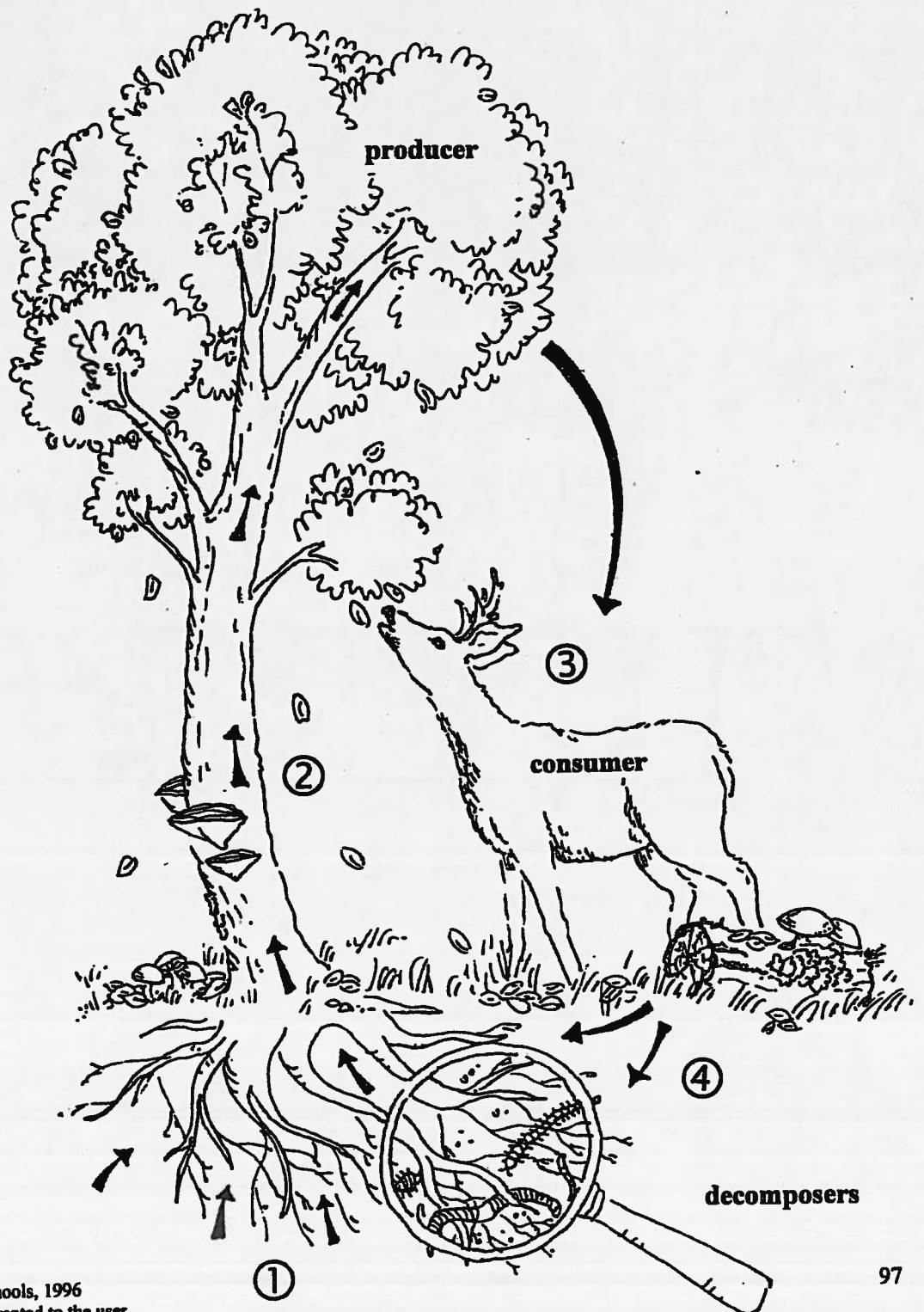


Name: \_\_\_\_\_

Master #5

Date: \_\_\_\_\_

### The Nutrient Cycle



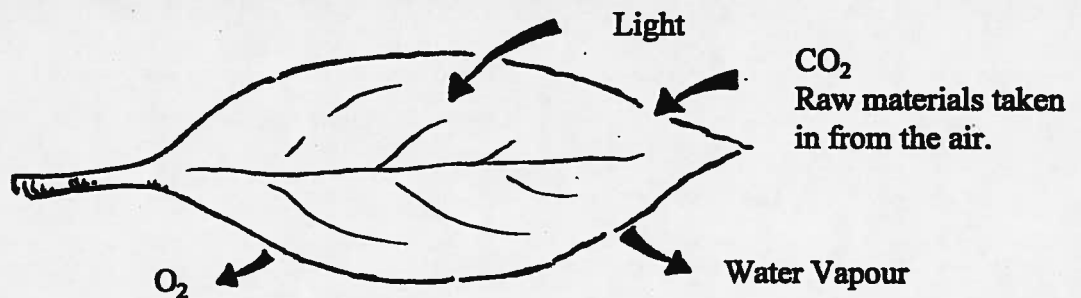
Name: \_\_\_\_\_

**Master #6**

Date: \_\_\_\_\_

## The Leaf: Our Oxygen Factory

The word *photosynthesis* comes from the word *photo*, which means *light*, and *synthesis*, which means *putting together*. Photosynthesis is the process by which plants produce their own food. Plants take carbon dioxide from the air and water and minerals from the ground. Energy from the sun is trapped by chlorophyll and this energy is then used to combine carbon dioxide and water to form sugars. The sugars are then converted into starches. This process provides plants with food, but also returns oxygen to the atmosphere for us to breathe.



Draw an illustration to show the oxygen cycle between a plant and an animal. Include the labels CO<sub>2</sub> and O<sub>2</sub> and arrows to show the exchange of gases.

What do you predict would happen if the majority of our trees were destroyed?

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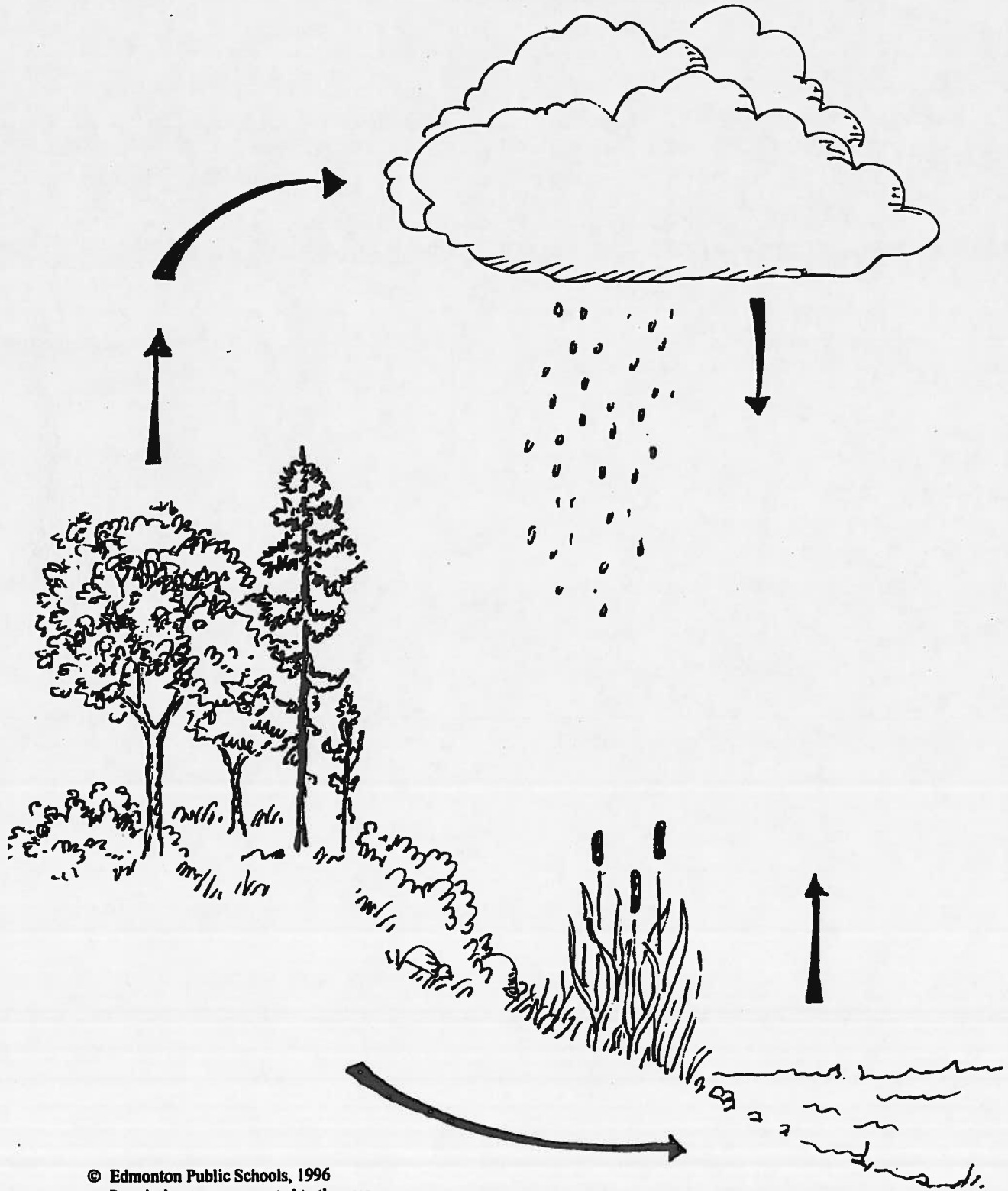
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Name: \_\_\_\_\_

**Master #7**

Date: \_\_\_\_\_

## The Water Cycle



**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## **Trees and the Water Cycle**

**Question:**

Do trees play a role in the water cycle?

**Prediction or Hypothesis:**

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- Materials:**
- 1 leaf tree
  - 1 needle tree
  - 2 plastic bags with twist ties
  - 1 graduated cylinder

**Procedure:**

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**Observations (before removing the bags):**

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**Master #8 cont'd**

**Observations (after removing the bags):**

Leaf Tree: _____ mL	Needle Tree: _____ mL
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**Diagram:**

Diagram of leaf tree:	Diagram of needle tree:

**Conclusions:**

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**Applications:**

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Name: \_\_\_\_\_

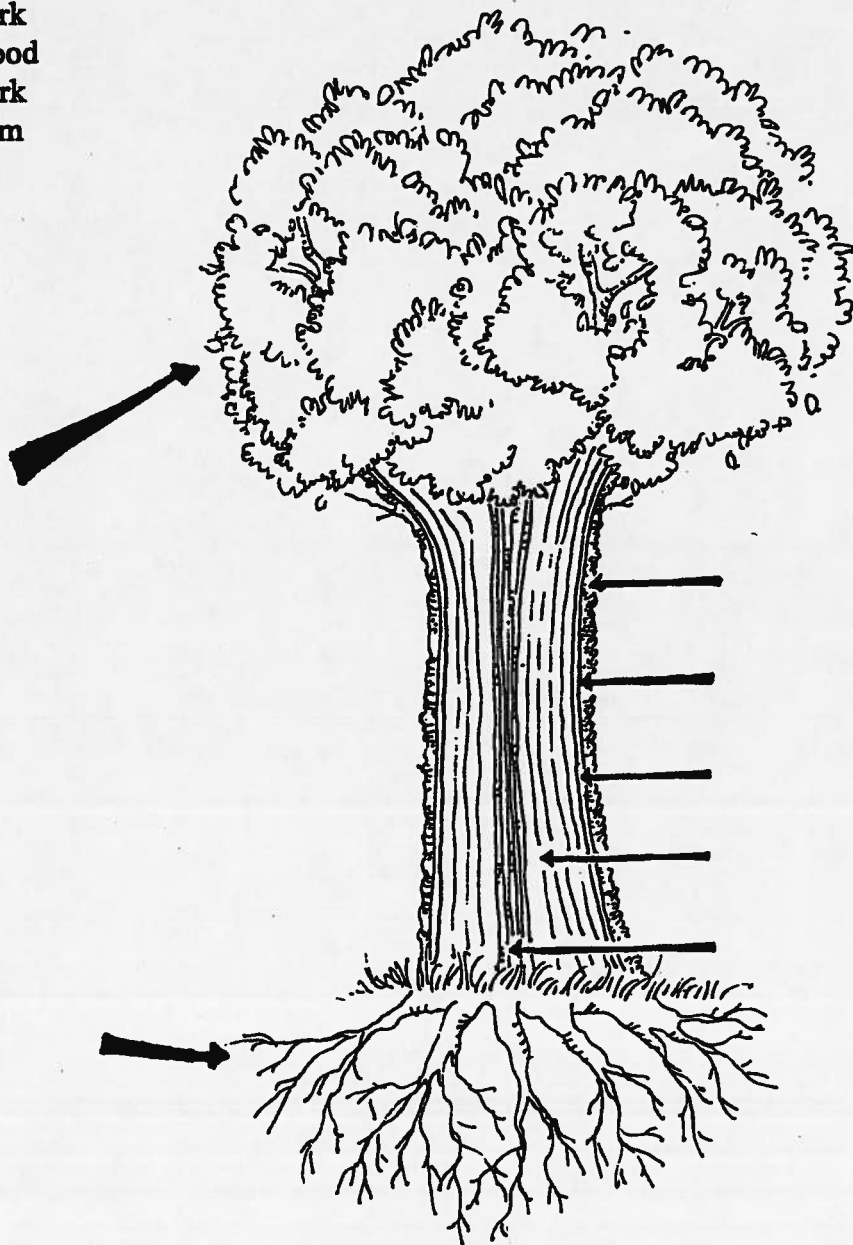
**Master #9**

Date: \_\_\_\_\_

## What is a Tree?

Label the parts of the tree using the following terms:

- sapwood
- innerbark
- heartwood
- outerbark
- cambium
- roots
- crown



Name: \_\_\_\_\_

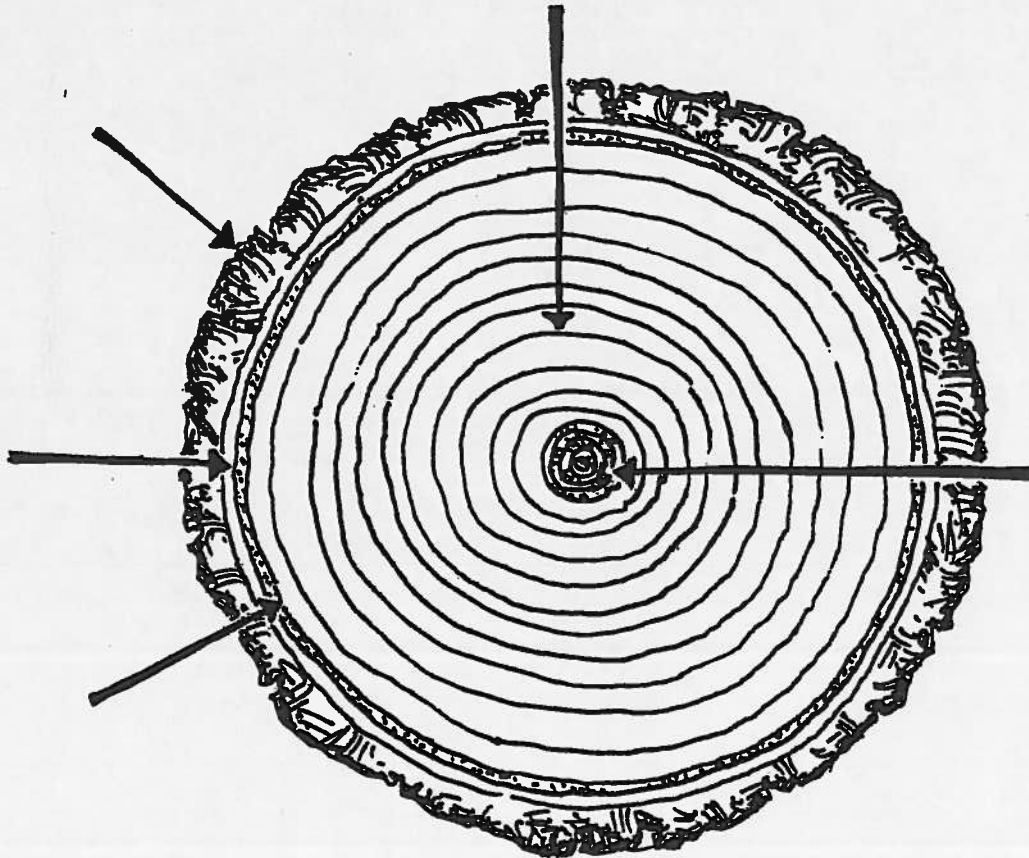
**Master #10**

Date: \_\_\_\_\_

## Cross-Section of Tree Stem

Label the tree cookie using the following terms:

- sapwood
- inner bark
- heartwood
- outerbark
- cambium

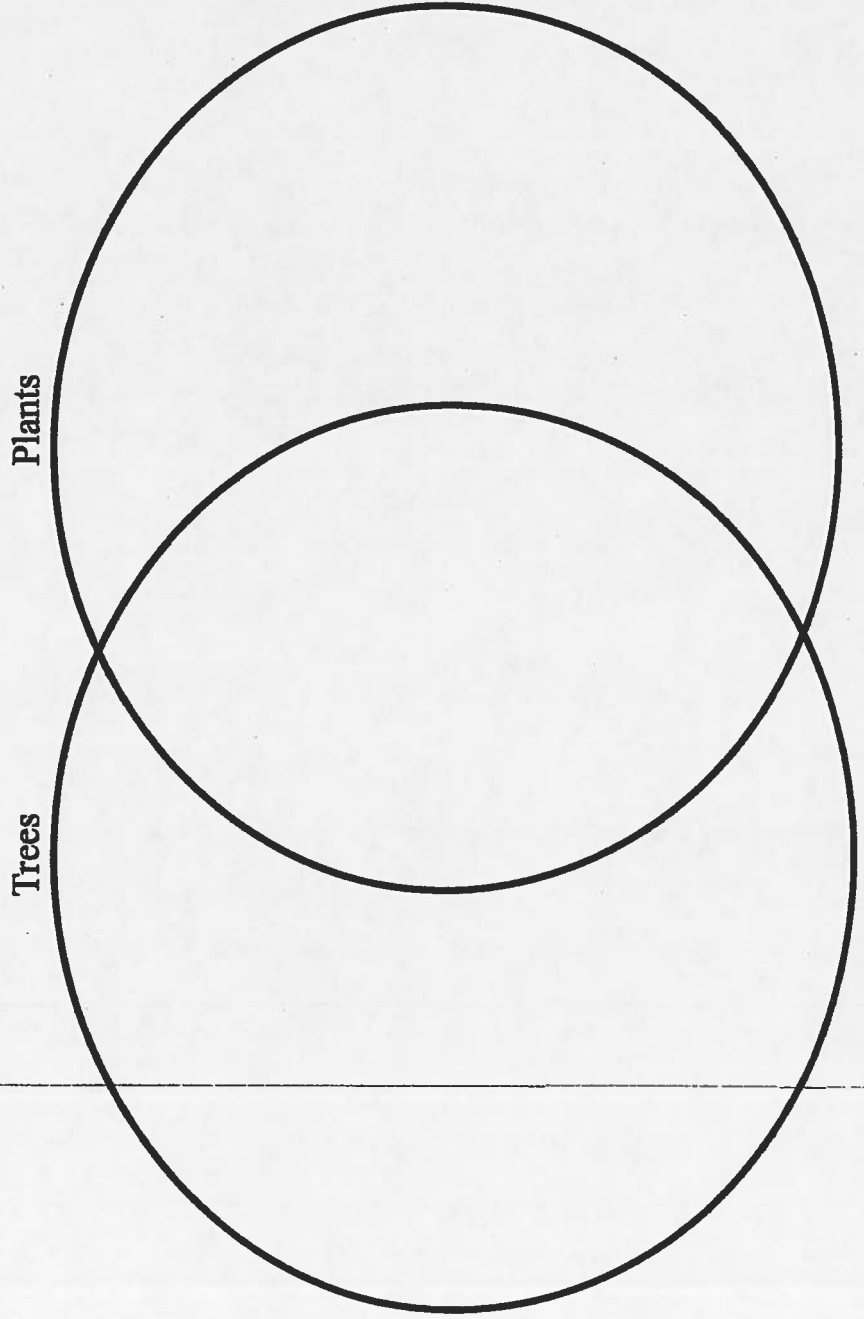


# Task: A Tree is a Plant Isn't It?

Name: \_\_\_\_\_ Date: \_\_\_\_\_

*Gramps told Byron that trees are special plants and that there were two main types of trees - deciduous and coniferous.*

1. Complete a Venn diagram to show similarities and differences between trees and plants.



Name: \_\_\_\_\_

**Master #11**

Date: \_\_\_\_\_

## Deciduous or Coniferous?

TYPES OF TREES		
	DECIDUOUS	CONIFEROUS
<b>Shedding of leaves</b>	- shed leaves in fall	- shed continuously. (Most do not shed leaves in one season).
<b>Shape of leaves</b>	- broad-leafed or needle shaped	- needle-shaped leaves
<b>Water retention</b>	- leaves waxy topside and large surface area on underside, causing moisture loss	- thick, waxy coating reduces water loss from transpiration
<b>Temperature resistance</b>	- do not withstand temperature extremes	- do withstand temperature extremes

**Deciduous** - loses its leaves in the fall.

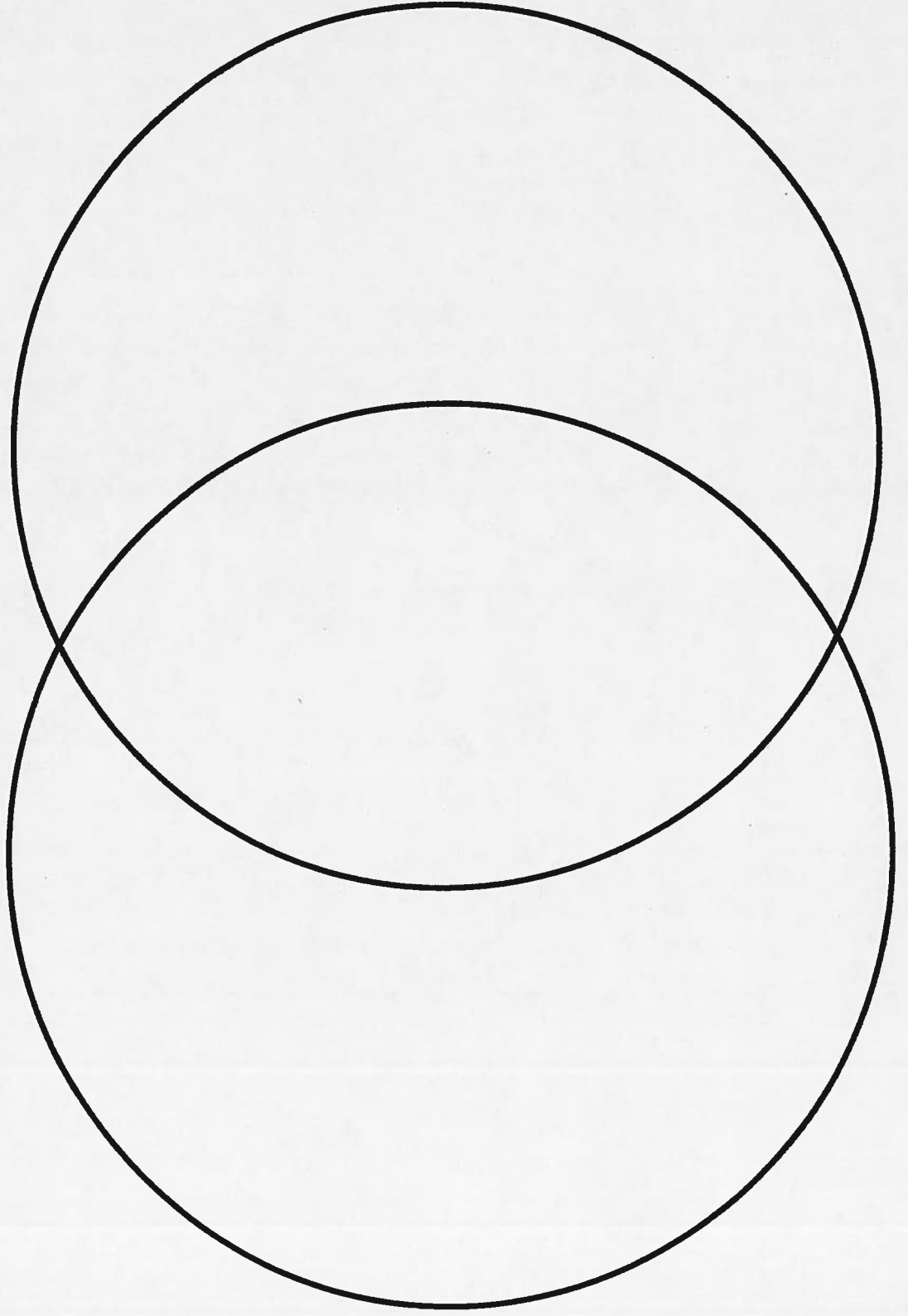
**Coniferous** - cone bearing trees.

\* A larch (tamarack) is both deciduous and coniferous. It loses its leaves in the fall and is also cone bearing.

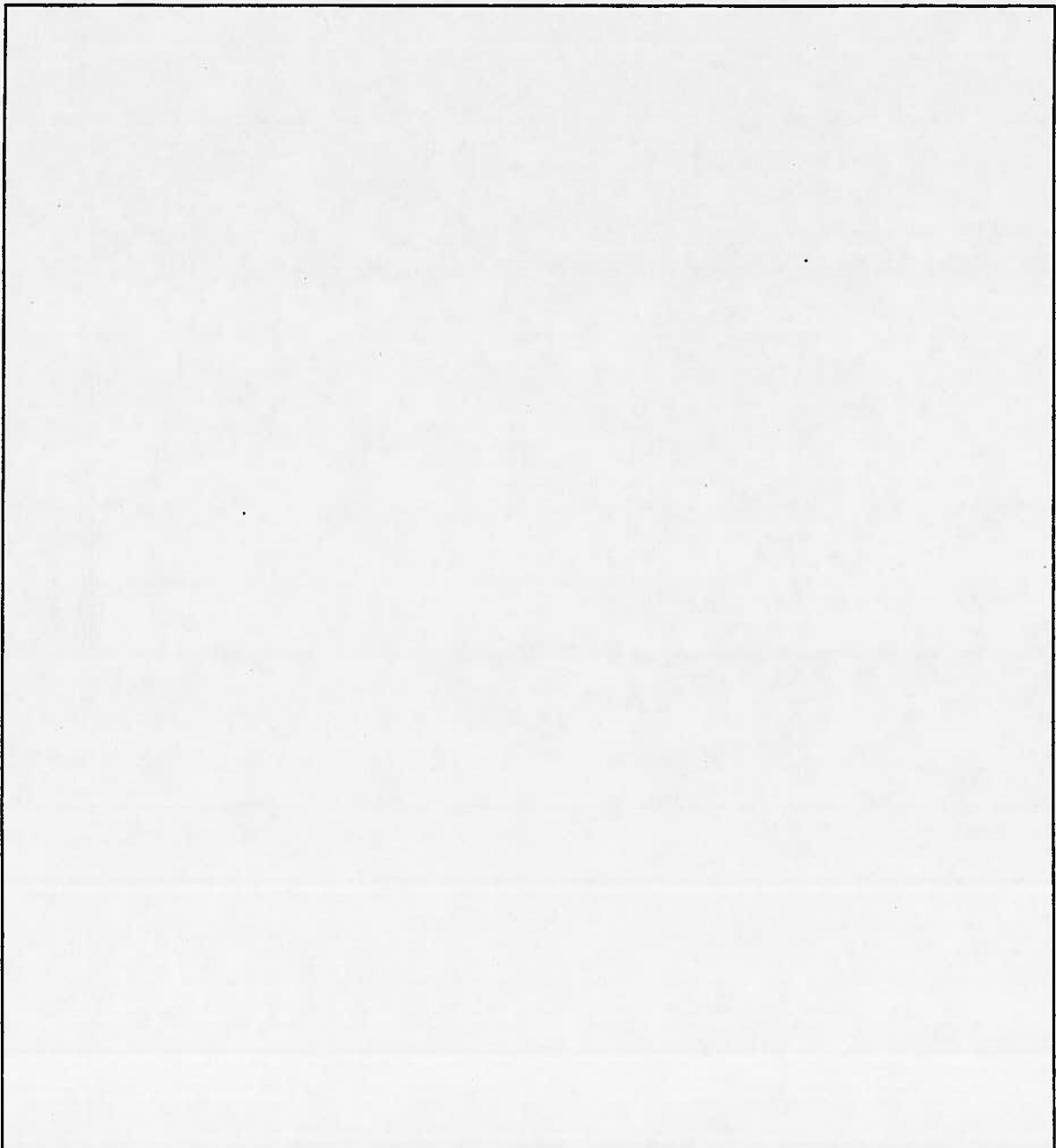
2. Complete a Venn diagram to show similarities and differences between deciduous and coniferous trees.

Deciduous

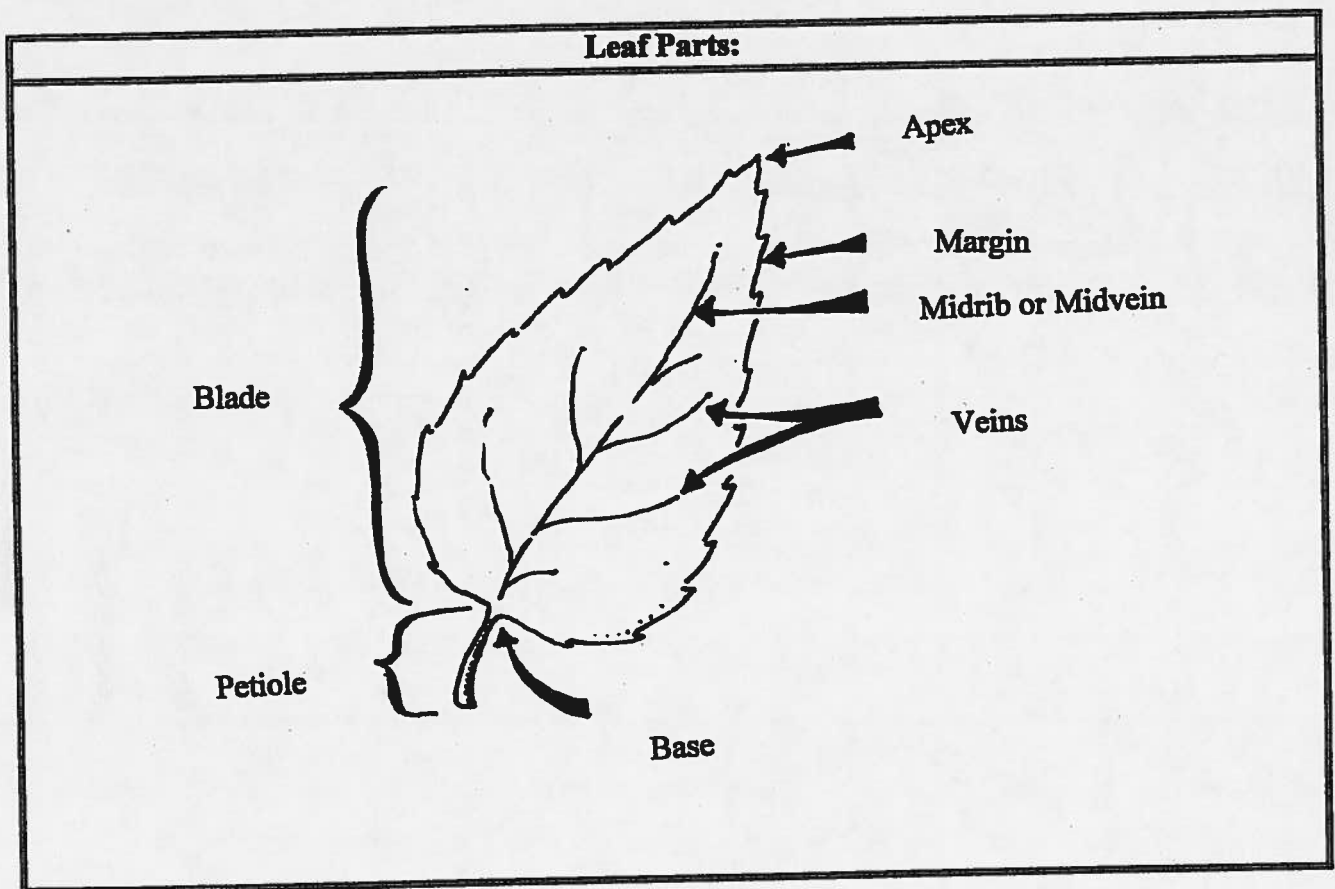
Coniferous



3. Byron enjoys learning about the characteristics of trees from Gramps. You decide to make a field guide outlining these characteristics over the course of a year. The field guide will come in handy on your future trips to the forest. Design your field guide table in the space below. Your table should outline key characteristics for at least one deciduous and one coniferous tree.



## Leaf Classification





Name: \_\_\_\_\_

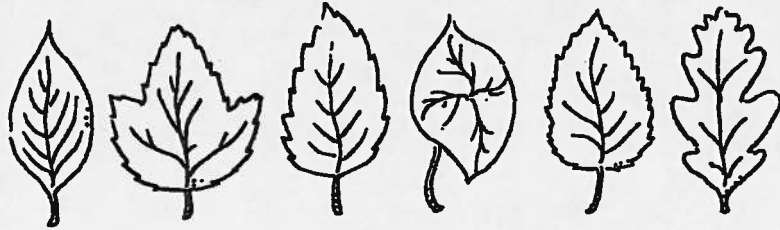
**Master #13**

Date: \_\_\_\_\_

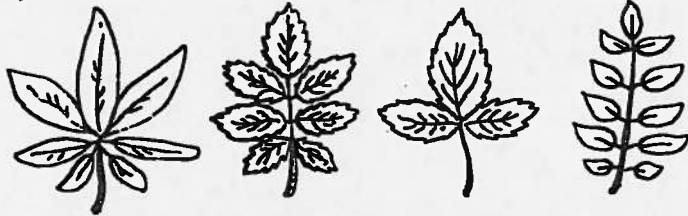
## Leaf Classification

### Leaf Types:

#### Simple leaves:



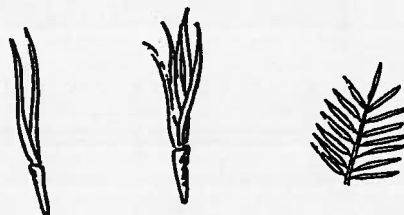
#### Compound leaves: (more than 1 blade on a petiole)



#### Double compound leaf:



#### Needle leaf:



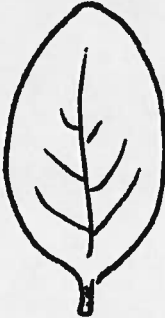
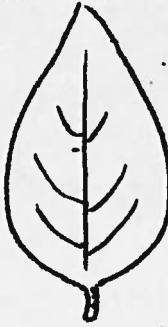

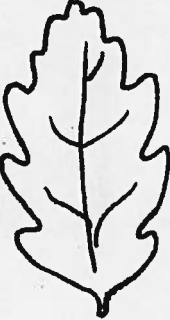
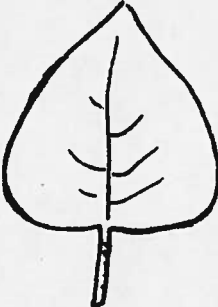
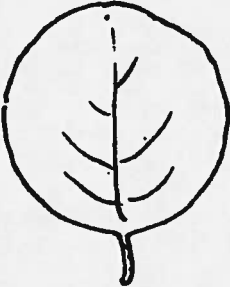





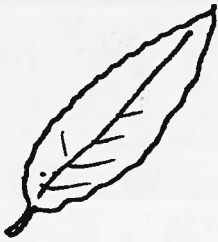


Name: \_\_\_\_\_

**Master #14**

Date: \_\_\_\_\_

## Leaf Classification

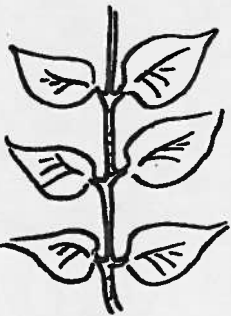



Leaf Shapes:				
				
linear	oblong	oval	ovate	cordate (heart shaped)
				
lobed	deltoid (triangular)	orbicular (round)	4 sided needle	flattened needle
Leaf Margins:				
				
smooth	fine-toothed	coarse toothed or serrated	scalloped or wavy	

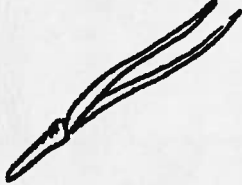

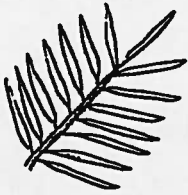
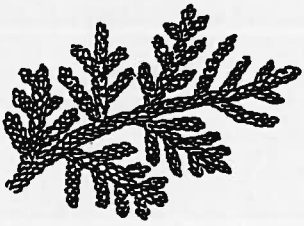
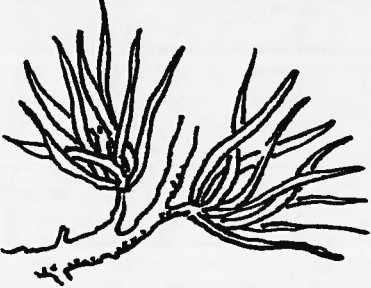
Name: \_\_\_\_\_

**Master #15**

Date: \_\_\_\_\_

## Leaf Classification

			
<b>opposite</b>	<b>alternate</b>	<b>whorl</b>	<b>basal</b>
<b>Leaf Arrangements</b>			

		
<b>in bundles of 2</b>	<b>bundles of 5</b>	<b>singly on a twig</b>
		
<b>scale-like</b>	<b>in clusters of more than 5</b>	
<b>Needle Arrangements and Types</b>		

Name: \_\_\_\_\_

**Master #16**

Date: \_\_\_\_\_


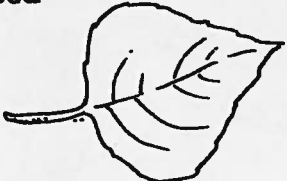
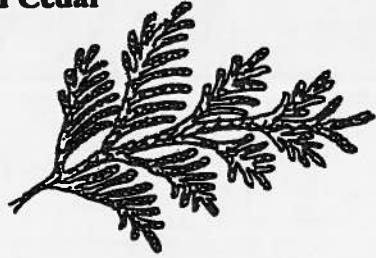
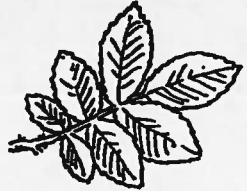
## Leaf Classification Exercise

### Directions:

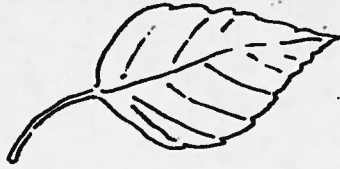
Beside each leaf picture record

1. *type of leaf*
2. *shape of leaf or needle*
3. *margin type or arrangement of needles*

Write N/A (not applicable) on the line if necessary.

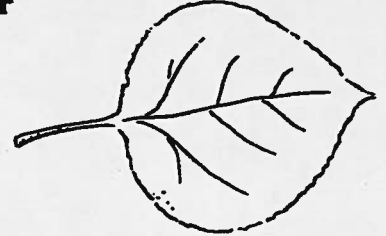
<p><b>A. Willow</b></p>  <p>1. _____</p> <p>2. _____</p> <p>3. _____</p>	<p><b>B. Plains Cottonwood</b></p>  <p>1. _____</p> <p>2. _____</p> <p>3. _____</p>
<p><b>C. Western Red Cedar</b></p>  <p>1. _____</p> <p>2. _____</p> <p>3. _____</p>	<p><b>D. Wild Rose</b></p>  <p>1. _____</p> <p>2. _____</p> <p>3. _____</p>

**E. Box Elder**



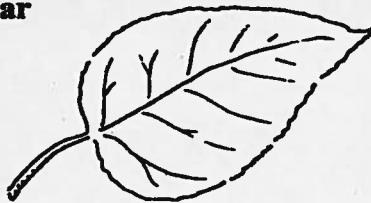
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**F. Aspen Poplar**



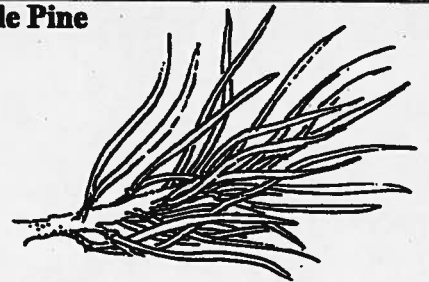
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**G. Balsam Poplar**



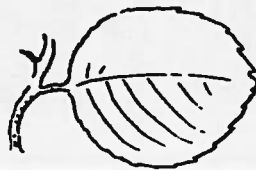
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**H. Lodgepole Pine**



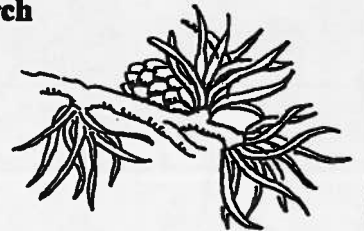
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**I. Saskatoon**



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**J. Tamarack - Larch**






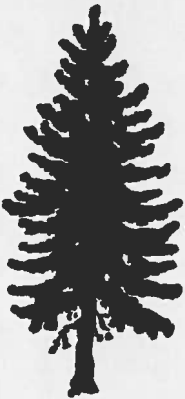

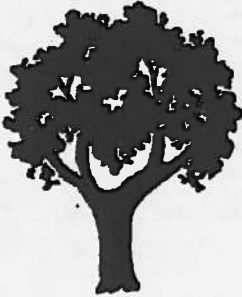


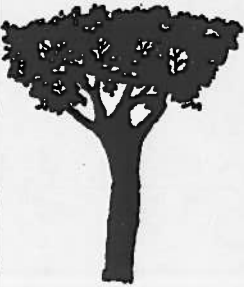
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Name: \_\_\_\_\_

**Master #20**

Date: \_\_\_\_\_

### Shapes or Silhouettes

				
<b>Lodgepole Pine</b>	<b>Balsam Fir</b>	<b>White Poplar</b>	<b>White Spruce</b>	
				
<b>Black Spruce</b>	<b>Apple Tree</b>	<b>White Birch</b>		



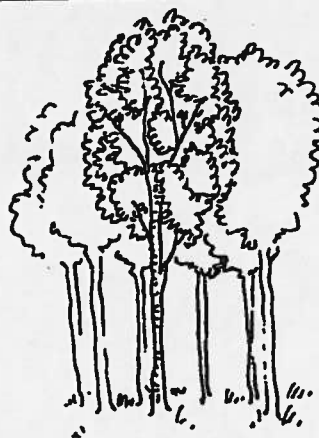
Name: \_\_\_\_\_

**Master #21**

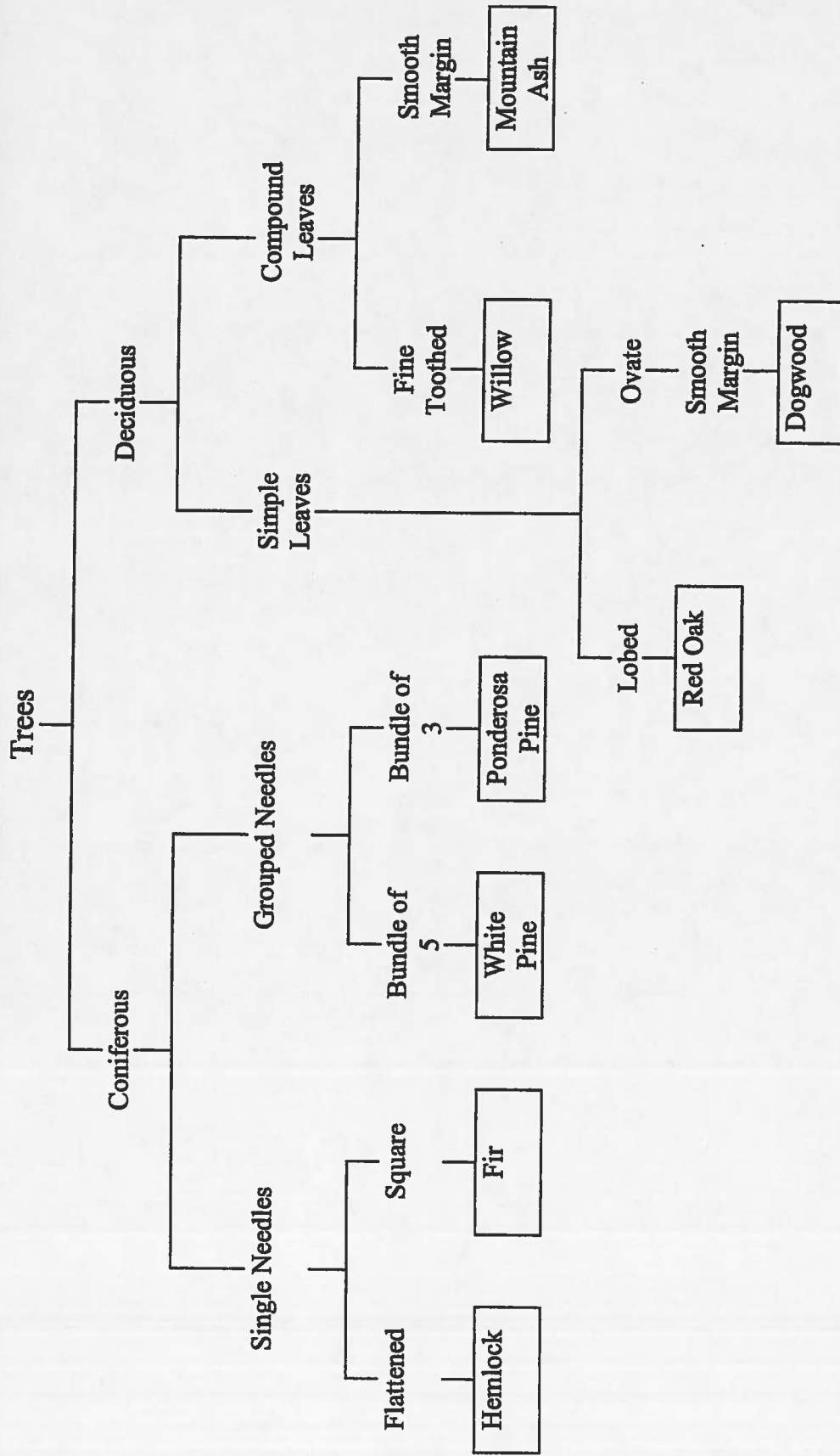
Date: \_\_\_\_\_

## Branching Patterns & Tree Shapes

How do you think the branching patterns and tree shapes of these trees have been affected by their location, weather conditions or other possible factors?



# Task: Classification Key for Be a Leaf Detective





## Task: Be a Leaf Detective

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Byron found two different types of leaves in the forest:

A.



B.



Use the classification key to answer questions A and B.

a. What is A? Why?

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b. What is B? Why?

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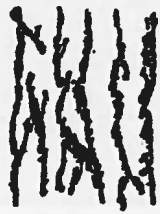


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Name: \_\_\_\_\_

**Master #18b**

Date: \_\_\_\_\_

### Matching Bark Patterns

<p>Label the name of each bark pattern on the appropriate line.</p>	<p>A</p>  <p>_____</p>	<p>B.</p>  <p>_____</p>
<p>C.</p>  <p>_____</p>	<p>D.</p>  <p>_____</p>	<p>E.</p>  <p>_____</p>



Name: \_\_\_\_\_

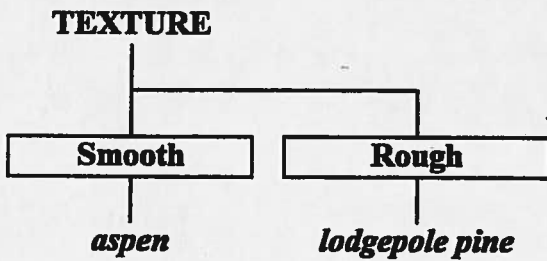
**Master #19**

Date: \_\_\_\_\_

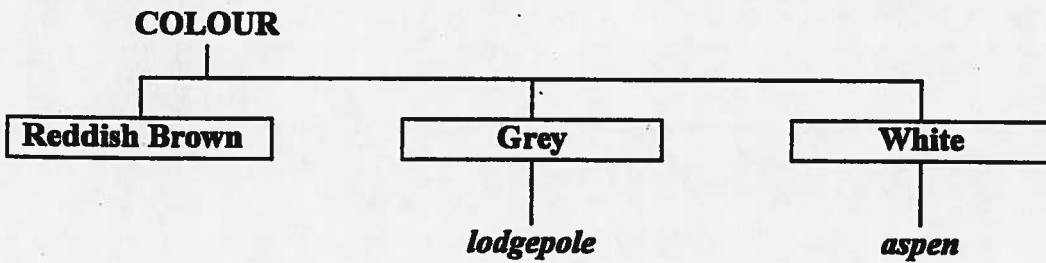
## Tree Bark

### Bark Characteristics Chart

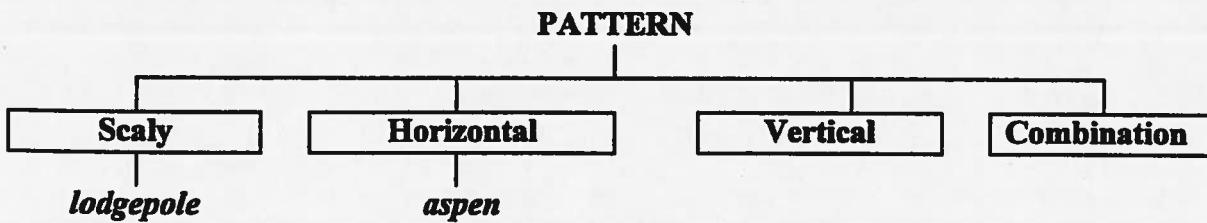
A.



B.



C.



# Task: Know Your Trees

Name: \_\_\_\_\_

Date: \_\_\_\_\_

A. Show that you are familiar with two coniferous and two deciduous trees in your neighbourhood by using both words and illustrations to complete the table below.

NATIVE TREES IN MY NEIGHBOURHOOD					
Name of Tree	Shape	Bark	Branching Pattern	Leaf Shape & Arrangement	Fruit, Flowers or Cones
<b>Coniferous trees</b>					
1.					
2.					
<b>Deciduous trees</b>					
1.					
2.					

**B. Count the number of deciduous and coniferous trees in your schoolyard.**

Deciduous \_\_\_\_\_ Coniferous \_\_\_\_\_

**C. Graph your results.**

**D. Use the information from your graph to answer the following questions.**

**a. Which tree is more common in your schoolyard?**

\_\_\_\_\_

**b. Give two reasons why this might be so.**

i. \_\_\_\_\_

ii. \_\_\_\_\_

**c. Should there be more trees in your schoolyard?**

\_\_\_\_\_

\_\_\_\_\_

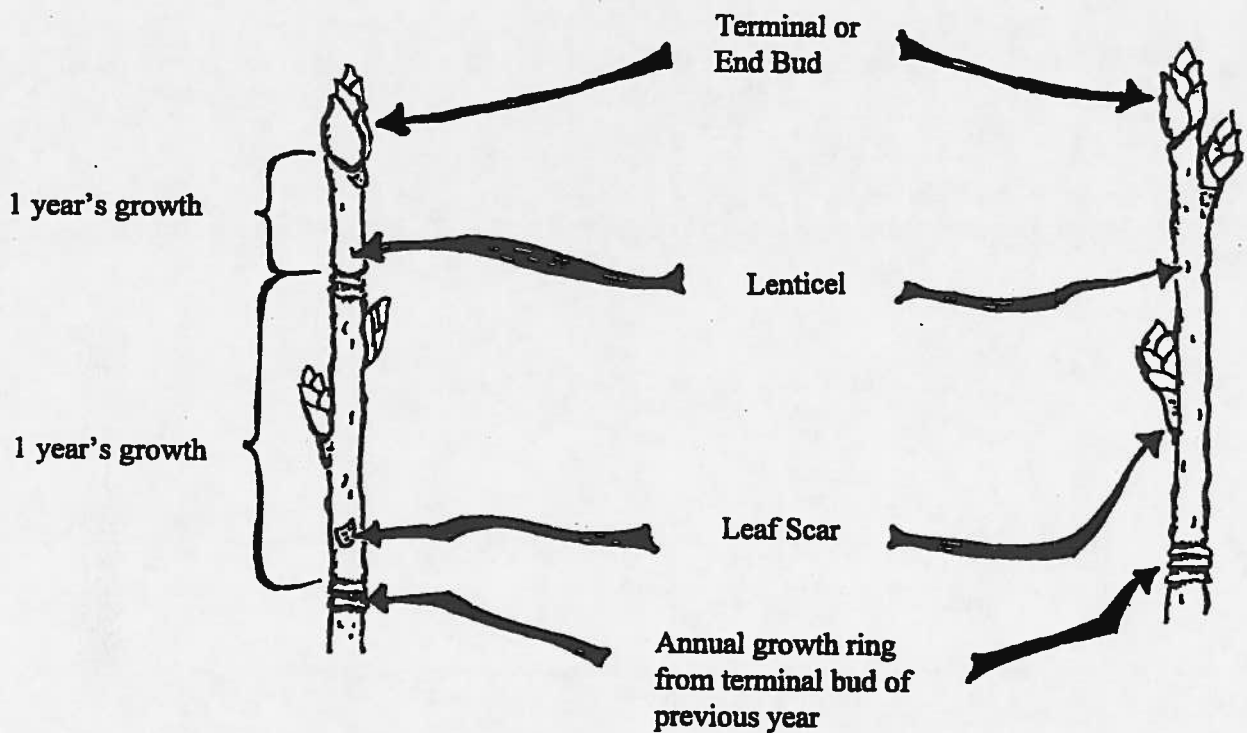
\_\_\_\_\_

Name: \_\_\_\_\_

**Master #22**

Date: \_\_\_\_\_

## Buds



A leaf scar (face) is left where the leaf from the previous year was attached to the tree. The "eyes" and "nose" are the location of the tubes which carried water to the leaf from the roots, and food to the roots from the leaf. The bud scales protect the bud during winter.

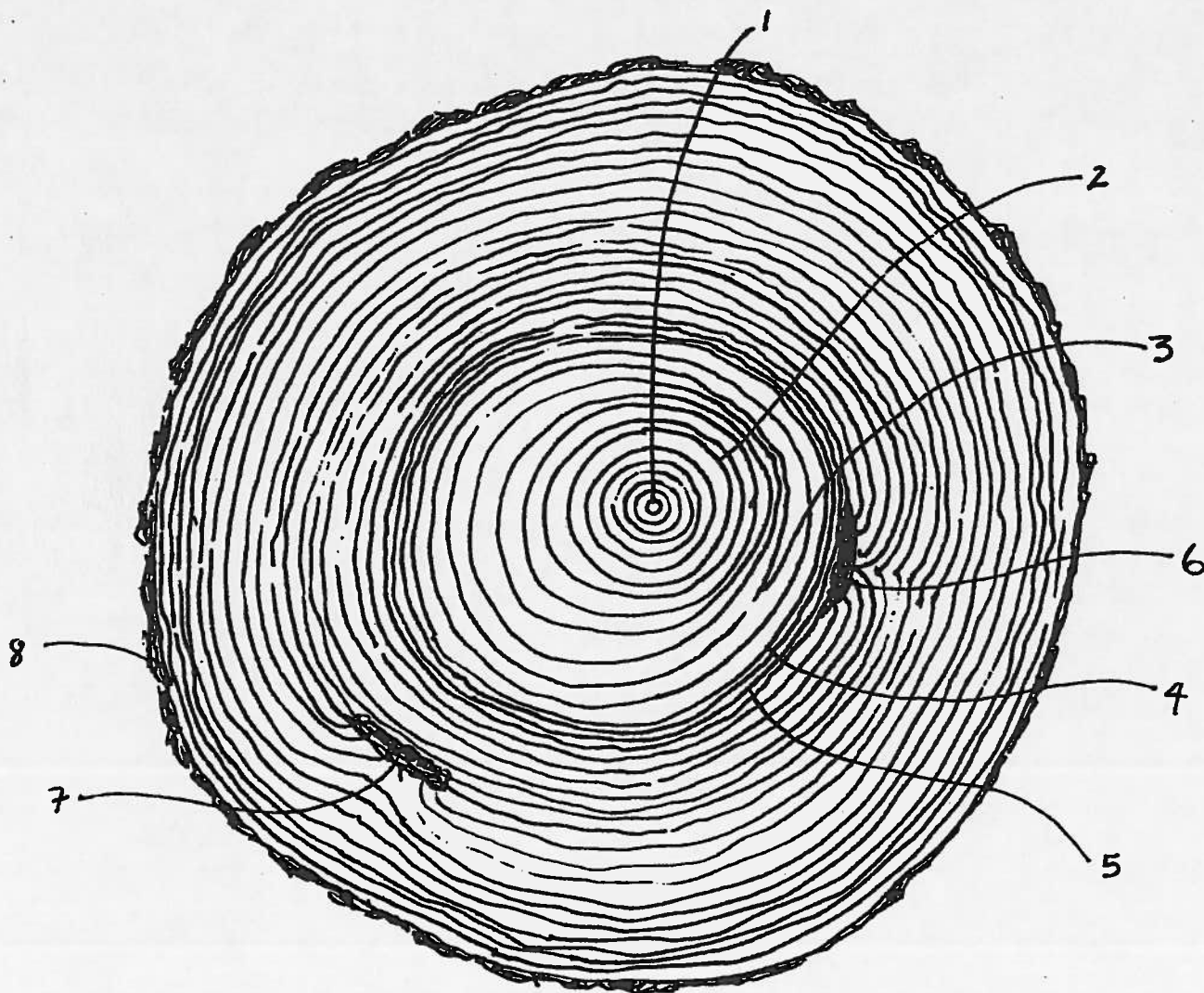
Name: \_\_\_\_\_

**Master #24**

Date: \_\_\_\_\_

## Life of a Tree

Observe the numbered tree rings carefully and record your observations accurately on Master #25. Infer a possible reason for the tree to have grown this way.



Name: \_\_\_\_\_

**Master #25**

Date: \_\_\_\_\_

### Recording the Life of a Tree

Observations	Inference (Probable Reason)
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	





Name: \_\_\_\_\_

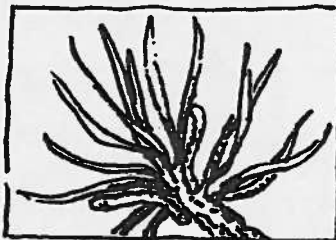
**Master #26**

Date: \_\_\_\_\_

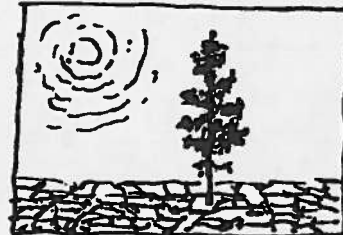
### Determining the Life of a Tree



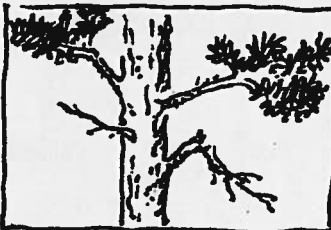
**Construction**



**Insect Attack**



**Drought**



**Dead Branch**



**Growing On A Slope**



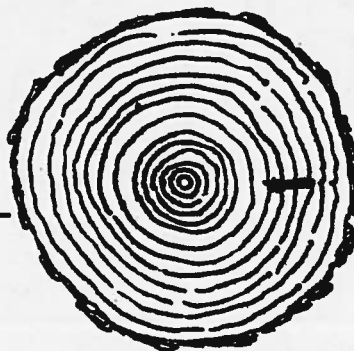
**Fire**

From the situations illustrated above, list 2 possible incidents which may have caused each of the following variations in tree rings.



A.

\_\_\_\_\_  
\_\_\_\_\_



B.

\_\_\_\_\_  
\_\_\_\_\_



C.

\_\_\_\_\_  
\_\_\_\_\_



D.

\_\_\_\_\_  
\_\_\_\_\_

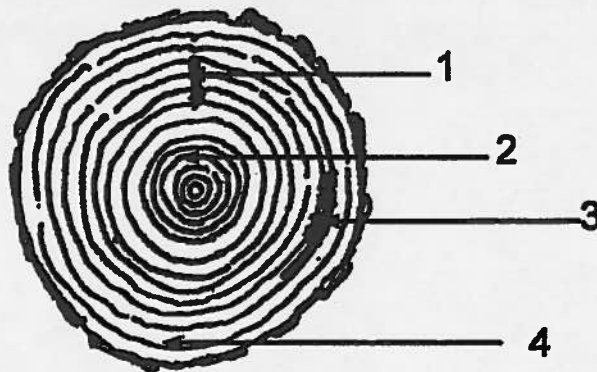
## Task: It's a Slice

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Gramps showed Byron how to read a tree's growth pattern and learn the history of a tree.*

Study the growth pattern of this tree cookie.

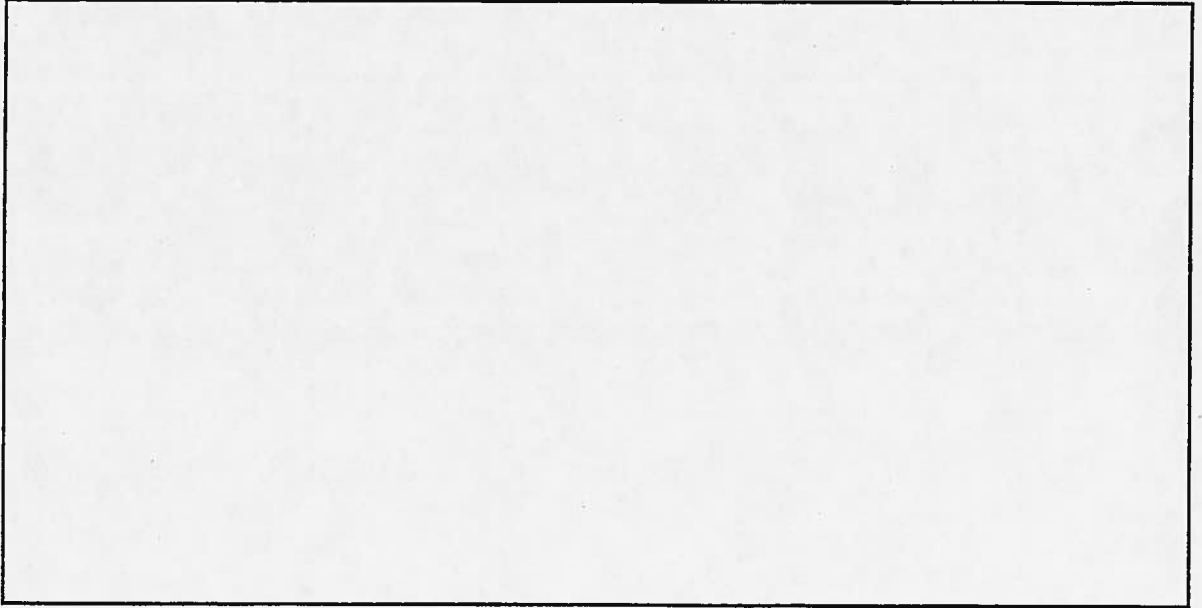


- In the following table, describe the numbered markings of the growth pattern and make an inference about the environmental conditions.

Marking	Description	Inference
1.		
2.		
3.		
4.		

2. Pretend you are a tree. Write your autobiography and then draw a cookie (cross-section) that would summarize your life. Be sure to include what kind of tree you are, your location and any hardships endured (fire, drought, insect infestation, etc.)

Tree cookie:



Autobiography:

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# Task: Tree Cookies

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Examine the following diagrams of tree cookies.

a.



b.



c.



d.



1. Describe the most probable environmental conditions that could cause the growth pattern of each tree cookie.

a. \_\_\_\_\_  
\_\_\_\_\_

b. \_\_\_\_\_  
\_\_\_\_\_

c. \_\_\_\_\_  
\_\_\_\_\_

d. \_\_\_\_\_  
\_\_\_\_\_

2. Select one of the tree cookies from Question #1. Complete the following table to explain how you were able to infer the environmental conditions during the growth of that tree by examining the tree cookie.

Tree Cookie # \_\_\_\_\_.

Condition	Description	Environmental Condition
<i>Shape of rings</i>		
<i>Distance between rings</i>		
<i>Unusual markings</i>		

3. Review the conditions for your choice in question # 2. Which condition would be the greatest threat to the life of a tree? Why do you think so?

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Name: \_\_\_\_\_

**Master #28**

Date: \_\_\_\_\_

## **Historical Patterns: Succession of a Forest**

### ***Steps in Succession of a Bare Rock Area***

1. A bare rock area exists.
2. Soil, carried by wind and water, is deposited in cracks or holes in rocks.
3. Lichen and mosses grow on bare rock surfaces.
4. Plant seeds take root in mosses and soil deposits.
5. Sun-loving trees such as pine, birch, and aspen grow and dominate.
6. As shade develops, other types of trees and shrubs grow and a mixed forest eventually develops.

### ***Steps in Succession of a Pond Area***

1. A pond with high banks exists.
2. Weeds grow and die, accumulating on the bottom of the pond, making it shallower.
3. Willows and other moisture-loving trees and shrubs take root along the edges of the pond. These also use up water, making the pond shallower.
4. The pond becomes shallower with more dead plant material.
5. Willows, aspen, and other less water-loving plants take root.
6. Pond dries up and aspen crowd out willows, creating an aspen forest.

### ***Steps in Succession of a Field or Meadow***

1. A field or meadow exists with grass and flowers as the only ground cover.
2. The first trees are produced by wind-blown, water-borne, animal-borne seeds, seed cones, and shoots of aspen.
3. Aspen, poplar, and/or lodgepole pine trees soon dominate the area.
4. While the older trees mature and die, spruce seedlings flourish in the shade they provide. Soon, white and black spruce of different ages dominate the forest.

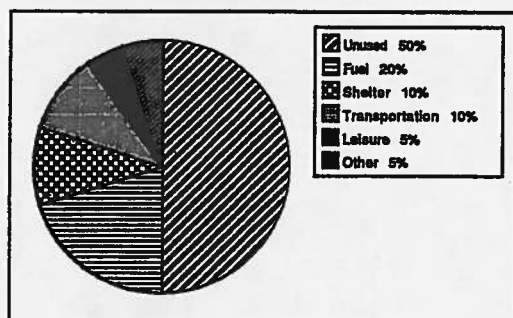
# Task: Forest Use

Name: \_\_\_\_\_

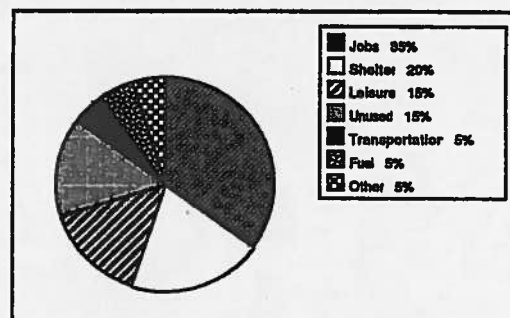
Date: \_\_\_\_\_

Study the following graphs that compare human use of the forest in the 17th century to forest use in the 20th century.

Forest Use in the 17th Century



Forest Use in the 20th Century

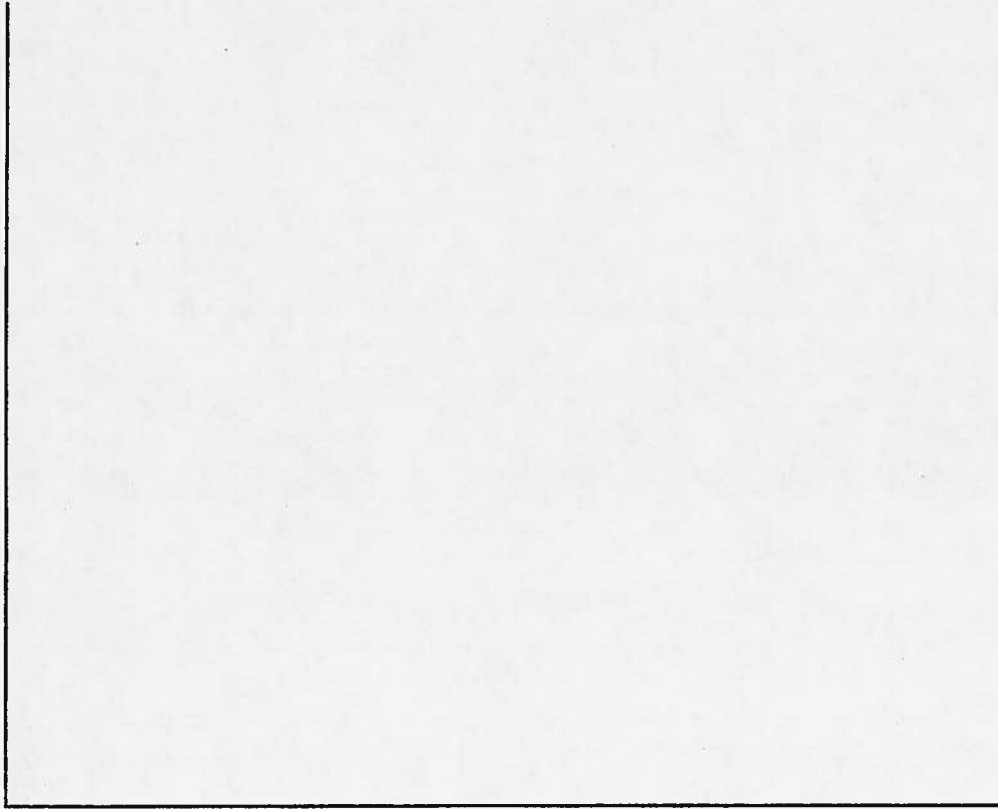


1. Complete the following table that compares the Forest Use in the 17th Century to the Forest Use in the 20th Century. Supply reasons that could account for the changes.

Use	17th Century %	20th Century %	Increase or Decrease	Explanation
1. fuel				
2. shelter				
3. leisure				
4. transportation				
5. jobs				
6. unused				



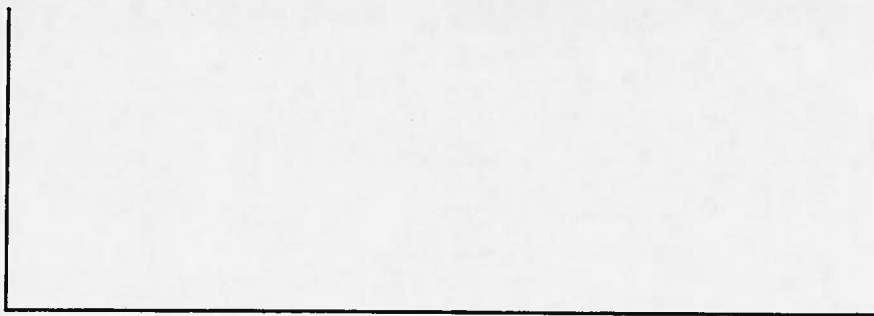
2. Create a graph comparing forest use in the 17th and the 20th centuries.  
Label.



Study the following data that predicts the forest use in the 22nd century.

Use	%
Jobs	40
Unused	20
Fuel	3
Others	5
Leisure	15
Transportation	2
Shelter	10

3. Using the data from the table above construct a bar or line graph that will display the predicted forest use in the 22nd century.



Hypothesize about the reasons for changes in forest use between the 20th and 22nd centuries.

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4. Complete the following chart by providing either a category or two examples. For example: something made out of lumber is furniture - two examples of furniture made from lumber are a chair or a table. Use terms from the box.

<i>food</i>	<i>baseball bat</i>	<i>tires</i>	<i>musical instruments</i>	<i>pine nuts</i>
<i>cardboard box</i>	<i>hockey stick</i>	<i>pecans</i>	<i>pulp &amp; paper</i>	<i>desk</i>
<i>explosives</i>	<i>bike peddles</i>	<i>fruit</i>	<i>rayon or cellophane</i>	<i>bark chips</i>

<i>Forest Products</i>		
<i>Source</i>	<i>Category</i>	<i>Examples</i>
made out of lumber	furniture	a. chair b. table
	_____	a. violin b. piano
	sports equipment	a. _____ b. _____
made out of cellulose	_____	a. newsprint b. wall paper
	chemical products	a. _____ b. _____
made out of sap	_____	a. maple syrup b. sugar
	natural rubber	a. _____ b. _____
produce	_____	a. apples b. peaches
	nuts	a. _____ b. _____



Name: \_\_\_\_\_

Date: \_\_\_\_\_

## The Forest In My Home

What tree products can you find in this picture?



Name: \_\_\_\_\_

*Master #30*

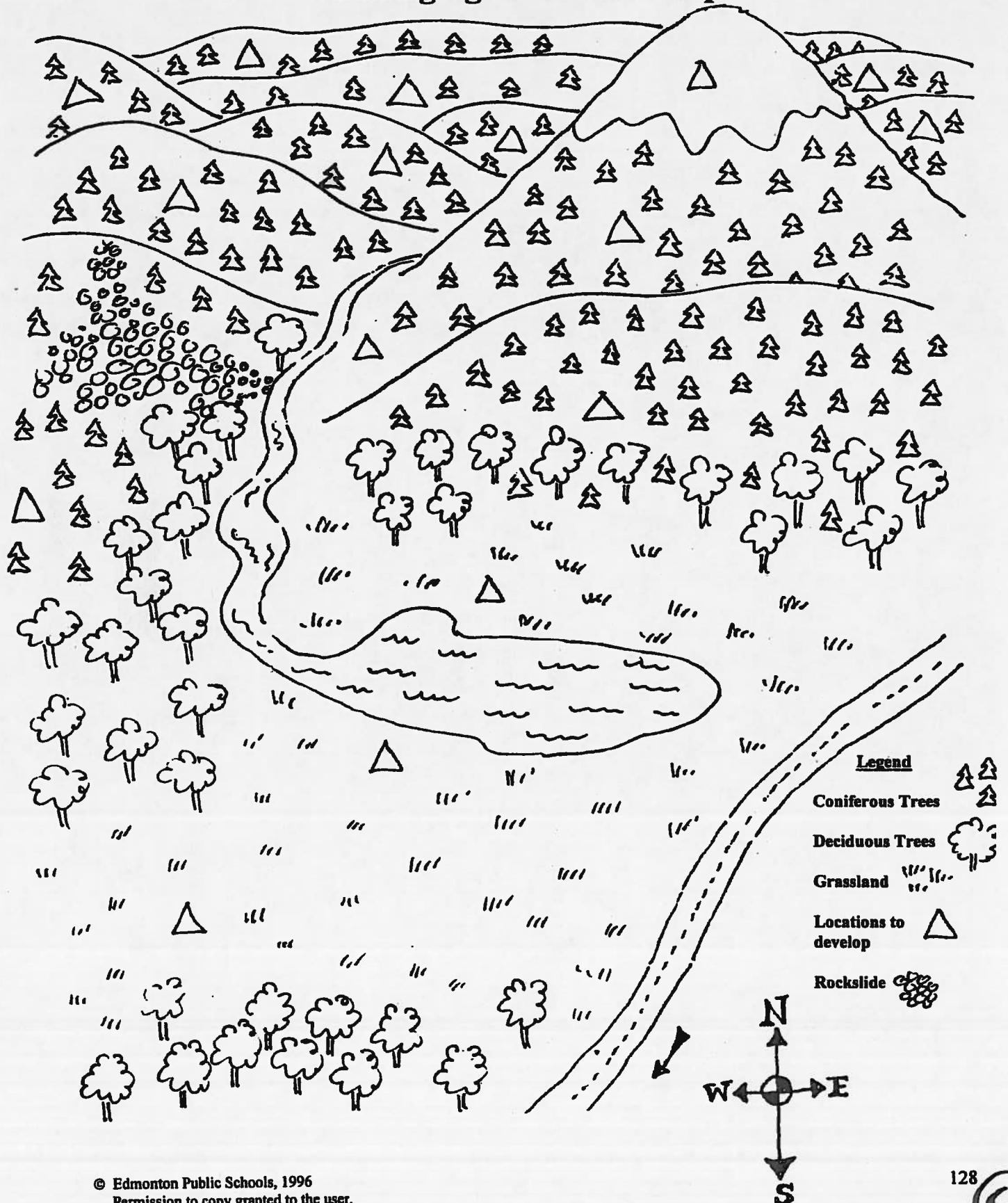
Date: \_\_\_\_\_

### Enhance or Threaten?

Enhancing the Forest	Threatening the Forest



# Managing the Forest: Map



You may also need to consider some of the following questions:

- *How will you prepare the land for the change?*
- *Will you be cutting down any trees? How? Clearcutting? Selective harvesting?*
- *What trees will you cut? How many?*
- *How will you use them? Replace them? Dispose of them?*
- *Will you be doing any planting? How? What seeding techniques will you use?*
- *What raw materials will you be removing?*
- *How will the raw materials be processed? Disposed of?*
- *Will you be building new structures?*
- *What jobs will be needed to make the change happen?*
- *Do you require outside resources, such as machinery?*
- *How will you care for and protect the wilderness?*
- *How will you care for and protect the wildlife?*
- *How will you plan impact the work of other forest management teams?*
- *How will your change enhance or threaten the forest?*



# Task: Points of View

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Byron and Gramps went to a town meeting in Aspentown. Many interested citizens discussed the most beneficial uses of the forest. Some government officials, as well as people representing the companies involved in the forest industry, were invited to express their interest in this forest.*

1. Match the person to the statement that correctly illustrates that person's point of view. Place the correct letter of the statement in the blank.

Point of View	Person
a. "I need the land cleared so I can plant more crops. Prices are down, so I have to produce more! I should be allowed to use the pesticides I need to make sure insects don't eat my crops."	Recreation Manager _____
b. "I want the forest to be as it always has been. I decide what areas of the forest will be designated as the protected sites. Many areas of the forests are nesting grounds for endangered species."	Farmer _____
c. "I need more resources! There is such a good market for my products now. I will be employing more people and they will have good-paying jobs. If I am allowed to log this area, the town's economy will be boosted."	Wilderness Manager _____
d. "I like to picnic in the area. There are so many lovely trees and bushes. I love to listen to the birds and insects as I paint these beautiful scenes. I like to bring my students here for science field trips. There is so much that can be learned by visiting the forest."	Logger _____
e. "I need a job! I have been without work since the company laid me off. My wife will lose her waitressing job in town if too many people move away. Businesses are closing and many young people are moving to the city to work. Our town will die if we don't create jobs now."	Owner-Pulp and Paper Company _____
f. "I need to create recreation areas so that the people will enjoy this forest. I want to make camping and picnic areas. I will be creating some new jobs as well as attracting visitors to the area."	





2. Compare and contrast two speakers from the town meeting in question #1.

	Speaker _____	Speaker _____
Same views		
Different Views		

3. Choose one of the people that you agree with from question #1. Write a short paragraph that explains why you agree with that speaker.

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4. Reflect on human activity that threatens our forests. Select one activity that you are against. Devise a plan that would decrease the effect of that activity.

Human threat: \_\_\_\_\_

Individual or group responsible for threat: \_\_\_\_\_

Obstacles (people, money or laws are that may interfere with your plan):

\_\_\_\_\_  
\_\_\_\_\_

Think about possible solutions and identify your solution:

\_\_\_\_\_  
\_\_\_\_\_

Make a plan. Consider how you would carry this action out, whose help would you need, and what actions you would take to overcome the obstacles.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you could test your solution, how would you know your action was successful? What changes will you look for?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Task: Different Perspectives

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Byron and his dad went to a town meeting. The people were discussing clearing a nearby forest to build homes and a new shopping mall. Byron heard a number of people speak in favour of cutting down the forest. Other people did not want the forest to be destroyed.*

1. For the various people at the meeting, describe their differing perspectives about using forests.

	Perspectives
Grade 6 Student	
Politician	
Furniture Manufacturer	

<b>Mill Operator</b>	
<b>Wildlife Officer</b>	
<b>Lumberjack</b>	
<b>Parent</b>	
<b>Environmentalist</b>	
<b>Recreation Consultant</b>	



2. Who do you agree with? Explain why you agree.

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3. Who do you disagree with? Explain why you disagree.

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## Task: Raise an Issue

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Consider the possibility of three new large campgrounds being opened in Banff National Park. Think about how different people might feel and react to the opening of these campgrounds. A public meeting has been called to look at suggestions for changing policies regarding recreational and human use of National Parks.*

Write a short point of view for each of the following people who want to speak at the meeting. Consider how their individual attitudes, beliefs, and special interests might affect their opinions on this issue.

Tourist

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**Industry forester**

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**Park warden**

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**Firefighter**

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**Forest ecologist**

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## Your Hired!

The Bennett Environmental Center has hired you to prepare a one- page handout to distribute to young students who attend the Alberta Forest Fieldtrip. Your handout should summarize the kinds of plants and animals found living on, under and among trees. It should also explain the role of trees in the nutrient cycle and the production of oxygen. Your boss has reminded you that the students who will receive your handouts will be 8-12 years old. These young students will learn a lot about trees from your handout if it is simple, neat, colourful and visually appealing. Make your handout on a blank sheet of paper. You may want to design your handout on the computer.



	<b>5</b>	<b>3</b>	<b>1</b>
<b>Criteria /15</b>	<ul style="list-style-type: none"> <li>-Handout illustrates 5 animals and 5 plants that are found living on, among and under trees</li> <li>-Handout clearly demonstrates the role of trees in the nutrient cycle</li> <li>- Handout clearly demonstrates how trees produce oxygen</li> </ul>	<ul style="list-style-type: none"> <li>-Handout illustrates 3-4 animals and 3-4 plants that are found living on, among and under trees</li> <li>- Handout somewhat demonstrates the role of trees in the nutrient cycle</li> <li>- Handout somewhat demonstrates how trees produce oxygen</li> </ul>	<ul style="list-style-type: none"> <li>-Handout illustrates 1-2 animals and 1-2 plants that are found living on, among and under trees</li> <li>- Handout does not demonstrate the role of trees in the nutrient cycle</li> <li>- Handout does not demonstrate how trees produce oxygen</li> </ul>
<b>Neatness</b>	Handout is simple, neat and colourful. Great time and effort is evident.	1 of the 3 components are missing	2 of the 3 components are missing. More effort was needed in the area of neatness.
<b>Audience</b>	Handout is age appropriate	The majority of the handout is age appropriate.	Handout is not age appropriate
<b>Spelling and Grammar</b>	There no spelling or grammar errors	There are 1-3 grammar or spelling errors.	There are 4 or more grammar or spelling errors.