



Lab Notebook



Index of Investigations, Challenges and Activities

Plants for Food and Fibre

Topic	Investigation	Activity	Title	Page Ref.
	Give It A Try		Survivor!	96
1 – Understanding structures and life processes of plants helps us to interpret their needs.				
	Give It A Try		Plant Parts Charades	99
	Give It A Try		Herbal Remedies	99
	Problem Solving	2-A	Design A Model of a Seed Plant	100
	Give It A Try		Moving In The Right Direction	102
	Inquiry	2-B	Plants At Work	105
	Experiment On Your Own	2-C	Light And Plant Growth	108
	Give It A Try		The Secret of Seeds	109
	Problem Solving	2-D	Germination and Growth	112-113
	Give It A Try		Beneath Your Feet	116
	Inquiry	2-E	Creating A Lesson About Flowers	117
	Give It A Try		Planting A Virtual Garden	121
	Inquiry	2-F	Investigating Growing Conditions	123
2 – Plants play an essential role in the environment and in meeting human needs.				
	Give It A Try		Nature's Connections	127
	Problem Solving	2-G	Why In The World Do We Need Plants?	128
	Give It A Try		When Is A Tree Not A Tree?	130
	Give It A Try		Using A Living Resource	133
	Problem Solving	2-H	Communicating Ideas ... Resource	134
3 – Soil is an important resource that human activity can protect or degrade.				
	Give It A Try		All Soils Are Not Created Equal	139
	Problem Solving	2-I	Designer Soil	140
	Try This at Home		How Does Your Garden Grow?	142
	Give It A Try		Human Activity and The Soil	143
	Decision Making	2-J	Fertilizers and Soil	146
4 – The ways that plants are grown and used are related to human needs, technology and the environment.				
	Give It A Try		Making Changes	151
	Problem Solving	2-K	Growing Plants Without Soil	152-153
	Give It A Try		A Rose By Any Other Name	156
	Problem Solving	2-L	The Key To Variety	157
	Give It A Try		What's the Real Story	160
	Give It A Try		Intended and Unintended Consequences	163
	Problem Solving	2-M	Reducing our Impact	165
Science World Case Study Issue			Genetically Modified Organisms	168
Project (End of Unit)			Design and Build A Growth Chamber	170-171





Give It A TRY

Survivor! (p. 96)

Food	Clothing	Shelter

Give It A TRY

Plant Parts Charades (p. 99)

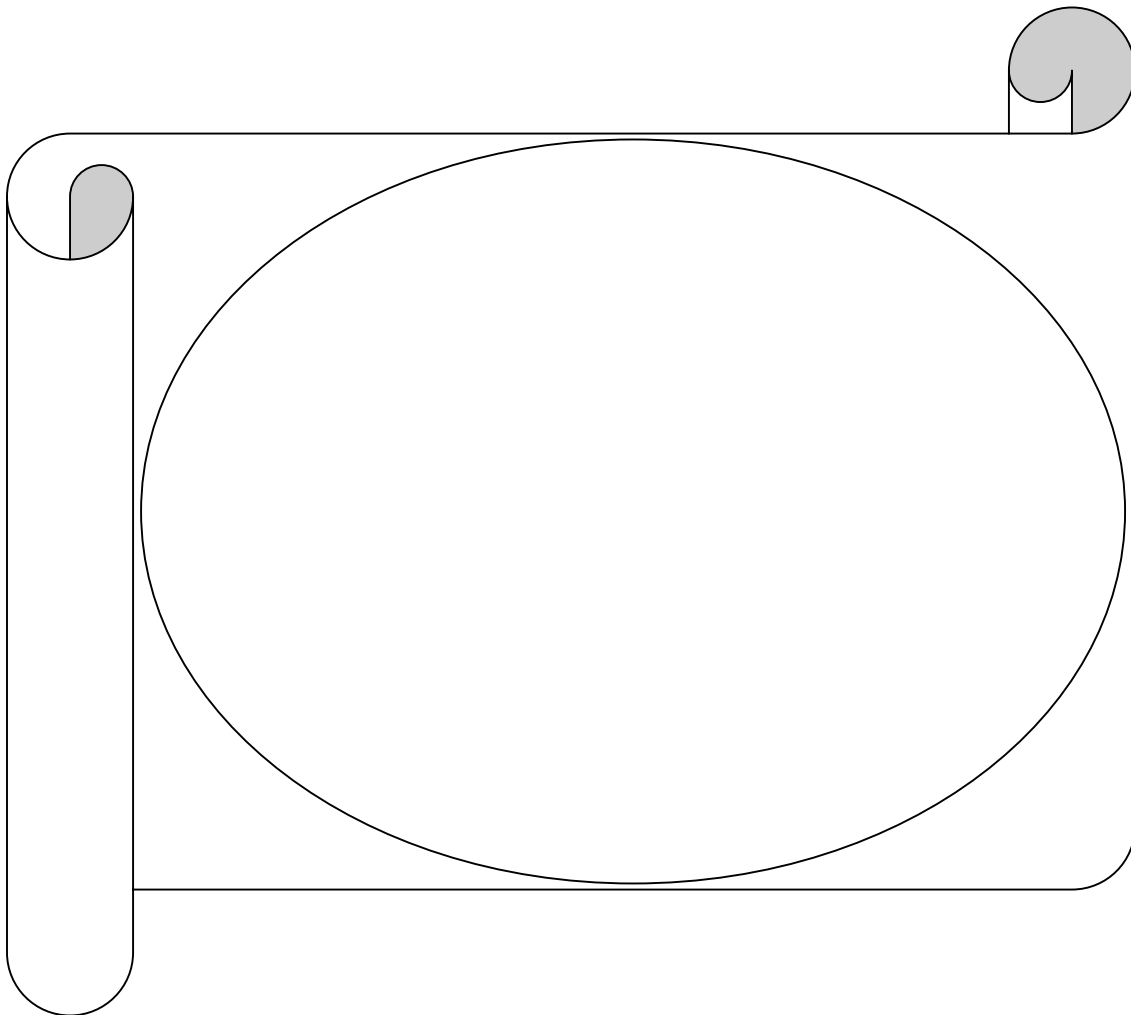
<p>Stems - are the main structure of a plant, providing support and carrying nutrients and water for leaves, flowers and fruits.</p>  <p>asparagus</p>	<p>Leaves - are lateral outgrowths; most commonly flat, broad and green, which produce food for the plant.</p>  <p>lettuce</p>
<p>Roots - absorb nutrients and water, anchor the plant in the soil, provide support for the stem, and store food.</p>  <p>radish</p>	<p>Flowers/Fruit/Seeds - are the seed-producing parts of a plant. The function of flowers is sexual reproduction.</p>  <p>broccoli apple peas</p>

Problem-Solving 2-A

Design A Model Of A Seed Plant (p. 100)

Seed structures	How they are represented in the Model

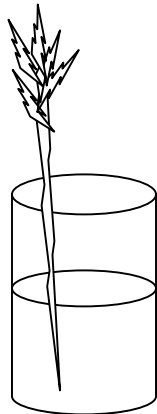
Labeled Diagram (Scientific Illustration) of Seed Model



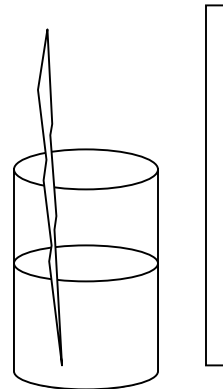
Give It A TRY

Moving In The Right Direction (p. 102)

For the celery samples that were used, color the bar to the height the water was drawn up.



With leaves



Without leaves

Interpretation: _____

Inquiry 2-B

Plants At Work (p. 105)

Question: How does transpiration move fluids from the roots?

Hypothesis: _____

Materials and Procedure: (p. 105)

(Note: This Lab Activity requires 2 plant cuttings)

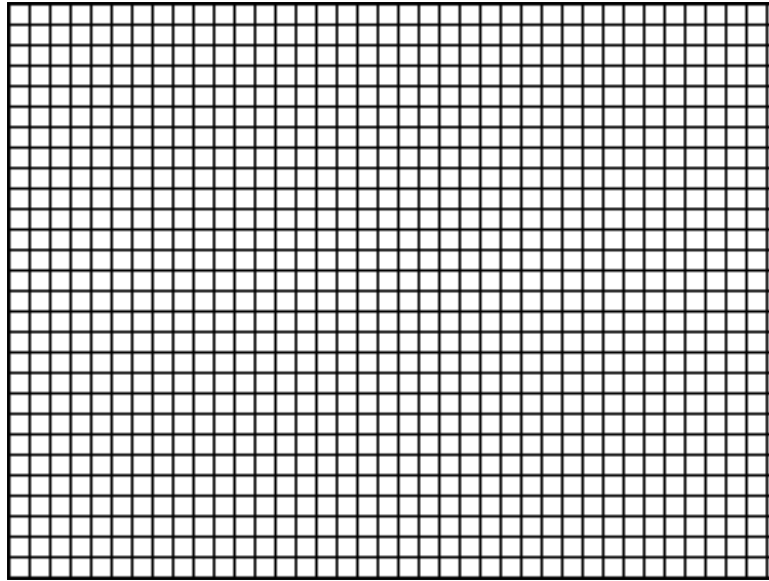
Amount of water (ml) left in beaker:

Plant Cutting	Day 1	Day 2
1 (no leaves)		
2 (leaves)		

Data Collection:

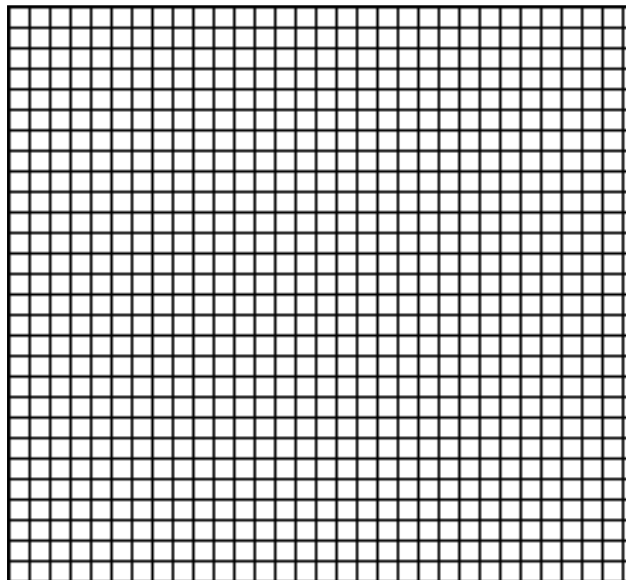
Plant Cutting 1
(estimated
area of all
the leaves)

Total Area
the leaves:



Analyzing and Interpreting: (p. 18)

10. Bar Graph (Title) _____



Forming Conclusions:

11. _____

12. _____

Applying and Connecting: (Watch a Plant Wilt / Wilting Point)
<http://sunflower.bio.indiana.edu/~rhangart/plantmotion/vegetative/wilting/wilt.html>
<http://www.esb.utexas.edu/solberg/Plant%20Phys%20Project/Plant%20Attributes/wiltpoint.html>

Experiment On Your OWN 2-C
Light and Plant Growth (p. 108)

Question: Do plants grow faster when they get more light?

Design of Experiment

1. Hypothesis: _____

2. Materials:

a) _____

b) _____

c) _____

d) _____

3. Procedural Plan

a) _____

b) _____

c) _____

d) _____

e) _____

4. Procedure:

Step 1 _____

Step 2 _____

Step 3 _____

Step 4 _____

Step 5 _____

Step 6 _____

Step 7 _____

Step 8 _____

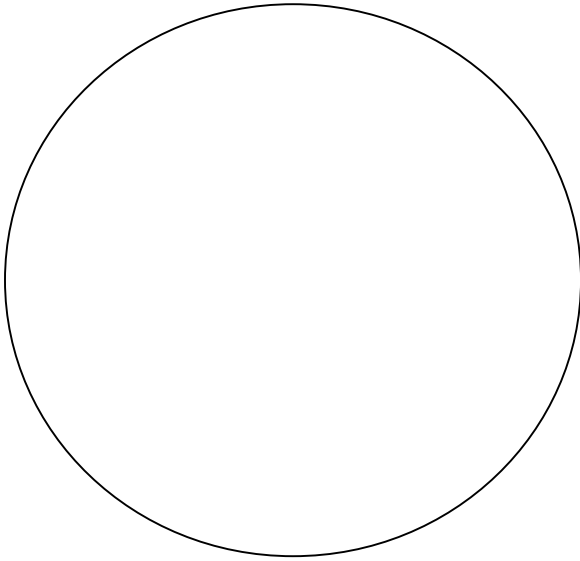
Step 9 _____

5/6. Experimental Results (Conclusion)

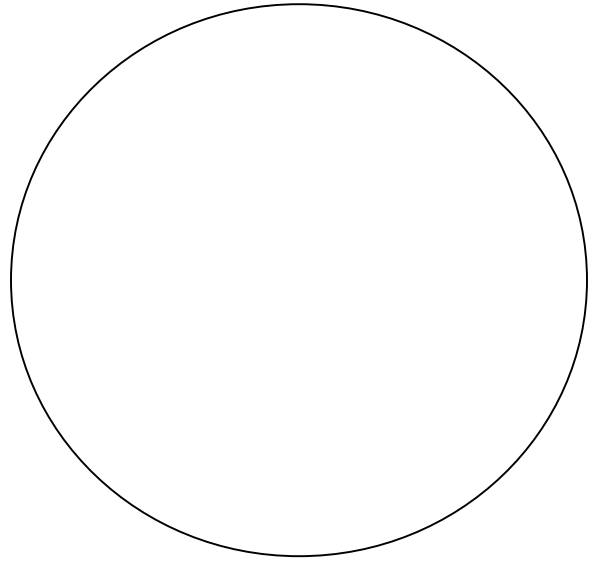
7. Follow-up Analysis:

Give It A TRY

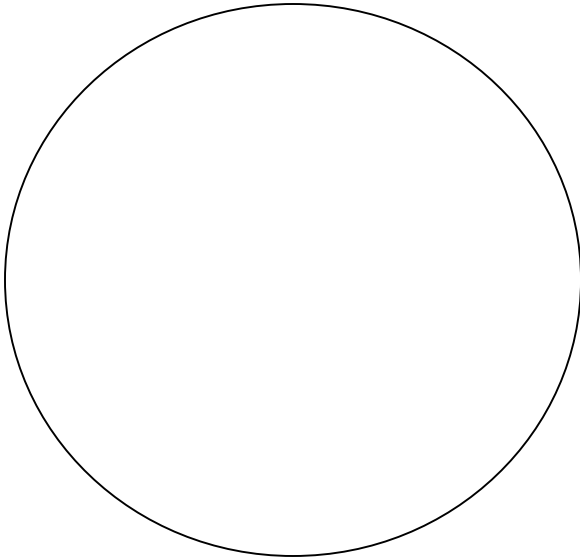
The Secret of Seeds (p. 109)



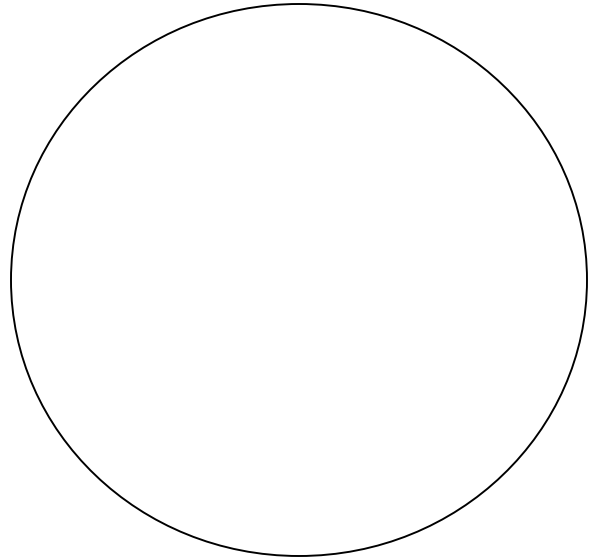
Seed 1 _____



Seed 2 _____



Seed 3 _____



Seed 4 _____

➤ _____

➤ _____

Problem-Solving 2-D

Germination and Growth (p. 112-113)

Problem: What is the best method for growing seedlings in a greenhouse?

1 – plastic **bags** with moist inserts (attached to the wall)
(Materials & Equipment p. 112)

2 – different **packing densities**
(Materials & Equipment p. 113)

3 – best method to prevent **moulding**
(Materials & Equipment p. 113)

Test and Evaluate:

5. Procedural Plan:

Step 1 _____

Step 2 _____

Step 3 _____

Step 4 _____

Step 5 _____

Step 6 _____

Step 7 _____

Step 8 _____

Step 9 _____

Step 10 _____

Step 11 _____

Test and Evaluate:

6. Observations and Data Collection:

Idea 1	
Idea 2	
Idea 3	

Give It A TRY

Beneath Your Feet (p. 116)

Plant Parts Observed and Identified						
Photos p. 116	Roots	Stem	Leaves	Flower	Seeds	Adaptation
		☺	☺			
Figure 1.25 (coniferous tree)						
Figure 1.26 (deciduous tree)						
Figure 1.27 (grass)						
Figure 1.28 (aquatic flower)						
Figure 1.29 (succulent)						
Figure 1.30 (alpine flower)						

Problem-Solving 2-E

Creating A Lesson About Flowers (p. 117)

Problem: Create a fun and interesting way to present **variations in flowers** to Grade 1 students

Criteria: (partner or small group (3) activity)

- **5 flowers** (w/ parts labeled)
- **creative - fun to watch**
- **time limit** (10 min)

Ideas:

Flowers used:

Communicate: (Self-evaluation)












Give It A TRY

Planting A Virtual Garden (p. 121)

Available Plant Tags - or, Get yours from your local Nursery



Plant Tags Chosen	Reasons	

Tag Exposure Symbols:		Other Tag Symbols:	
 Full Sun	 Alpine Plant	 Good cut flower	
 Partial Sun/Partial Shade	 Evergreen Foliage	 Drought Tolerant	
 Full Shade	 Groundcover	 Attracts Hummingbirds	
	 Good for container growing	 Attracts Butterflies	

One plant type in the entire garden would ...

➤ _____

Inquiry 2-F

Investigating Growing Conditions (p. 123)

Question: Does the amount of water a radish plant receives affect its growth?

Hypothesis: _____

Procedure: (p. 123) Ref: **Toolbox 2**

Step 1 _____

Step 2 _____

Step 3 _____

Step 4 _____

Step 5 _____

Step 6 _____

Step 7 _____

Step 8 _____

Step 9 _____

Step 10 _____

Data Collection (design your own table) : (p. 123)

Analyzing and Interpreting:

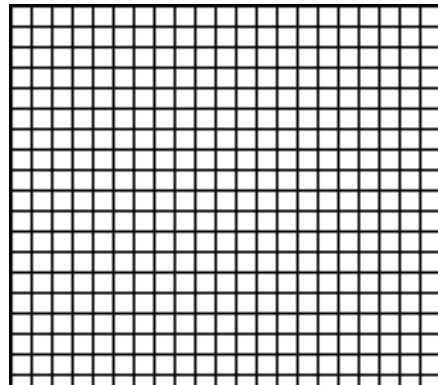
6. _____

7. _____

8. _____

Forming Conclusions:




9. _____






Applying and Connecting:

Give It A TRY

Nature's Connections (p. 127)

Plants
 Figure 2.2
 Figure 2.3
 Figure 2.4

Animals
 Figure 2.5
 Figure 2.6
 Figure 2.7

Problem Solving 2-G

Why In The World Do We Need Plants (p. 128)

Question: What are the essential role of plants around the school?

Hypothesis: _____

Materials & Procedure: (p. 128) **Data Collection:**

Essential Role of Plants	Examples around the school ...
Provide oxygen	
Provide shelter	
Provide food	
Build and protect the soil	

Communicate: Report your results on a separate sheet

Extending: (Optional)

Begin here: Bio regions of Alberta

<http://raysweb.net/specialplaces/pages/places.html>

Supplementary Reference

COMMON TREES, SHRUBS AND HERBS IN ALBERTA

Scientific Name	Common Name	Scientific Name	Common Name
TREES		SHRUBS	
<i>Abies balsamea</i>	Balsam Fir	<i>Juniperus horizontalis</i>	Juniper
<i>Picea glauca</i>	White Spruce	<i>Prunus</i>	Mancurian Cherry
<i>Picea pungens</i>	Blue Spruce	<i>Cornus stolonifera</i>	Red Osier Dogwood
<i>Pinus strobus</i>	Eastern White Pine	<i>Lonicera</i>	Honeysuckle
<i>Pinus albicaulis</i>	White-bark Pine	HERBS	
<i>Pinus banksiana</i>	Jack Pine	<i>Festuca</i>	Fescue
<i>Pinus mugo</i>	Mugo Pine	<i>Dactylis</i>	Orchard Grass
<i>Pinus contorta</i>	Lodgepole Pine	<i>Poa pratensis</i>	Kentucky Bluegrass
<i>Betula</i>	White Birch	<i>Plantago major</i>	Common Plantain
<i>Populus tremuloides</i>	Trembling Aspen	<i>Arctium minus</i>	Burdock
<i>Sorbus decora</i>	Mountain Ash	<i>Taraxacum officinales</i>	Dandelion

Give It A TRY

When Is A Tree Not A Tree? (p. 130)

Sample Item	Plant used to make it ...
Pencil	
Paper	
Perfume	
Skin care lotion	
Baseball bat	
Bread	
Table	
Throat lozenges	
t-shirt	
Rope	
Dog food	
House	

Give It A TRY

Using A Living Resource (p. 133)

Area _____

After being used as a resource by humans ...

➤ _____

➤ _____

➤ _____

➤ _____

➤ _____

➤ _____

Inquiry 2-H

Communicating Ideas About A Managed Resource (p. 134)

Task: To make a mini-pamphlet that explains how a forest region is used.

Forest Region Studied _____

Inside of Pamphlet

--	--	--

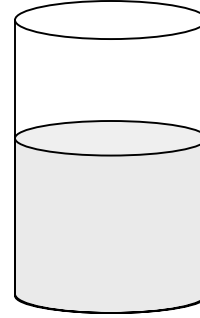
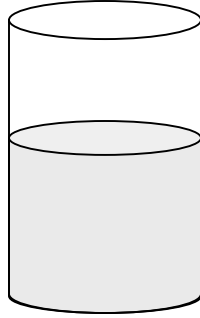
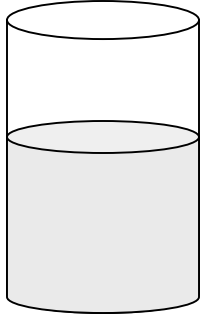
Outside of Pamphlet

--	--	--

Self-Evaluation _____

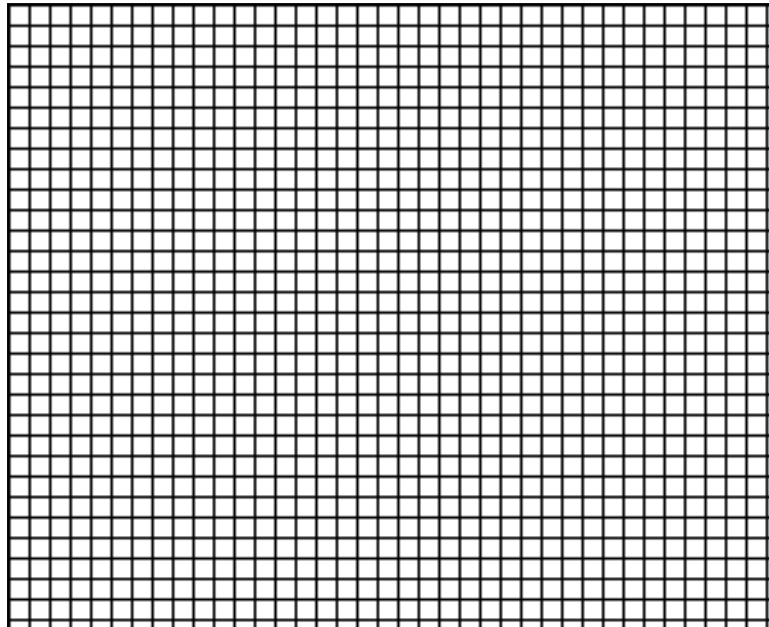
Give It A TRY

All Soils Are Not Created Equal (p. 139)



clay	loam	sand

Title _____



- holds water best _____
- best for drainage _____
- used to construct earthen dams _____

Problem Solving 2-I

Designer Soil (p. 140)

Problem: How will you mix the materials available to you with clay soil to make it more like loam?

Hypothesis: _____

2. Materials available

_____	_____
_____	_____
_____	_____

Test and Evaluate:

Communicate: 'Recipe' for Loam

Step 1 _____

Step 2 _____

Step 3 _____

Step 4 _____

Step 5 _____

Step 6 _____

Step 7 _____

Step 8 _____

Step 9 _____

9. _____

10. _____

TRY This at Home

How Does Your garden Grow? (p. 142)

Soil in Flowerbed	Soil elsewhere
Description	Description

Give It A TRY

Human Activity And The Soil (p. 143)

Situation	How it helps the soil	How it harms the soil
A farmer puts manure on his fields		
A potato farmer irrigates her crop		
The stubble that is left when a grain crop is harvested, is plowed into the soil		
Make up your own situation in the last row		

Decision-Making 2-J

Fertilizers and Soil (p. 146)

Opinion:

Get a copy of **Customs Form E311**

<http://www.ccra-adrc.gc.ca/E/pbg/cf/e311/e311-03b.pdf>

Try This at HOME

Impacts On The Environment (p. 72)

4.5a) _____

4.5b) _____

4.5c) _____

<p>Activity 2</p> <p>Waste And Pollution</p>	organic	inorganic	recyclable	miscellaneous
<p>Activity 3</p> <p>Materials And Goods</p>	Items Purchased	Cost	Essential	Non-essential

12. Support Your Opinion

Plan: _____



Forest Harvesting

Resources to help you get started ...

- **Forest Management in Alberta**
 - <http://www.borealcentre.ca/facts/forestry.pdf>
- **Forestry**
 - <http://www.lethsd.ab.ca/mmh/grade4/altaresources/forestry.htm>
- **Forest Practices**

- http://nofc.cfs.nrcan.gc.ca/biodiversity/en/practices/practices_e.htm
1

➤ **Forest Harvesting Impacts**

- <http://www.agric.gov.ab.ca/sustain/woodlot/woodlot5.html>

Continue to find additional resources to answer the questions:

What methods can be used to harvest Canada's Forests?

➤ _____

➤ _____

➤ _____

➤ _____

➤ _____

What factors need to be considered when deciding how to harvest trees?

➤ _____

➤ _____

➤ _____

➤ _____

➤ _____