

Grade 7

Science Focus



Lab Workbook

Unit 1

Interactions & Ecosystems

Tools for the Task

Problem: Can animals switch to a different type of food if their usual food is in short supply?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on page 12

Data Collection:

Feeding Round	Food Type 1	Food Type 2	Food Type 3	Food Type 4
1				
2				

Analysis of Data:

1. _____

2. _____

3. Yes No because _____

Conclude and Apply:

4. _____

Lab Investigation 1-A submitted by _____

Date _____

Wetland Wonders

Investigation 1-B
Pages 26 – 27

Problem: Can you make a model to demonstrate how to preserve a wetland habitat, even with road construction?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on pages 26-27

Data Collection:

Number of Sponges	Time to Drain (s)	Amount of Water collected (mL)
1		
2		
3		
4		
5		
6		

Analysis of Data:

1. _____

2. _____

3. _____

4. _____

Lab Investigation 1- B submitted by _____

Date _____

Waste-Reduction Diary

Problem: How do you reduce waste in your home?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on page 34

Type of Waste	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7

(Use the *attached Data Collection Table, or Make your own)

Analysis of Data:

1. _____
2. _____
3. _____
4. _____

Conclude and Apply:

5. _____

6. _____

Flow Chart (Use 'Inspiration' – if possible)

Lab Investigation 1- C submitted by _____

Date _____

Analyze:

1. Manipulated Variables _____

Responding Variable _____

Controlled Variables _____

2. Summary: _____

Warm or Cold
Light or Dark
Wet or Dry

3. _____

Conclude and Apply:

4. Warm Cold - Light Dark - Wet Dry (Circle)

5. _____

Extend Your Knowledge:

Try the following URL's to get the information you will need to answer this question

<http://www.icomm.ca/~dragon/mealworm.htm>

<http://www.ext.vt.edu/departments/entomology/factsheets/mealworm.html>

6. _____

Inquiry Investigation Lab 1-D submitted by _____

Date _____

What Goes Up Must Come Down

Investigation 1-E
Page 41

Problem: Can you read and interpret a graph?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on page 41 (Use the Graph)

What To Do – Questions to be answered:

- a) _____ b) _____
- b) Snowshoe Hares _____ Canada Lynxes _____
- c) _____

Analyze:

1. _____

2. _____

3. _____

4. _____

Lab Investigation 1-E submitted by _____

Date _____

Don't Waste It !

Investigation 1-F
Pages 46 - 47

Problem: How can you find out which materials will decompose, and how long it takes for the decomposition to occur?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on pages 46 and 47

Predictions: (What you think will happen ...)

Material Tested	Prediction of what will happen
Banana peels	
Paper	
Cabbage leaves	
Grass clippings	
Aluminum foil	
Orange peels	
Plastic	
Glass	
Potato peels	
Carrot peels	
Eggshells	

Observations: (after 2-3 weeks)

Material Tested	Observations
Banana peels	
Paper	
Cabbage leaves	
Grass clippings	
Aluminum foil	
Orange peels	
Plastic	
Glass	
Potato peels	
Carrot peels	
Eggshells	

Analysis of Data:

1. manipulated variable _____
responding variable _____
controlled variables _____

2. _____
3. _____
4. _____
5. _____

Conclude and Apply:

6. _____

7. _____

Extend Your Skills: (Optional)

8. Design your Investigation on a separate sheet and attach it to this Lab when you submit it.
9. Design your Investigation on a separate sheet and attach it to this Lab when you submit it.
10. **Math-Connect** (Graph and interpret your decomposition results)

Lab Investigation 1-F submitted by _____

Date _____

Telltale Snails

Investigation 1-G
Page 50

Problem: How can you use Bromothymol blue to show that snails give off carbon dioxide when they breathe?

Hypothesis: _____

Investigative Procedure: (Give step-by-step directions as explained on page 50)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Scientific Illustration of Investigation:

Analysis of Data:

1. manipulated variable _____
responding variable _____
controlled variables _____

2. _____
3. _____

Conclude and Apply:

4. _____

5. _____

Extend Your Skills: (Optional)

6. Design your Investigation on a separate sheet and attach it to this Lab when you submit it.

Lab Investigation 1-G submitted by _____

Date _____

Nothing Succeeds Like Succession

Investigation 1-H
Pages 58-59

Problem: How does succession take place in an ecosystem?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on page 58-59

Observations:

Time/Date	Observations

Analysis of Data:

1. as in the table above

2. _____

3. _____

Conclude and Apply:

4. _____

5. _____

6. _____

Extend Your Skills: (Optional)

8. Design your Investigation on a separate sheet and attach it to this Lab when you submit it.

These sites might help you:

<http://www.rain.org/~sals/ingham.html>

<http://www.walden.org/thoreau/default.asp?MFRAME=/thoreau/writings/essays/natural/Succession.htm>

<http://www.gardenguides.com/TipsandTechniques/successi.htm>

<http://connix.com/~harry/forest.htm>

Lab Investigation 1- H submitted by _____

Date _____

Keep Them Safe

Problem: Can you devise a recovery program to keep a species at risk in Alberta from going extinct?

Design Specifications: These are outlined on page 66 and are to be completed in a PowerPoint Presentation not to exceed 3 minutes.

Evaluate:

1. _____

2. _____

3. _____

Extend Your Skills:

1. Database (using Access)
2. Compare/Contrast \longrightarrow Risk categories/Threats/Recovery Plans
(This can be a PowerPoint Presentation)

Urls that may be useful in your investigation:

- <http://eelink.net/EndSpp.old.bak/Endangered.html>
- <http://www.endangeredspecie.com/>
- <http://giftshop.endangered.com/cgi-bin/SoftCart.10.exe/mainmenu/index.html?E+scstore>
- <http://library.thinkquest.org/25014/?tqskip=1>
- <http://www.wwf.org/>

Lab Investigation 5-I submitted by _____

Date _____

What's the Change?

Investigation 1-J
Page 71

Problem: What types of amphibians are found in Alberta and where are they found?

Investigative Procedure: Follow the directions outlined on page 71

Graphical Representation of Data in Table 1.1

Graphical Representation of Data in Table 1.2

Analysis of Data:

1. (a) _____

(b) _____

(c) _____

Lab Investigation 1- J submitted by _____

Date _____

Monitor Your Local Amphibians

Investigation 1-K
Pages 72-73

Problem: What do you need to know to effectively gather information on amphibians in your area?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on pages 72-73

Amphibians to Observe

Long-toed salamander,
Tiger salamander,
Northern leopard frog,
Wood frog,
Spotted frog
Plains spadefoot,
Boreal chorus frog,
Western Toad,
Canadian toad
and Great plains toad

..... Sketch of Habitat Area

Analysis of Data:

1. How do you think this long-term monitoring can be best achieved?

2.

3.

Lab Investigation 1- K submitted by _____

Date _____

Comparing Ecosystems

Problem: What kinds of organisms can be found living in two different habitats in your community?

Hypothesis: _____

Investigative Procedure: Follow the directions outlined on page 76-77

Data Collection:

Name of Species	Quadrant					Avg. # of individuals per sq. meter	Total Ecosystem area	Estimated total population
	1	2	3	4	5			

Analyze: (Identification of Species) sources used:

1. _____

2. Replace as instructed

3. Data to be Charted

Conclude and Apply:

4. _____

5. _____

6. _____

Extend Your Knowledge:

7. _____

Lab Investigation 1- L submitted by _____

Date _____

Student Project (A Role Play Activity – A Public Hearing):

A Critical Decision Needs To Be Made

Analyze an Issue - Unit 1
Page 82 - 83

Resolution: **Blue Box Recycling Programs don't work, so they should be scrapped?**

Project Description:

Students will participate in a **Town Hall Public Hearing** to determine the best course of action to be taken on the Resolution.

There are basically three sides to the resolution, **Pro** – in favour of passing the resolution, and **Con** – against passing the resolution. Some of the participants will be **Neutral** at the beginning of the meeting – they can see both sides of the resolution and they can be swayed either way, based on what is presented and how it affects them.

In order to prepare for the meeting, students will be assigned a role prior to the meeting and will be expected to prepare their position and present it, reflecting their particular role.

Participating Roles:

Chairperson (Neutral – No Vote)

Mayor (Neutral)

Minister of Natural Resources (Government Official) – (Neutral)

City Councillors (3) – (1 Pro, 1 Con, 1 Neutral)

City Residents (3) - (1 Pro, 1 Con, 1 Neutral)

Manager of the Local Recycling Depot (Con)

Worker at the Local Recycling Depot (Con)

Supervisor of the Sanitary Landfill Site (Pro)

Supervisor of Waste Management (Pro)

Sanitary Engineers (2) - (1 Pro, 1 Con)

Local Environmentalist Activist (Con)

University – Department of Environmental Studies Researcher (Pro)

Local Teacher (Con)

Developer (Con)

Waste Management Technology Specialist (Neutral)

Environmental Biologist (Con)

Ecologist (Con)

Manager of Plastics Packaging Company (Pro)

Worker at the Plastics Packaging Company (Pro)

Local Media (2) - (Both Neutral)

Economics Expert (Con)

Local Farmer – Farm is adjacent to Landfill Site (Pro)

Naturalist (Pro)

Homeless person (Pro)

Preparation:

Read – *An Issue to Analyze* – **Beyond the Curb: Is Recycling Really Reducing Garbage?**

(Science Focus: pages 82 – 83)

Prepare your presentation (as if you were actually the person described). You should do additional research to back-up your position – to make convincing arguments for or against the resolution, depending on who you are). This role-play activity is designed to look at both sides of the issue and try to find common ground and at least come up with an acceptable solution to the Resolution – for the majority of the participants. A review of the key concepts in this Unit – with particular attention to **Topic 3** on **Environmental Choices** would help.

Role Play Evaluation

(Science Focus Resources – Teacher Resource Binder)

Assessment Checklist 9 – **Investigating an Issue/Controversy** (Adapted)

Assessment Checklist 20 – **Oral Presentation** (Adapted)

Assessment Rubric 8 – **Presentation Rubric** (Adapted)

Assessment Rubric 9 – **Research Project Rubric** (Adapted)

Assessment Rubric 10 – **Concept Rubric** (Adapted)

Assessment Rubric 12 – **Communication Rubric** (Adapted)

Societal Decision Making – **Procedure for a Public Hearing** (BLM G-15)

All of these resources can be used in conjunction with the evaluation process, provided they are reviewed with the students prior to being evaluated. This review should reflect the level of mastery you expect from the students and should be adapted to meet your individual classes, taking into account the individuals you are evaluating.

Once a Role Play Rubric is set, students should be given a copy and should be allowed to collaborate with the teacher, by providing their own self-evaluation following the Activity.

To get the students involved and motivated, costumes should be **encouraged** for the actual Public Hearing. You can set up and decorate your classroom to create the mood and invite your Administration and other teachers to be observers (audience).

This Role Play – **Public Hearing** – is intended to be an alternative to the Debate suggested, because it directly involves all of the students and helps the students to understand that an Issue can have two sides – but can be presented using different perspectives. (This is what will help the students perceive and better comprehend **viewpoints** – which is taught in Grade 9).

Set-Up: (Make sure each of the speakers is clearly identified with a Name Tag) Each speaker will address the other participants from their respective speaking podiums ●

