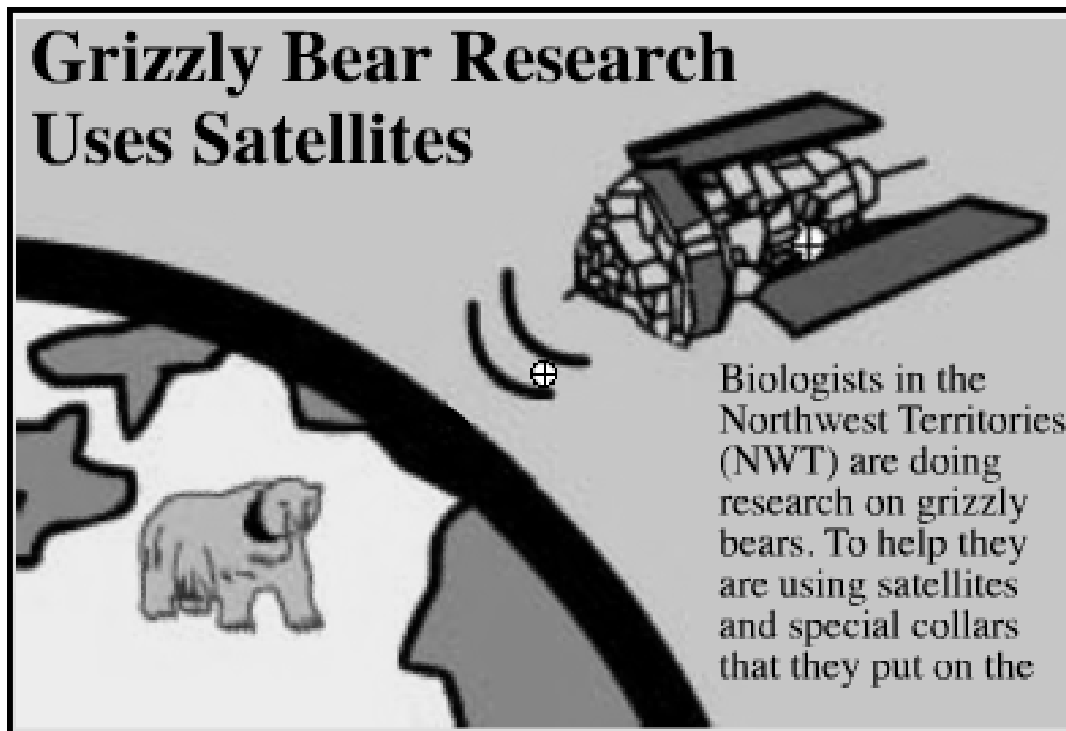
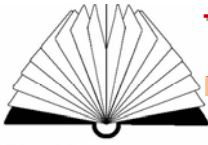


The Northern Edge

Study Guide

Grizzly Bear Research





Grizzly Bear Research

Introduction

This story comes from **Issue #1 of The Northern Edge**. Biologists want to find out how bears use the land and how they react to activities such as roads and mining. Biologists hope their research helps to reduce harmful impacts on the bears' environment.

On-line learning activities include a spelling quiz, a fill-in-the-space vocabulary quiz, and a multiple choice comprehension quiz.

This story offers an opportunity for learners to explore GPS, and words and concepts related to research and traditional knowledge.

This section first presents a list of 10 learning activities and the written text for the story. The pages following the written text give instructor notes and handouts for each activity, in the order on the list.

This symbol marks the written text for the story.



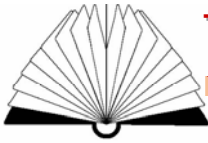
This symbol marks instructor notes.





This symbol marks handouts to copy for learners.

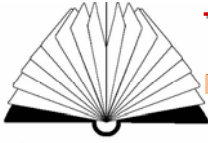


Do the first activity, Website Research, before learners read the story. In this activity, learners focus on what they know before they read the story and what they learned from reading the story.



Grizzly Bear Research List of Learning Activities		
Instructor Notes 	Handouts 	Page #s
1) Website research **	No handout	6
2) Vocabulary	1 handout	7 to 10
3) Language skills	1 handout	7, 11
4) Questions	2 handouts	12 to 15
5) Writing	5 handouts	16 to 25
6) Learn more about GPS	1 handout	26 to 29
7) Do your own grizzly bear research	1 handout	30, 31
8) Latitude and longitude	3 handouts	32 to 36
9) Track an elephant on-line	No handout	37
10) Take a walk on the wild side	No handout	38

** Do this first activity before learners read the story Grizzly Bear Research.



Text - Grizzly Bear Research
Issue #1 The Northern Edge

Biologists in the Northwest Territories (NWT) are doing research on grizzly bears using satellites and special collars that they put on the grizzly bears.

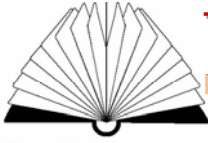
There are two new diamond mines in the NWT. The biologists want to see how the grizzly bears are using this land and how they are reacting to the mines, roads, and human activity that have come with the new mines.

This kind of information will help biologists and mines to understand how bears use habitat and hopefully reduce the harmful impacts of new development.

The biologists catch bears and put special collars on them that help them track where a bear travels.

Here is how they do it:

- i) The biologists fly around in a plane until they find a female grizzly bear.
- ii) Then they go in a helicopter to where the bear was spotted.
- iii) They shoot a dart at the bear from the helicopter. The dart tranquilizes the bear.
- iv) They put a collar on the bear.
- v) At the same time, they take a small tooth from the bear to see how old it is.
- vi) They weigh the bear by putting it in a net and then lifting it off the ground with the helicopter. There is a weigh scale



attached to the net that tells the weight of the bear.

The biologists put a special kind of collar on the grizzly bear called a GPS collar. GPS stands for the Global Positioning System and consists of 24 Earth-orbiting satellites.

These satellites allow any person who owns a GPS receiver to determine his or her precise longitude, latitude, and altitude anywhere on the planet. GPS satellites send out radio signals that the GPS receiver can detect.

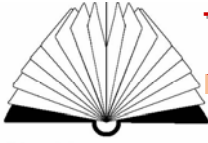
The location of a bear is saved on the collar. The collar saves the location every hour or 24 times a day. Biologists use this information to see what habitat these female bears use and to see if they are affected by development activity.

The biologists need to get the collars back so they can get the information from them. The collars have a special mechanism that makes them fall off on a certain day.

The collars have a breakaway mechanism which is programmed to allow the collar to drop off on a specific date. The collars will just fall off on that day. The biologists then go and pick up the collars by helicopter.

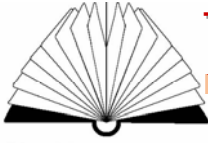
To avoid being totally dependent on finding the collars to get the information off them, biologists just fly several kilometers above the bear at a certain time each month. The collar sends a signal and all the information to a special receiver in the plane.

Biologists want to recover the collars because they have the most complete information and because they wish to use the collars again.



Unfortunately four of the six breakaway mechanisms did not work properly in October. Only two of the collars were retrieved. Next May, when the bears emerge from their dens, the biologists will check to see if the remaining four collars did eventually drop off. If the bears are still wearing the collars the biologists will recapture them and manually remove the collars.

Once the biologists have all the data from the collars, they take it and make it into a map. The scale for this map shows this distance to be 25 kilometres. This map shows the Ekati Diamond Mine and the Diavik Diamond Mine. It also shows the movements of six grizzly bears.



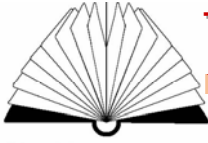
Website research Learning Activity 1

No handout

This learning activity encourages learners to recognize what they already know, and what they can learn from reading and research.

Put up three flipchart pages. Use the K-L-W guide to label each page.

- ✓ **K**now – What do we already know?
 - ✓ **L**earned - What did we learn from reading the story?
 - ✓ **W**ant to know – What do we still want to find out?
-
- i) Brainstorm what learners already know about grizzly bears and write their ideas on the first flipchart page.
 - ii) Brainstorm what learners want to know about grizzly bears and write their ideas on the third flipchart page.
 - iii) Ask learners to read or listen to the story either on-line, on the CD, or the written text.
 - iv) Brainstorm what learners learned from reading the story.
 - v) Compare the '**Know**' list with the '**Learned**' list.
 - vi) Ask learners if they have other things to add to the '**Want to know**' list after they read the story. Ask learners to pick topics they want to research from the '**Want to know**' list.



**Vocabulary
Learning Activity 2**

One handout

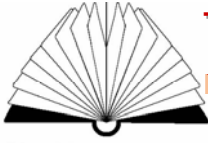
Learners use a dictionary to find the meaning of some words from the story about grizzly bear research. Learners then use each word in a sentence. Each sentence may contain more than one word.



**Language skills
Learning Activity 3**

One handout

Learners read each sentence and decide what order they happened in the story. They write a number beside each sentence to show the sequence of events.



Vocabulary Learning Activity 2

Use a dictionary to find the meaning of these words from the story about grizzly bear research. Write down the meaning.

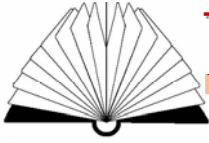
1) Biologist _____

2) Habitat _____

3) Mechanism

4) Latitude _____

5) Longitude _____



6) Recapture _____

7) Impact _____

8) Development _____

9) Reacting _____

Use each word in a sentence. Put more than one word in a sentence if you want.

biologist

habitat

mechanism

longitude

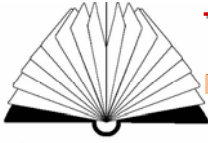
latitude

recapture

impact

development

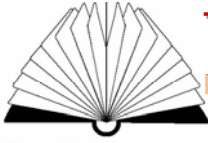
reacting



Language skills
Learning Activity 3

Read each sentence. Decide what order they happened in the story. Write a number beside each sentence to show the order they happened. We already put number 1 beside the first sentence. Fill in the rest. There are eight sentences altogether.

- _____ After they find a female bear, the biologists go back in a helicopter to where they spotted the bear.
- _____ The collar is programmed to fall off the bear on a certain day.
- _____ They weigh the bear by putting it in a net and then lifting it off the ground with the helicopter. There is a weigh scale attached to the net that tells the weight of the bear.
- _____ The biologists put a special collar on the bear called a GPS collar.
- _____ The biologists shoot a dart at the bear from the helicopter. The dart tranquilizes the bear.
- _____ At the same time, they take a small tooth from the bear to see how old it is.
- 1 The biologists fly around in a plane until they find a female grizzly bear.
- _____ Biologists use information from their research to learn about how bears use their habitat.



Questions Learning Activity 4

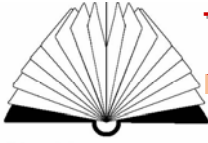
Two handouts

4-1: Story questions

Learners read each question and write a sentence to answer it.

4-2: Journal writing

Learners use questions on the handout to guide their journal writing.



Questions Learning Activity 4

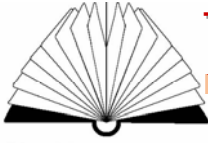
4-1: Story questions

Answer these eight questions with sentences. Begin each sentence with a capital letter and end with the correct punctuation.

- 1) How do biologists keep track of grizzly bears?

- 2) What do biologists want to learn about from their grizzly bear research?

- 3) Why do biologists want to do the research? Why is it helpful?



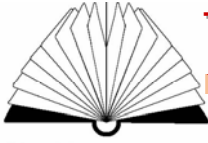
4) What does GPS stand for? Where does a GPS get its signal?

5) What information does the GPS collar give the biologists?

6) How do biologists get information from the collars? Write 2 ways.

7) Do biologists go back to look for the collars they didn't find? Why or why not?

8) Why do you think the biologists put collars only on female bears?

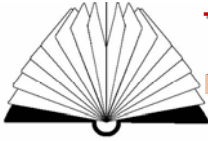


Questions Learning Activity 4

4-2: Journal writing

Use your own ideas to answer these questions.

- ✓ What is your reaction to the story about grizzly bear research?
- ✓ Do you think it's important for biologists to find out if human development such as diamond mines affect grizzly bears? Why?
- ✓ Do you think it affects the bear when the biologists use a helicopter and tranquilize the bear, put on a collar, remove a tooth, and weigh the bear? Explain your answer.
- ✓ Have you seen unusual animals in or near your community recently? If so, why do you think they are there?



Writing Learning Activity 5

Five handouts

5-1: Flow chart

Learners investigate a problem, solution, and results. Ask learners to present their 'problem – solution – result' to the group.

5-2: Northern habitat

Learners do research about a northern animal and its habitat. Use the information each student creates and make a class booklet of northern animals.

See a sample booklet on the NWT Literacy Council website www.nwt.literacy.ca that Fort Resolution adult learners created. Click on 'Resources', then click on 'Community Created Resources'. The booklet is called 'Animals'.

Or learners each make their own small booklet.

5-3: Where's the bear?

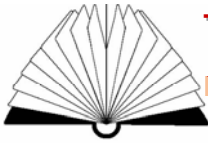
Learners examine the Grizzly Bear Research on-line map and write their conclusions.

5-4: The five W's

Learners use sentences from the story to identify question words.

5-5: Write a memo

Mr. I Need, a biologist, asks his secretary to reply to his memo.

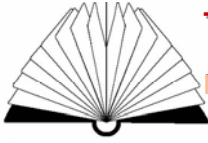


Writing Learning Activity 5

5-1: Flow chart

Look at the story about grizzly bear research. Use the information from the story to complete the flow chart.

Problem	Who or what is the story about?
	What happened?
	Why did it happen?
↓	
Solution	What did people do to try to deal with the problem?
↓	
Results	What were the outcomes?



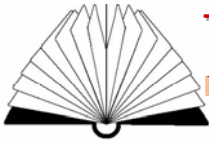
Writing Learning Activity 5

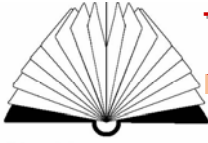
5-2: Northern habitat

Do research about your favourite northern animal. Each learner finds information about one animal and writes about it. Together the class makes a booklet about the different animals.

- i) Choose an animal. Look for information about where and how it lives.
- ii) Brainstorm your ideas using a web or an outline.
- iii) Write about the animal, its habitat, and how it lives. Use the Writing Process Guide or Writing Skills handout to help with your writing and editing.
- iv) Colour the area on a map to show where the animal lives at different times of the year.
- v) Draw and colour one or more pictures about your animal.
- vi) Bring together the information from each learner for each animal. Put it together to make a booklet.
- vii) Make a cover page. Write a title for the booklet on the cover page. Write in the date and everyone's name at the bottom.
- viii) Share the booklet with people in your community.

Or learners can each make their own booklet. Create a wall display with all the different booklets.





Writing Learning Activity 5

5-4: The five Ws

Who – the people in the story

What – the animals or things in the story

Where – the places or location of the story

When – the time the story happened

Why – the reasons things happen in the story

A sentence, paragraph, or story doesn't always give information about all five Ws. Here's an example from the story about grizzly bear research:

The biologists need to get the collars back so they can get the information from them.

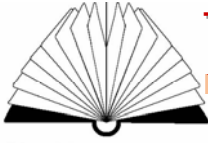
Who – 'the biologists'

What – 'the collars'

Where – no information

When – no information

Why – to 'get the information from them'



Now look at these sentences from the story Grizzly Bear Research. Do the words in bold tell who, when, where, what, or why? Write the answer in the blank.

- 1) The collar sends a **signal**.

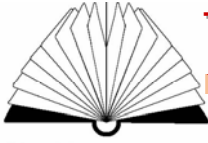
- 2) The biologists fly around **in a plane**.

- 3) The collar saves the location every 24 hours or **24 times a day**.

- 4) **The biologists** then go and pick up the collars by helicopter.

- 5) Biologists catch bears and put special collars on them **that help track where the bear travels**.

- 6) The collars have a special mechanism that makes them fall off **on a specific date**.



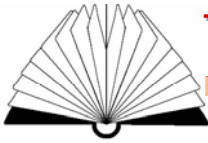
Writing Learning Activity 5

5-5: Write a memo

A memo is a short message people use to:

- ✓ Tell other people something
- ✓ Ask other people to do something
- ✓ Ask other people for their opinion

Some memos also ask for a response.



Sample Memo

To: Janet

Date: June 21, 2005

From: Mr. I. Need, Biologist

Re: Presentation about our grizzly bear research

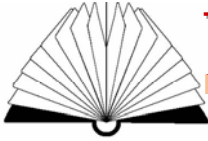
On Saturday, June 24th, 2005 I'm doing a presentation to the Adult Basic Education class in Fort Good Hope about our grizzly bear research. I plan to show them the video we made last summer.

Can you please find me a copy of the video? Can you also let me know what other information I should take? We have photos, charts, wall maps, posters, and written materials.

Please reply to this memo by noon tomorrow and tell me what other information I should take and why you think the learners will like it.

Can you also please get the video and information together by 3 pm Friday, June 23rd? Thanks

Write a memo from Janet to Mr. I. Need to respond to his memo. List the information he should take and why the adult learners will like it.



Learn more about GPS Learning Activity 6

One handout

Learners do on-line research and find out how important GPS is in our everyday lives.

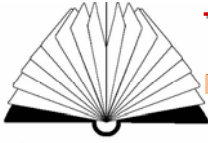
Learners fill out the three research cards in the handout as they do their research. The research cards focus on:

- i) What is GPS?
- ii) How does GPS work?
- iii) What do we use GPS for in our everyday lives?

Ask learners to start with a basic internet search of GPS. From there they can pick different websites to find the information they want and to fill out the research cards.

After everyone completes the cards, ask people to share what they learned.

You can also have a discussion about what websites learners liked the best, and why.



Learn more about GPS Learning Activity 6

Go on-line and do a general search for GPS. Choose different websites to fill in the three research cards below:

- i) What is GPS?
- ii) How does GPS work?
- iii) What do we use GPS for in our everyday lives?

i) What is GPS?

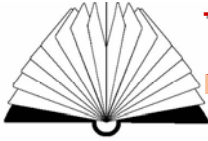
Web site address: _____

Title of article: _____

Author: _____

Website date: _____

Notes: _____



ii) How does GPS work?

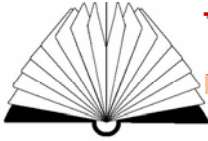
Web site address: _____

Title of article: _____

Author: _____

Website date: _____

Notes: _____



iii) What do we use GPS for in our everyday lives?

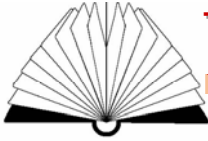
Web site address: _____

Title of article: _____

Author: _____

Website date: _____

Notes: _____



Do your own grizzly bear research Learning Activity 7

One handout

Learners identify their own research questions about grizzly bears, and go on-line to do the research.

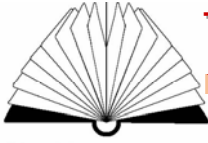
Go back to the lists you made in Activity 1 if you still have them. Or brainstorm with learners about what other things they'd like to know about grizzly bears.

Ask each learner to write down at least one research question about grizzly bears on the research card handout.

Ask them to go on-line to search for and record answers to the question.

After everyone completes their card, ask them to share what they learned.

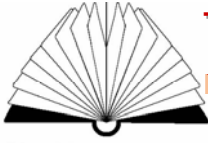
Have a discussion about what websites learners like the best, and why.



Do your own grizzly bear research Learning Activity 7

Decide what research question you want to ask and write it at the top of the research card. Go on-line and search for websites to answer the question. Fill in the research card as you find the answers.

<p>Research question: _____ _____</p> <p>Web site address: _____</p> <p>Title of article: _____</p> <p>Author: _____</p> <p>Website date: _____</p> <p>Notes: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____</p>



Latitude and longitude Learning Activity 8

Three handouts

Learners explore latitude and longitude and learn how to use them.

8-1: What is latitude?

8-2: What is longitude?

These two handouts introduce learners to the concepts of latitude and longitude. Each handout has a few questions to help learners understand the concepts. Make up a few more questions or ask learners to think up other questions.

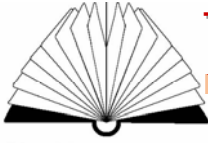
8-3: Latitude + longitude = a coordinate

This handout helps learners understand how to use coordinates to locate places.

Once learners grasp the ideas, they can look up latitude and longitude in an atlas.

Use an overhead of a map of Canada to review the concepts.

- ✓ Locate and name places across Canada – north, south, west, east. Write the latitude and longitude.
- ✓ Use these place names to explore other parts of the world. For example, what other places around the world are near the 60th parallel?

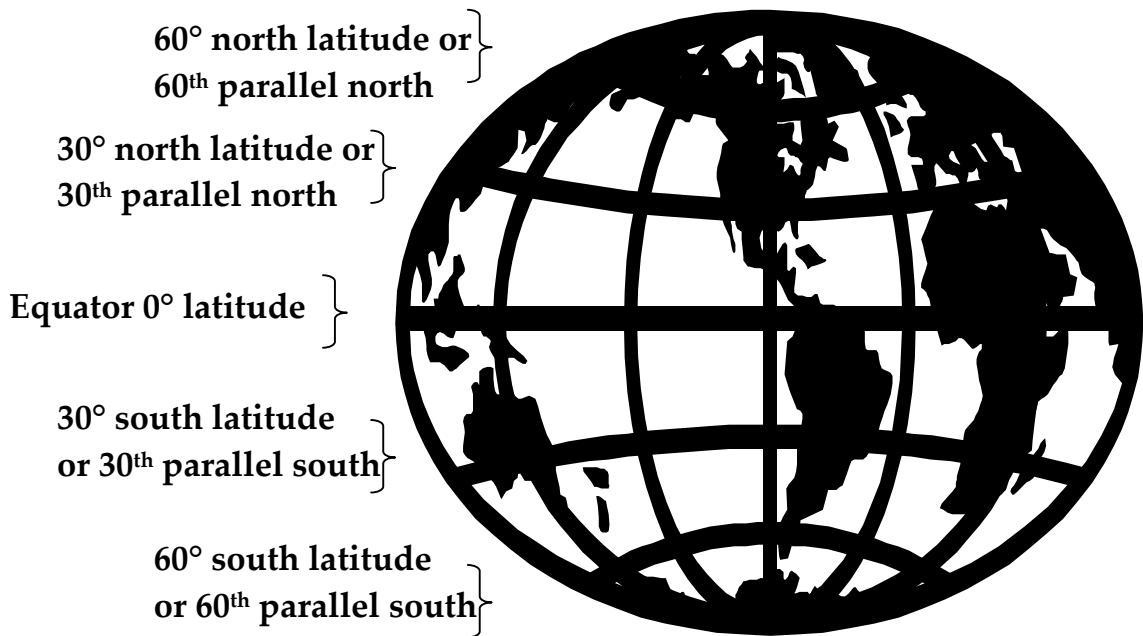


Latitude and longitude Learning Activity 8

8-1: What is latitude?

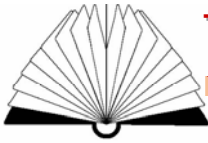
Latitude is a set of imaginary lines that go around the earth from east to west. They're called **parallels of latitude** because each line is the same distance apart. The **equator** is the line in the middle.

We measure parallels of latitude in **degrees north and south**. The equator is 0 degrees. **Above the equator** we measure from 0° to 90° north. **Below the equator** we measure from 0° to 90° south.



The 60th parallel north is the border between the NWT and Alberta. Colour it red.

- ✓ What would you wear in January at the 60th parallel north?
- ✓ What would you wear in January at the equator?
- ✓ What would you wear in January at the 60th parallel south?



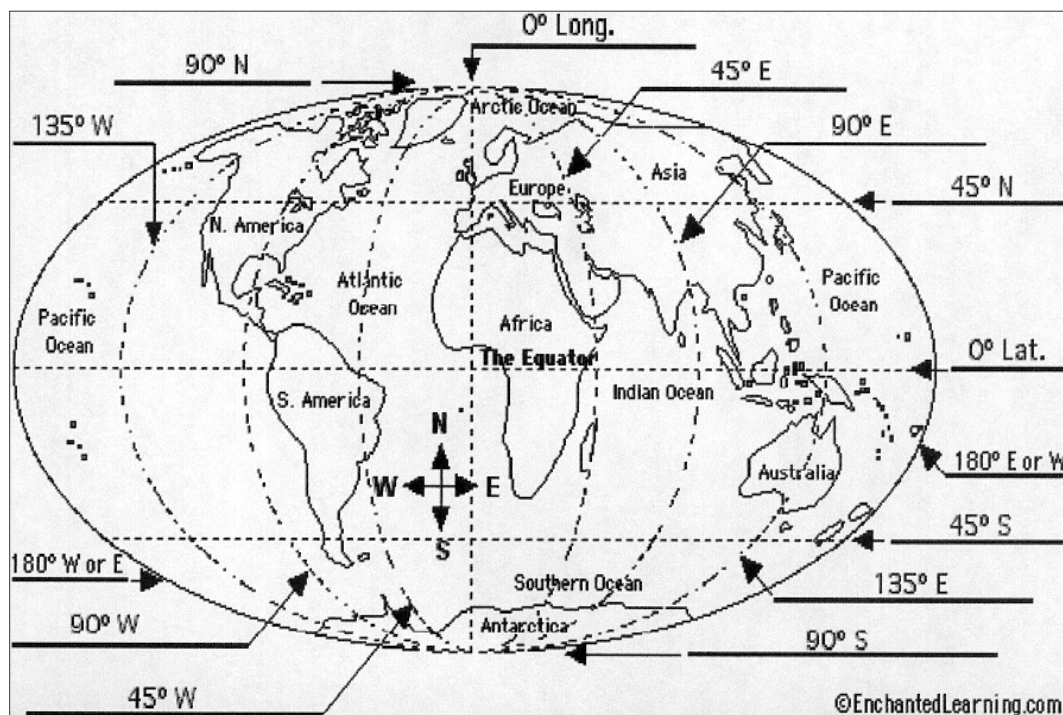
Latitude and longitude Learning Activity 8

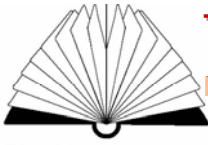
8-2: What is longitude?

Longitude is a set of imaginary lines that go around the world from north to south. They're called meridians. The prime meridian in Greenwich, England is the middle, or 0° . We measure meridians in **degrees west or east** – west to North America, east to Asia.

Look at the map below:

- i) Colour 0° longitude red.
- ii) Colour 45° E longitude blue. It's also called the **45th meridian east**.
- iii) Colour 90° W longitude green. It's also called the **90th meridian west**. What countries does it go through?





Latitude and longitude Learning Activity 8

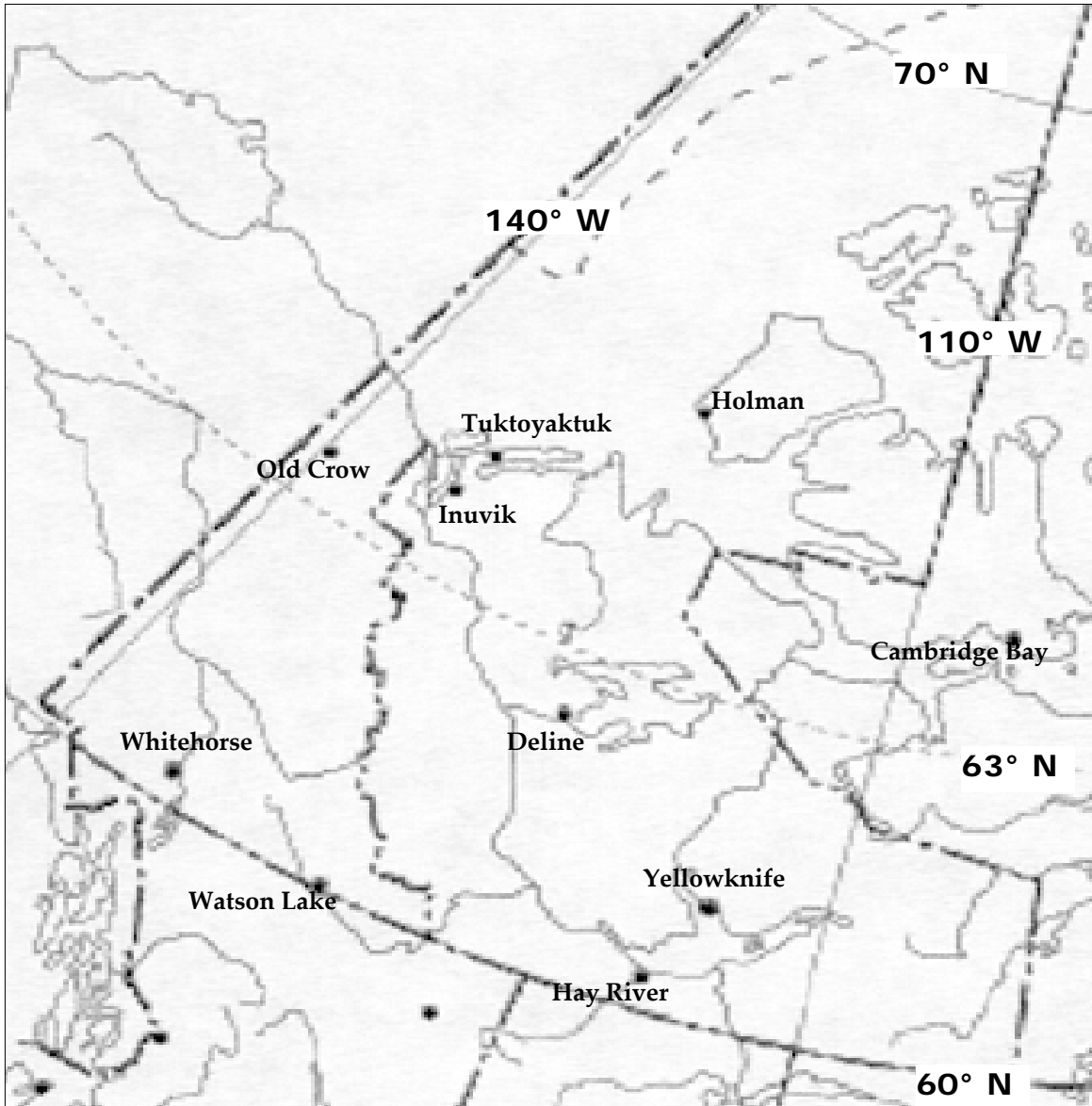
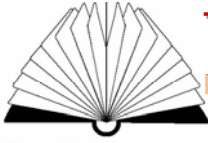
8-3: Latitude + longitude = a coordinate

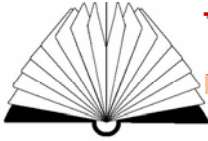
We use latitude and longitude to locate places around the globe. GPS devices use latitude and longitude. A coordinate is the place where the parallel of latitude crosses the meridian of longitude.

Look at the map on the next page to do the following:

- i) Colour the parallels of latitude with yellow highlighter and the meridians of longitude with orange highlighter.
- ii) Find the place where 60° N and 140° W meet. What community on the map is closest to this coordinate?
- iii) What community on the map is closest to the coordinate 70° N and 110° W?
- iv) Use a pencil to draw in by hand the parallels of latitude for 61° N, 62° N, 64° N, 65° N, 66° N, 67° N, 68° N, and 69° N.
- v) Use a pencil to draw in by hand the meridians of longitude for 115° W, 120° W, 125° W, 130° W, and 135° W.
- vi) Name the coordinates for five communities on the map.

Community	Longitude	Latitude
	° N	° W
	° N	° W
	° N	° W
	° N	° W
	° N	° W





Track an elephant on-line Learning Activity 9

No handout

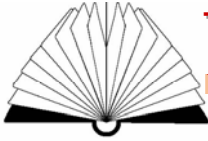
Learners have some fun and learn something about elephants, and how people use a collar to track them, just like the grizzly bears.

Go to this website:

<http://www.animal.discovery.com/fansites/wildkingdom/elephant/track/track.html>

During the on-line activity learners:

- ✓ Collar and track the elephant herd.
- ✓ Answer questions and learn more about elephants as they go from frame to frame.



Take a walk on the wild side Learning Activity 10

No handout

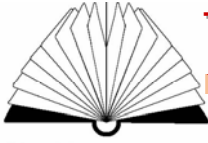
Learners write something about grizzly bears and elephants.

Ask learners to think about what they learned when they did the on-line activity to track an elephant herd. And ask them to think about what they learned from the grizzly bear research story and the other learning activities.

Then ask them to write one of these things:

- ✓ A funny paragraph with pictures of grizzly bears and elephants
- ✓ A paragraph that compares grizzly bears and elephants
- ✓ A story using bears and elephants as the main characters

Or ask them to come up with their own idea of something to write about elephants and grizzly bears.



Resources

- ✓ www.dummies.com/WileyCDA/DummiesArticle/id-2572.html
GPS devices used in our everyday life:
- ✓ www.eg3.com/eCLIPS/desc/mobile_gps_blank.html
Definition of GPS
- ✓ www.nationalgeographic.com
- ✓ <http://atlas.gc.ca>
- ✓ www.eduplace.com
Blank printable maps of NWT and Canada.
- ✓ www.animal.discovery.com/fansites/wildkingdom/elephant/science/science.html
How GPS works, pictures, comprehensive text describing animals that have been tracked since 1992.
- ✓ **National Geographic Marco Polo Xpeditions. Geography standards in your classroom. 1998 – 2003**
www.nationalgeographic.com
- ✓ **Col, Jeananda. Enchanted Learning. 1996 – 2005**
www.enchantedlearning.com