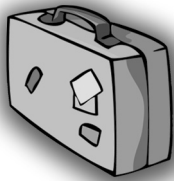




The Mystery on the
**Great
Lakes**



Teacher's Guide
by
Carole Marsh

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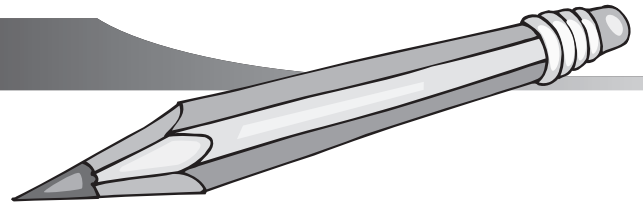
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A Word from the Author

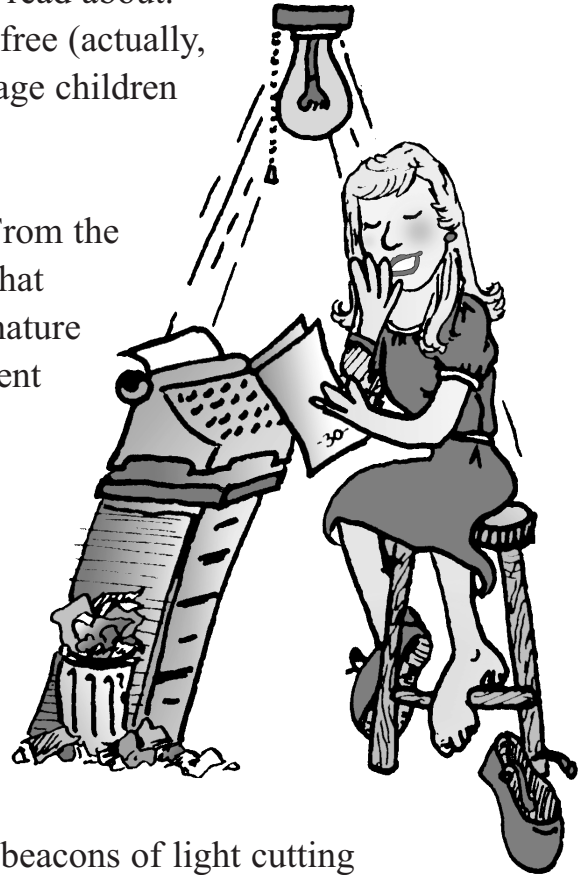


Dear Teacher,

In 1979, I began writing children’s mysteries set at historic sites that still existed—primarily so that kids could go and see what they had read about. Frankly, I found no more fun, educational, and stress-free (actually, just plain joyful!) activity to do with my then school-age children than to visit a fascinating historic site!

The Great Lakes are a magnificent natural wonder! From the depths of the deepest lake, to the shimmering waves that skim the surface, the Great Lakes provide a study in nature as well as American history. How did these magnificent lakes form? Who were the early settlers along their shores? How valuable were the lakes to their livelihood, and to ours today?

Although calm and inviting on many days, the Great Lakes have a dark side: ferocious storms that have claimed many a life and many a ship sailing their vast expanse. These shipwrecks, though so very tragic, add an air of mystery and intrigue to this watery wonderland. And the lighthouses—with their beacons of light cutting through the night—stand as silent witnesses to the history and drama of these magnificent lakes.

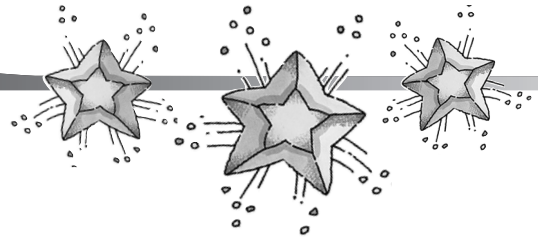


In my travels, we learned a lot, but what we learned best is that kids and adults can learn together. Reading and going and seeing and doing is what education is all about, and most especially, that “adopting” a subject or place leads to a lifelong interest in an era, a place, a people, and all the fascinating facts that made up their lives. We learned that history is still “living” and is not lost on kids! In fact, it is quite a revelation!

I wish you smooth sailing along this Great Lakes adventure!

Carole Marsh

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<i>Page #</i>	<i>Subject</i>	<i><u>EXPLORE!</u></i>
13	Science	Christina’s eyes watered when she ate the spicy food. Why do our eyes water when we eat spicy food? There is a chemical in the food called capsaicin. Your body mistakes it for a danger to you and makes your eyes water as a warning.
13	Food	Buffalo wings were named for the town where they were invented, Buffalo, New York. They are not made from buffalo. What are they made of?
15	Geography	Niagara Falls is located on Lake Ontario. The falls straddle both the United States as well as Canada.
16	Science	Grant loved seeing the rainbow over Niagara Falls. What causes a rainbow?
16	Science	The Great Lakes hold 20 percent of the world’s fresh water supply. What is the difference between fresh and salt water? What are examples of each?
18	Geography	Locate Lake Erie and Cleveland, Ohio on a map.
21	Museums	The Rock and Roll Hall of Fame is located in Cleveland, Ohio, right on Lake Erie. Why do you think a museum was established for rock and roll music?
24	Mnemonic Device	The Great Lakes can be remembered by using HOMES, which stands for Huron, Ontario, Michigan, Erie, and Superior.
25	Science	Christina sees whitecaps on the lake. What causes waves and whitecaps on a lake?
25	Spelling	Eerie is something spooky. Erie is the name of the lake.
27	Writing	A simile is a comparison using like or as. Papa says, “We’ll ride those waves like a bucking bronco!” Explain how Papa’s statement is a simile.

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|----|------------------|---|
| 30 | Legend and Lore | Bessie is a legendary sea monster that supposedly lives in Lake Erie. Can you think of a similar legendary sea monster in Scotland? |
| 34 | Music | Elvis was called the “King of Rock and Roll.” Discuss Elvis and his contributions to rock music in America. |
| 34 | Writing | “Christina popped up like a jack-in-the-box” is another simile. Can you come up with some other similes? |
| 35 | Figure of Speech | Grant says to Papa, “I’m your right-hand man!” What does that mean? |
| 36 | Vocabulary | Modular shapes are standard shapes, such as a square. Name some other modular shapes. |
| 37 | History | The main building of the Rock and Roll Hall of Fame is shaped like a pyramid. Grant comments that the Egyptians had pyramids as well. Who were the Egyptians? |
| 38 | Vocabulary | Lake Erie lapped at the seawall. Is this the same use of the word “lap” as how a dog drinks water, or how a runner goes around a track? Explain the differences. |
| 39 | Colloquialism | “If Grant fell, he’d be a goner!” What does it mean to be “a goner”? |
| 41 | Vocabulary | Rafters are parallel beams that support a roof. The Rock and Roll Hall of Fame has cars suspended (or hanging) from the rafters! |
| 43 | Spelling | “Sergeant Pepper’s Lonely Hearts Club Band” was a song performed by the Beatles. The name of their group is a “play on words.” Explain how their name puts a twist on the name of an insect. |
| 44 | Reasoning | Mimi thinks her friend Ichabod is senile. She’s led to that conclusion because of what he’s told her (he’s hearing noises and seeing lights on). Why does she come to that conclusion? Is she accurate? |

Page-by-Page Guide

- 47 Geography Lake Michigan’s borders are only in the United States. It is the only one of the Great Lakes that does not also touch Canada.
- 48 Reasoning Christina and Grant receive a text message that’s a riddle. The message says, “I can see you, but you can’t see me.” Both Grant and Christina make conclusions that the person who sent the message must be near. Why would they think that? Is there another answer?
- 49 Feelings Christina is afraid of a ghost. She also is very curious. Do you think she should be afraid? Why or why not?
- 50 Landmark Sleeping Bear Dunes were created during the Ice Age when moving ice crushed rock into sand. Why is it called Sleeping Bear Dunes?
- 52 Vocabulary When something is collapsing, it falls to the ground. Christina and Grant made it across the dune before collapsing.
- 53 Vocabulary Foliage are the leaves on trees. Grant and Christina see magnificent autumn foliage. Do you know why leaves turn color in the fall?
- 53 Word Usage Leaves “danced in the breeze.” How do leaves dance? The term used to give actions to something inanimate, making it seem life-like, is called personification.
- 53 Logic Christina saw a small boat on the horizon of Lake Michigan. The boat grew larger as it moved closer. Why?
- 54 Transportation Tankers carry large cargo on the Great Lakes because it is faster and more economical than other methods. What are other shipping methods that could be used in the northern states near the Great Lakes? Notice how using the Great Lakes reduces the travel time between cities on the lakes.
- 57 Etiquette Papa insisted, “Ladies first” to board the *Mimi* boat. Why does he say this?
- 58 Vocabulary If something is maneuvered, it is steered, or guided. Papa maneuvered the *Mimi* boat onto Lake Michigan.

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58	Safety	Even though Christina was a strong swimmer, she wore a life vest. Explain why a life vest is very important for water safety.
58-60	Language	Grant says, “Aye-aye Captain,” “Land-ho,” and “Aye, lassies,” Where do you think these sayings originated? Is there a specific group of people who might have used this type of language? What are some other similar terms?
61	Vocabulary	Intrigue means to arouse interest or desire. Why would Christina find an old shipwreck intriguing?
62	Invention	Before radar, sonar, and satellites, ships needed guidance on the waters to know where to find the land. Lighthouses were created. Using light and sound (horns), they helped steer ships so they could have safe passage.
62	Weather	Lighthouses are great, but not perfect. Two conditions prevent a lighthouse from helping the ships: fog and white-out conditions. Why would these two things be a problem?
66	Technology	Mimi remarked that her cell phone worked even on a remote island. How can she still receive calls in the middle of a huge lake?
69	Geography	The Mackinac Straights is a body of water that stretches between both Lake Michigan and Lake Huron.
70	Geography	Lake Huron is the second-largest of the Great Lakes. Which lake is the largest?
71	Industry	The Great Lakes are extremely important to the shipping industry, making shipping to large cities in the North quick and easy. What would happen if we suddenly couldn’t use the Great Lakes for shipping?
71	Transportation	The waters of the Great Lakes freeze over in the winter. Large ships, called cutters, clear the shipping lanes of ice so ships can pass. What could happen if the lanes didn’t get cleared?

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71	Modern Life	There is pollution in the waters of the Great Lakes. Wrecked ships which once carried iron ore or coal are mostly to blame. Describe how a shipwreck could cause polluted water.
71	Vocabulary	A nuisance is something that is an annoyance or causes trouble.
71	Science	Zebra mussels, a type of shellfish, are a nuisance to the waters in the Great Lakes. The zebra mussels attach themselves to everything underwater, including other shellfish. Discuss how their intrusive behavior can be a nuisance.
73	Family	Christina always looks out for Grant. She feels a deep sense of responsibility as the big sister. Discuss family relationships and why she feels that way. Who do you look after (sibling, pet)?
72	Hobbies	Boating is one of Papa’s hobbies, as well as flying airplanes. Do you have any hobbies? What are your hobbies?
72,73,78	Boating	Papa “moored” (or tied the boat) to a “pylon” (a large mass, usually wooden, sticking out of the water). The “hull” of the ship is the bottom. Name other boating terms?
81	History	Before automobiles were invented, and up until around 1915, people used horses, carriages, and buggies for transportation. Mackinac Island is a remote island that does not allow automobile transportation of any kind. They still use horses and buggies. Why would they not allow cars on the island?
81	Movies	Mackinac Island was filmed and featured in the movie, “Somewhere in Time.”
82	Symbolism	Mackinac Island was named by an aboriginal tribe. They believe it looked like the back of a turtle (round and green). In their language, “mish-la-mac-in-naw” means turtle. What other things received their name from the way they look?
83	Food	Grant and Christina are served walleye cheek chowder, a fish soup. Though it sounds weird, Christina eats it anyway and likes it. Tell about a time where you ate something that sounded weird, or different. Did you like it or not?

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- 87 Geography Lake Superior is the largest, and northernmost lake. Because of Lake Superior's location, it is subject to many harsh storms. Why?
- 90 Vocabulary A gale is a very strong and violent wind.
- 91 Estimation The bell from the shipwreck, the *Edmund Fitzgerald*, weighs just over 200 pounds. What can you think of that might weigh about 200 pounds?
- 91 Disaster The *Edmund Fitzgerald* was a very famous shipwreck. Though the crew had radar and frequent communication with land and other ships, the *Edmund Fitzgerald* disappeared without a trace. Discuss the details of the shipwreck.
- 92 Science Researchers now feel that a rogue wave battered the *Edmund Fitzgerald* and broke her in half. A rogue wave is one that is exceptionally large and originates in very deep water.
- 93 Science The Great Lakes freeze over in the winter months. Grant wants to go ice skating, but Papa tells him it's too dangerous. The ice is not solid, but rather more like an iceberg that floats and moves along the water.
- 94 Vocabulary Maritime refers to boating and the water. Maritime law is obeyed when boating.
- 98 Geography Devil's Island is located in Lake Superior as part of an island chain called the Apostle Islands. Locate Lake Superior and the Apostle Islands.
- 99 Sports A kayak is a small, thin, long boat designed for two people (sometimes one person). Some kayaks have pedals to assist in forward movement. Show how a boat moves forward with pedals, and then uses paddles for direction.
- 101 Vocabulary A harbor is a protective shelter, usually a small cove on a lake. Grant and Christina left their kayak in a cozy harbor.
- 102 Feelings Grant felt excited by the chase and suspense of the mystery. Tell about a time when you've been excited by suspense.

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| 102 | Landmarks | There are hundreds of lighthouses scattered throughout the Great Lakes area. Why would there be so many lighthouses? |
| 104 | Vocabulary | Dejected refers to an unhappy state. Christina is dejected because she can't figure out which lighthouse they needed to go to. |
| 106 | Science | Christina and Grant go into a cave. Christina notes that it is colder inside the cave. Why? |
| 106 | Science | Stalactites are rock formations hanging from the ceiling of a cave. How are they formed? |
| 108 | Feelings | Christina felt she needed to be brave about her scrape around Grant, even though it hurt. Why did she feel this way? |
| 109 | Science | The effects of the moon and winds/weather cause bodies of water to have tides. Oceans have tides, but do lakes? Discuss what causes bodies of water to rise, fall, and have a current. |
| 112 | Decisions | Christina and Grant were stuck in a cave. Grant had to pass Christina his paddle. While Christina was considering how to accomplish the task, Grant panicked and tossed the paddle backward. Was that a wise choice? What would have been a better decision? |
| 114 | Literature | Christina asks Grant to pass the paddle slow and steady. Have you heard the expression, "slow and steady wins the race"? What do you think "slow and steady" means? Demonstrate "slow and steady" as you pass your pencil to your neighbor. |
| 117 | Geography | Christina and Grant visit Little Sand Bay Visitor Center, which is part of the Apostle Islands. Where is it located? On which of the Great Lakes is Little Sand Bay Island located? |
| 118 | Body Language | Grant crossed his arms over his chest when the phantom text messenger called them nosy. Was he happy? How can you tell? |

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| 120 | Vocabulary | Treacherous means unpredictable or dangerous. The clerk in the visitor center says that the waters of the Great Lakes can be treacherous. |
| 121 | History | The clerk of the gift shop talks about a schooner ship, or a large ship with two sails. In the 1800s, thousands of schooners sailed across the Great Lakes. These massive ships carried all types of cargo, from apples to iron ore. |
| 121 | Weather | The average water temperature of Lake Superior is 40 degrees Fahrenheit. The lake rarely freezes over completely in the winter. |
| 121 | Vocabulary | A nor'easter is short for a storm coming from a northern direction traveling in an easterly manner. The clerk at Sand Island Visitor Center tells a story about when a 'nor'easter came rolling in. |
| 125 | Geography | Sand Island is a very small island in the Apostle Island chain, found on Lake Superior. Locate Sand Island on a map. |
| 126 | Vocabulary | To skitter means to slide and roll. Christina's cell phone skittered on the boat floor. Why is it more interesting to read something that uses descriptive words like "skitter"? |
| 129 | Vocabulary | Scampered means to move quickly, but playfully. Grant and Christina scampered off the shuttle boat. |
| 129 | Math | An octagonal shape has eight sides. Can a building be an octagon? Draw some octagonal shapes. |
| 131 | Vocabulary | A musty smell is one that is damp, moldy, and dirty. Christina and Grant are in a basement that smells musty. Is a musty smell a pleasant smell? |
| 131 | Architecture | Spiral staircases lead up in a circular pattern. Where would you want to use such a thing? |
| 132 | Vocabulary | Ascending means to go up. Christina and Grant ascended the stairs. Which way did they travel? |

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| 132 | Vocabulary | Light burst into their dark quarters. Quarters in this case means a shelter or lodging. Is there another type of quarters? |
| 133 | Feelings | Christina felt genuinely frightened. What does that mean? |
| 136 | Vocabulary | Elated means feeling happy. Christina felt elated about her birthday surprise party. |
| 136 | Vocabulary | To be furious is to be very angry. Christina felt furious that she was tricked. |
| 136 | Feelings | Christina didn't know if she should be elated or furious. Is it possible to feel both emotions at the same time? |
| 136 | Logic | Mimi and Ms. Susan planned to send Christina text messages as clues. But how did Ms. Susan know exactly when to send which message? |
| 140 | Irony | Christina and Grant's mystery was not really a mystery, but instead a special surprise party. So, how do they explain the ghost in the lighthouse and the boots coming up the stairs? Isn't it ironic that there was a mystery, but no one, not even Mimi, knew? |

Discussion Questions

1. Shipping is very important on the Great Lakes. Cities surrounding the Great Lakes rely on the fast method of using tankers to carry goods to and from different destinations. Even though the lakes have cutter ships to slice a path through the ice which builds up in the winter, sometimes the lakes are impassable. Discuss some of the other shipping options. How can we still move goods even if the lakes are blocked?
2. Lighthouses are numerous on the many shores of the Great Lakes. While they played a very important role before radar and satellites, they are not quite as useful today. Do they still have any significance or useful attributes in the modern world? Are some lighthouses still operational on the Great Lakes?
3. Grant and Christina traveled on the Mackinac Straights, an area where Lake Michigan and Lake Huron meet. When traveling on that portion of the lakes, how can you tell which lake you are on? Is there a line, or marker of some sort? Why do you think those two bodies of water are not just one big lake?
4. The *Edmund Fitzgerald* is a famous shipwreck. Grant, Christina, Mimi, and Papa all learned the details of the shipwreck. Is the *Edmund Fitzgerald* the only ship that sank on the Great Lakes? Do you think ships still sink on the Great Lakes?

Bonus Info!

How Did the Lakes Form?

The Great Lakes were formed thousands of years ago by receding glaciers. With thousands of pounds of pressure from the glaciers, the soft ground underneath sank. When the glaciers melted, the water filled the basins and created the Great Lakes. The glaciers left behind high ridges and many other interesting land formations.

Even today, the land beneath the Great Lakes continues to rise. Students can research the geographical history of the Great Lakes at http://www.great-lakes.net/teach/geog/lakeform/lf_2.html. Look for photos or graphs that illustrate the formation of the lakes.

Geography: Find It!

1. Label each of the Great Lakes on the map below.
2. Find Buffalo, New York, where Grant and Christina started their Great Lakes tour, and label it.
3. Locate Cleveland, Ohio and label it on the map as well.
4. Use a classroom map to help you find the Apostle Islands on Lake Superior. On your map, label the general area where this island chain is located.



Bonus Info!

I Can Remember That!

A mnemonic device is a term used to describe a memory aid or learning tool. People use them every day to help remember things. One example is called an acronym.

To remember the names of the Great Lakes, remember HOMES!

Huron

Ontario

Michigan

Erie

Superior

Mathematics: Calculate It!

1. The Great Lakes (all five combined) contains 20 percent of the fresh water supply in the U.S. That equals approximately 6 quadrillion gallons. Write out 6 quadrillion in numeric form.
2. Lake Erie is 57 miles wide, and a boat traveling 5 miles per hour is crossing the lake. How long will it take the boat to cross the lake?
3. If a lighthouse is operational 10 hours a day, and the cost of operation is \$1.25 per hour, how much does it cost per week to operate the lighthouse? How much per year?
4. You dive into the deepest area in Lake Huron (750 feet). You then dive down into the deepest area in Lake Superior (1,332 feet). How much further do you dive into Lake Superior?
5. The total coastline of the Great Lakes is 10,900 miles. How many feet is that?
6. Lake Superior is 350 miles long. Lake Michigan is 307 miles long. Lake Huron is 206 miles long. Lake Erie is 241 miles long. Lake Ontario is 193 miles long. Make a bar chart showing the lengths of the Great Lakes.

Bonus Info!

Did You Know That?

Just because something has a large mass, does not mean it has a large volume. How can that be? Depth is the deciding factor. So while a lake can be long, it might be shallow, thereby not having a high volume.

Four of the five Great Lakes are at different elevations. The waters head from Lake Superior down through the other Great Lakes.

Since the Great Lakes were formed by retreating glaciers, they are considered a "newer" formation. The Great Lakes continue to change in size and shape to this day.

English: Write It!

1. Ready to Rock and Roll! The history of rock and roll is a fun way to learn about the history of our country. Develop a list of rockers. You can find a list of inductees at www.rockhall.com. Select your favorite musician and then write a paper and include historical events that shaped the artist's music or life.
2. Storms come up quickly on the Great Lakes. Can you imagine being on board an 1800s schooner ship with a storm that pops up along the horizon? Pretend you are on board that schooner ship and write your story of sailing to safety just out of the grasp of a deadly storm.
3. Different American Indian tribes, including the Chippewa, roamed the states surrounding the Great Lakes. Imagine you are seeing the Great Lakes for the first time, and write a story naming the area for your own Indian tribe.
4. Christina and Grant had a scary adventure in the caves. What would you have done if you were in the caves with them and experienced the ever-rising waters? Write about your own adventure on a kayak with Grant or Christina.

Bonus Info!

Speak Like the Chippewa Indians

The Chippewa Indians lived in North America and Canada. They are also known as the Ojibwa, Ojibwe, and Ojibway. Ojibwe and Chippewa come from the Algonquin word for "puckering," which most likely referred to their distinctive moccasin style. Their language is called Ojibway, and still spoken by a few descendants today.

Some simple words in Ojibway are *aaniin* (pronounced ah-nee), which is a friendly greeting and *miigwech* (pronounced mee-gwetch), which means "thank you."

A pictured glossary of Ojibway words can be found here:

http://www.native-languages.org/ojibwe_animals.htm

Art: Create It!

1. Flo-till-a-SINK! A flotilla is a parade of boats. Construct paper boats to float in a big basin of water. Then add pennies (ballast) to your boat, one at a time, until it sinks. Which boat stayed afloat for the longest? Analyze the shapes of the various boats. Why did one boat stay afloat while another one sank?
2. Draw a picture of a schooner ship. Here is a link with photographs: <http://www.schoonerman.com/home.htm> After you draw the ship, write a small paragraph describing what your schooner ship is carrying, and where you are headed.
3. The Rock and Roll Hall of Fame's main building was a pyramid shape. The lighthouse where Christina's birthday party took place was an octagonal shape. Experiment by drawing buildings of different shapes. See how creative you can be!
4. The surface levels of the lakes are not the same. In order for the ships to navigate from one lake to another, they must pass through locks. Study a lock system and try constructing or diagraming your own. See if you can help a ship navigate from a higher level to a lower level just like the real ships on the Great Lakes must do!

Bonus Info!

Haunted Lighthouses, Lake Monsters, and a Ghost Dog!

The Great Lakes have their share of ghostly tales. While there are many reports of haunted lighthouses where lights turn on and off, and phantom boats can be heard pounding up the steps, Great Lakes lore includes several other unexplained phenomenon:

Bessie, the lake monster, is reported to live in Lake Erie. Mariners have reported seeing a huge serpent-like creature in the lake for centuries.

The Black Dog of Lake Erie legend started when a ship's mascot, a large black dog, fell overboard and was lost. Ever since, mariners have told of a ghostly black dog that sometimes appears on the deck of a ship. The legend says that when the black dog appears, the ship is headed for trouble!

Walleye Chowder

3 tbsp butter
1/2 c diced celery
1/4 c flour
2 c quartered red potatoes
salt & pepper

3 strips diced bacon
1 large yellow onion
3 c cold milk
2 eight oz walleye filets

Melt the butter in a large stock pot over medium-high heat. Add the bacon and quickly saute until the bacon begins to crisp. Add the celery and onions; saute. Add the flour to form a roux. Stir until the roux blends with the butter, forming a paste-like consistency. Add milk; be sure to use cold milk to prevent lumping. Add the potatoes and chunks of fish and stir gently. Reduce the heat and simmer for about 40 minutes, or until the potatoes are cooked through. Add salt and pepper to taste.

Enjoy with a big crusty loaf of sourdough bread!

Mackinac Fudge

1 stick butter
1/4 tsp salt
1 lb box 10X sugar
1/2 c nuts, optional

4 tbsp milk
1 tbsp vanilla
1/2 c cocoa
1/2 c peanut butter, optional

Stand up stick of butter in medium size mixing bowl (microwaveable). Dump in other ingredients around the stick of butter. Microwave for about one minute (until butter is melted). Mix together and place in 8 x 8 inch pan to cool.

Bonus Info!

What is a Walleye, Anyway?

Walleye, a medium-sized freshwater fish, is plentiful in the Great Lakes and the rivers and streams that flow from and into the lakes. In Ohio, the fish is a springtime fishing favorite, particularly in the Maumee River near Toledo and in the Canadian waters of Lake Erie.

Walleyes are sensitive to light, so fishermen have a better chance of catching them around dawn, dusk, at night, or when the weather is cloudy. These fish live a long life—some have been known to live as long as 26 years! The walleye is used in many recipes of the Great Lakes, including chowders and other dishes.

Who Am I? Game

Materials: Index cards, pens and/or pencils

Directions: Divide into teams of 4. Teams should assemble away from each other so they cannot hear other teams talking.

Teacher: Write each “Who Am I?” question on a note card and the answers (provided below) on the opposite side of the card. Make enough cards to provide each team with a set of 10 cards. The event will need to be timed by your teacher. You will have approximately 20 minutes to complete the question/answer portion.

Nominate one student to read the questions to your team. The other students will guess the answers. For every correct guess, the “reader” places the card into the center of the table. The team with the largest “most correct” pile wins.

1. I sang, “I’m all shook up.”
2. I am a shipwreck off Manitou Island.
3. I share my name with a famous legend of a ghostly horseman.
4. I was one of the Beatles.
5. I am the largest, northernmost Great Lake.
6. I am the only Great Lake that is entirely in the United States.
7. I was considered a “mighty” ship until I sank in 1975.
8. I am good at karate.
9. I had my birthday party inside a lighthouse.
10. I have a bright red cell phone.

Answers:

1. Elvis Presley
2. Francisco Morazan
3. Ichabod
4. John Lennon
5. Superior
6. Michigan
7. Edmund Fitzgerald
8. Grant
9. Christina
10. Mimi

Activities

Search for the mysteriously hidden words below!

E	A	V	A	Q	M	N	F	R	E	D	P	N	W	N
U	O	O	N	R	W	O	O	T	R	U	O	X	N	S
G	H	R	O	O	L	I	I	R	G	N	L	T	Z	C
I	Q	T	N	I	R	T	O	W	U	E	L	I	W	H
R	S	N	A	E	C	E	A	Y	X	H	U	B	Z	O
T	N	G	P	A	V	G	A	S	R	H	T	G	G	O
N	E	U	L	M	C	N	H	S	E	X	I	G	V	N
I	S	A	L	W	L	I	G	H	T	H	O	U	S	E
H	T	K	J	A	P	S	Z	U	A	E	N	I	Z	R
S	U	P	W	W	G	P	P	A	W	I	R	J	G	U
B	F	L	R	A	Y	A	E	M	I	T	I	R	A	M
L	F	E	L	P	F	L	M	I	C	H	I	G	A	N
K	C	E	I	R	D	L	O	I	R	A	T	N	O	M
K	R	A	F	G	L	O	E	R	I	E	R	O	O	X
L	D	J	Y	E	Q	C	X	U	R	D	U	F	K	J

WORD BANK

COLLAPSING
DUNE
ERIE
FOLIAGE
GALE

HULL
HURON
INTRIGUE
LIGHTHOUSE
MARITIME

MICHIGAN
NOREASTER
ONTARIO
POLLUTION
SCHOONER

SHIPWRECK
STALACTITE
STORM
SUPERIOR
WATER

Chapter 1-4 Worksheet

NAME: _____

DATE: _____

Do you know what this word means? Write the definition in the space provided.

1. eerie

Answer the following questions using complete sentences.

2. What percentage of fresh water over the entire world do the Great Lakes provide?
3. The main building of the Rock and Roll Hall of Fame is made of what?
4. Name the Great Lake that starts with the letter H.
5. Name the Great Lake that starts with the letter O.
6. Name the Great Lake that starts with the letter M.
7. Name the Great Lake that stars with the letter E.
8. Name the Great Lake that starts with the letter S.

Write T for True and F for False.

9. ____ Lake Ontario is the smallest of the Great Lakes.
10. ____ Niagara Falls is located on Lake Erie.

Chapter 5-8 Worksheet

NAME: _____

DATE: _____

Do you know what these words mean? Write their definitions in the space provided.

1. collapsing
2. foliage
3. maneuvered
4. intrigued

Answer the following questions using complete sentences.

5. How were Sleeping Bear Dunes created?
6. Who rescued the little Mimi boat from Lake Michigan and pulled her to shore?
7. Why was Christina worried about taking the little Mimi boat out onto Lake Michigan?
8. Mimi believed that her friend Ichabod was going senile. What does that mean?

Write T for True and F for False.

9. ____ John Lennon was a member of the Ladybug band.
10. ____ Mimi had no cell phone signal on Manitou Island.

Chapter 9-11 Worksheet

NAME: _____

DATE: _____

Do you know what these words mean? Write their definitions in the space provided.

1. gale
2. rogue wave
3. maritime

Answer the following questions using complete sentences.

4. Which of the Great Lakes in its entirety is only in the United States?
5. Why are zebra mussels harmful?
6. Mackinac Island was named such because an Indian tribe thought it looked like what?
7. Papa told Grant that he can't ice skate on the lakes in the winter, even though there is a lot of ice. Why not?

Write T for True and F for False.

8. ____ Thick ice forms on the Great Lakes in winter and they use cutter ships to clear shipping lanes.
9. ____ The Edmund Fitzgerald sank in Lake Michigan.
10. ____ The Chippewa were an Indian tribe.

Chapter 12-13 Worksheet

NAME: _____

DATE: _____

Do you know what these words mean? Write their definitions in the space provided.

1. harbor
2. kayak
3. dejected

Answer the following questions using complete sentences.

4. Grant and Christina's kayak had a special system to move the small boat forward, not just with paddles. What was this system?
5. Who did Grant and Christina find on top of the lighthouse on Devil's Island?
6. Why did Christina and Grant decide to try to enter a different cave instead of the first one they picked?
7. Why did Christina and Grant feel colder when they entered the cave?

Write T for True and F for False.

8. ____ Grant and Christina find out who is sending the text messages when they are in the lighthouse on Devil's Island.
9. ____ Devil's Island is located on Lake Michigan.
10. ____ On Devil's Island, Grant doesn't want to go into the caves.

Chapter 14-16 Worksheet

NAME: _____

DATE: _____

Do you know what these words mean? Write their definitions in the space provided.

1. treacherous
2. nor'easter
3. schooner
4. skitter

Answer the following questions using complete sentences.

5. Why did Christina and Grant get stuck in the cave?
6. What is the northernmost lake of the Great Lakes chain?

Write T for True and F for False.

7. ____ The Great Lakes area has very few lighthouses.
8. ____ Devil's Island is on Lake Superior.
9. ____ Storms can come up very quickly and suddenly on the Great Lakes.
10. ____ Grant argued that he was not nosy.

Chapter 17-19 Worksheet

NAME: _____

DATE: _____

Do you know what these words mean? Write their definitions in the space provided.

1. musty
2. ascending
3. quarters
4. genuinely
5. elated
6. furious

Answer the following questions using complete sentences.

7. How did Mimi know Ms. Susan and Mr. Ichabod?
8. Who was sending Christina the text messages?

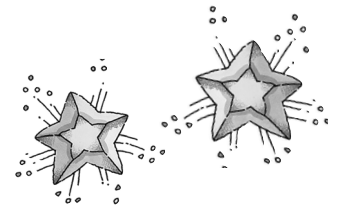
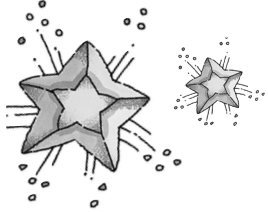
Write T for True and F for False.

9. ____ An octagonal building has six sides.
10. ____ Christina wasn't afraid when climbing the stairs to the top of the lighthouse in the middle of the storm.

The Mystery on the Great Lakes

Vocabulary

End-of-Unit Quiz



NAME: _____

DATE: _____

Using the word bank, fill in the correct vocabulary word in the sentences below.

WORD BANK

NUISANCE

GALE

MARITIME

ASCENDED

ELATED

MANEUVERED

FOLIAGE

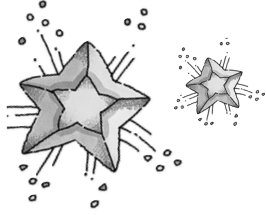
COLLAPSING

INTRIGUED

NOR'EASTER

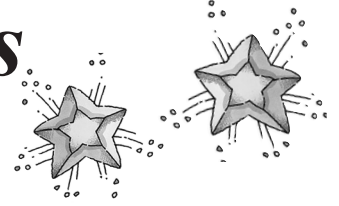
1. A _____ is a strong wind.
2. Papa followed _____ law when boating.
3. A _____ is a storm that comes in from the north.
4. Christina was _____ about her surprise birthday party.
5. Grant and Christina _____ the steps of the lighthouse.
6. Papa _____ the Mimi boat onto the lake.
7. Christina and Grant saw beautiful autumn _____.
8. Christina was _____ by the shipwreck.
9. Grant and Christina were _____ on the dunes.
10. Mimi explained how zebra mussels are a _____.

The Mystery on the Great Lakes



Matching Characters

End-of-Unit Quiz



NAME: _____

DATE: _____

Match the mystery characters with their descriptions.

_____ 1. Christina

_____ 2. Grant

_____ 3. Clerk at visitor center

_____ 4. Mimi

_____ 5. Papa

_____ 6. Mr. Ichabod

_____ 7. Ms. Susan

_____ 8. Hotel clerk

_____ 9. *Edmund Fitzgerald*

_____ 10. Chippewa

A. pulled the Mimi boat back to shore

B. sent Mimi messages about a ghost

C. an Indian tribe

D. received a scratch from the caves

E. told the story of a frozen ship

F. sent text messages to Christina

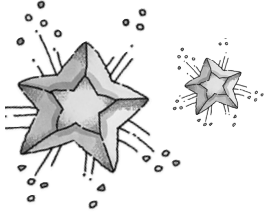
G. played air guitar

H. name of a shipwreck

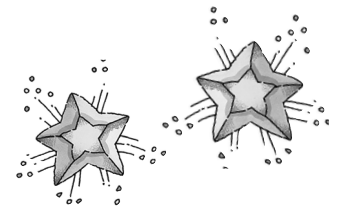
I. was worried about her old friend

J. told the story of Bessie

The Mystery on the Great Lakes



Fill-in-the-Blank End-of-Unit Quiz



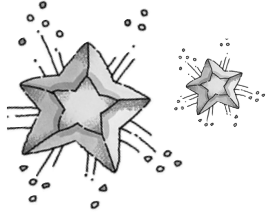
NAME: _____

DATE: _____

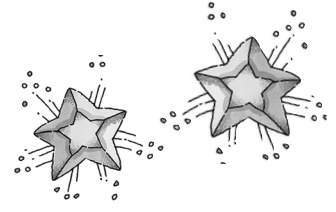
Fill in the blanks to complete the following:

1. An octagonal building has how many sides?
___ I ___ H ___
2. Niagara Falls is located on which lake?
___ ___ T ___ ___ O ___
3. The Rock and Roll Hall of Fame is located on which lake?
___ ___ I ___
4. How were the Great Sleeping Bear dunes created?
___ L ___ ___ I ___ ___
5. In what lake did the Edmund Fitzgerald sink?
___ ___ P E ___ ___
6. In which lake can you find the Apostle Islands?
___ U ___ ___ O ___
7. What is the name of the last island Christina, Grant, Mimi, and Papa visit?
___ ___ N ___ ___ S ___ ___
8. What is the name of the boat that Papa commands?
___ ___ M ___
9. What is the name of the shellfish that creates a nuisance by attaching itself to other shellfish in the Great Lakes?
___ ___ B ___ ___ S ___ ___
10. What is the name of the storm that comes in from the north?
___ O ___ ' ___ A ___ ___

The Mystery on the Great Lakes



True or False End-of-Unit Quiz



NAME: _____

DATE: _____

Write T for True and F for False.

1. ____ The Great Lakes contain 20 percent of the world's fresh water.
2. ____ Lake Huron is the northernmost Great Lake.
3. ____ Grant is Christina's older brother.
4. ____ Christina has brown eyes.
5. ____ Dangerous storms come up quickly on the Great Lakes.
6. ____ Pollution is a problem on the Great Lakes.
7. ____ A schooner is a large ship that has two sails.
8. ____ Niagara Falls is on Lake Superior.
9. ____ Lake Michigan is the only Great Lake located entirely in the United States.
10. ____ The Rock and Roll Hall of Fame is in Canada.

Answer Key

Page 15, Mathematics: Calculate It!

1. 6,000,000,000,000,000; 2. 11.4 hours;
3. \$87.50 a week, \$4,550 a year; 4. 582 feet;
5. 57,552,000 feet

Page 17, Vocabulary: Use It!

1. Ontario; 2. dune; 3. maritime;
4. nor'easter; 5. foliage; 6. collapse;
7. intriguing; 8. maneuver; 9. nuisance;
10. Huron

Page 22, Chapter Worksheet—Chapters 1-4

2. 20%; 3. glass; 4-8. Huron, Ontario, Michigan, Erie, Superior; 9. T; 10. F

Page 23, Chapter Worksheet—Chapters 5-8

5. created by glaciers; 6. Papa; 7. little boat, big lake; 8. forgetting things; 9. F; 10. F

Page 24, Chapter Worksheet—Chapters 9-11

4. Michigan; 5. They are a nuisance because they attach themselves to everything including other shellfish; 6. a turtle;
7. Because the ice is free-floating like icebergs; 8. T; 9. F; 10. T

Page 25, Chapter Worksheet—Chapters 12-13

4. bicycle pedals; 5. no one (other than themselves); 6. They had difficulty with the kayak (couldn't make it in); 7. It is colder underground and in the caves; 8. F; 9. F; 10. F

Page 26, Chapter Worksheet—Chapters 14-16

5. water rose, tide came in; 6. Superior;
7. F; 8. T; 9. T; 10. T

Page 27, Chapter Worksheet—Chapters 17-19

7. Susan was a teacher with Mimi, and Ichabod is her husband; 8. Ms. Susan; 9. F; 10. F

Page 28, Vocabulary End-of-Unit Quiz

1. gale; 2. maritime; 3. nor'easter;
4. elated; 5. ascending; 6. maneuvered;
7. foliage; 8. intrigued; 9. collapsing;
10. nuisance

Page 29, Character Matching End-of-Unit Quiz

1. D; 2. G; 3. E; 4. I; 5. A; 6. B; 7. F; 8. J; 9. H; 10. C

Page 30, "Clue-Driven" Fill-in-the-Blank End-of-Unit Quiz

1. eight; 2. Ontario; 3. Erie; 4. glaciers;
5. Superior; 6. Superior; 7. Sand Island;
8. Mimi; 9. zebra mussel; 10. nor'easter

Page 31, True or False End-of-Unit Quiz

1. T; 2. F; 3. F; 4. F; 5. T; 6. T; 7. T; 8. F; 9. T; 10. F