

# Third Grade Social Studies



Unit 1: The Geography of Michigan

Student Name:

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## Big Picture Graphic

Overarching Question:  <b>How does the geography of Michigan affect the way people live?</b>		
Previous Unit:  <b>Second Grade Local Community</b>	This Unit:  <b>The Geography of Michigan</b>	Next Unit:  <b>The Economy of Michigan</b>
<pre>                 graph TD                 A[How do geographers look at Michigan?] --- B[Movement]                 A --- C[Regions]                 A --- D[Location]                 A --- E[Place]                 A --- F[Human/Environment Interaction]                 </pre>		
Questions to Focus Assessment and Instruction: <ol style="list-style-type: none"> <li>1. How can the five themes of geography be used to describe Michigan?</li> <li>2. How have people used, adapted to, and modified the environment of Michigan?</li> </ol>		<u>Types of Thinking</u>  Compare/Contrast Description

# Questions for Students

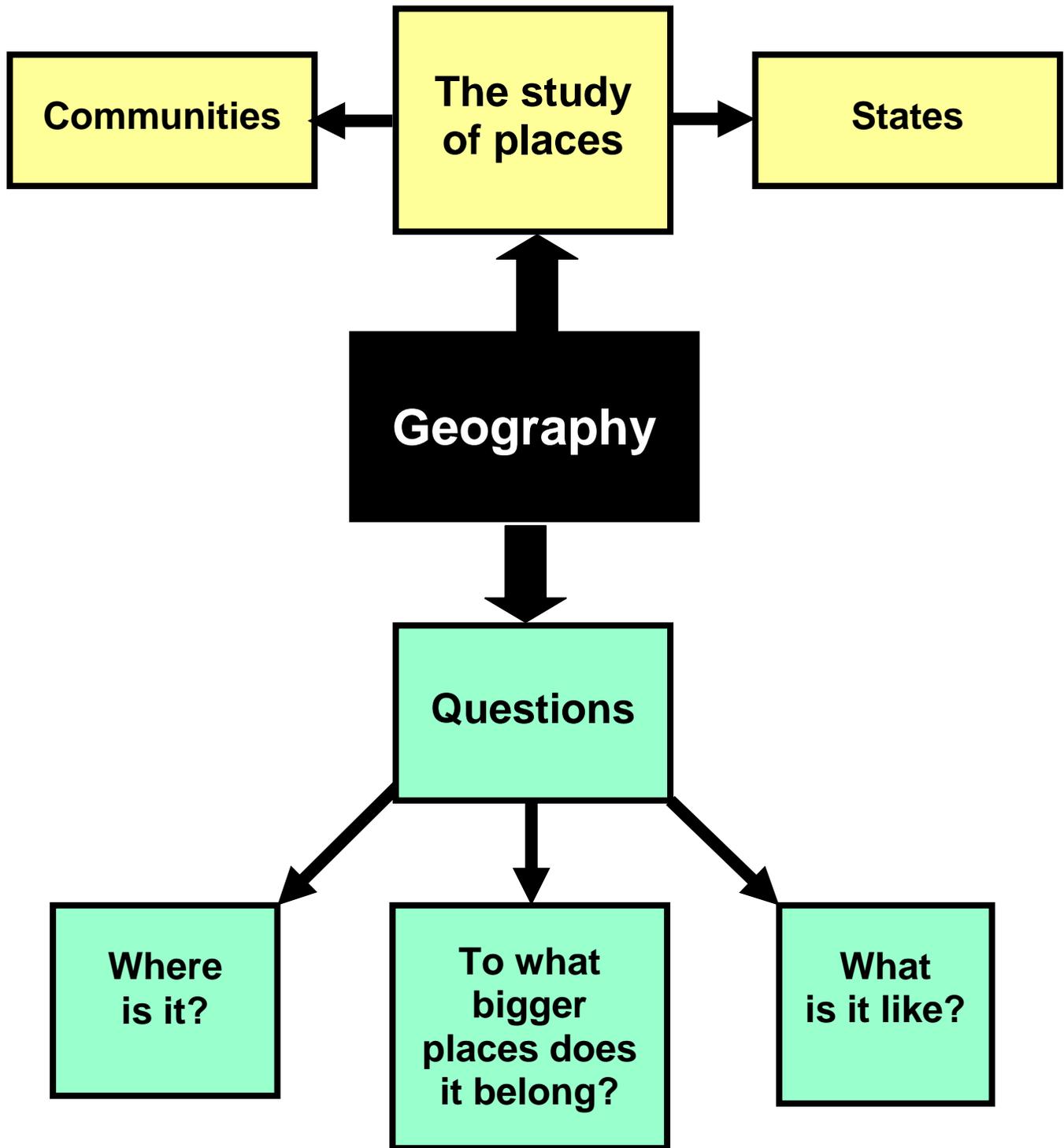
In this unit, we are going to be learning about the geography of Michigan. Think about the focus questions:

1. How can the five themes of geography be used to describe Michigan?
2. How have people used, adapted to, and modified the environment of Michigan?

Use the chart below to write or draw about these questions.

Things I Know	Questions I Have

### Lesson 1 Graphic Organizer



### Big Ideas of Lesson 1, Unit 1

- Geography is the study of places.
- Geographers study small places like communities and big places like states and countries.
- To study a place geographers ask questions about the place and try to find answers.
- A state is one of the fifty parts of our country.
- To learn about a state, it can be helpful to think and work like geographers.

### Word Cards

#### 1 geography

the study of places



**Example:** In geography people study about places like communities, states and countries.

#### 2 geographer

someone who studies places



**Example:** Geographers study places such as deserts, communities and states.

### 3 natural characteristics

Things that were not made by humans.



**Examples:** Trees, soil and animals are natural features.

### 4 human characteristics

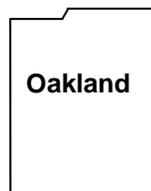
Parts of a place made by people



**Example:** Bridges, roads and buildings are human characteristics.

### 5 county

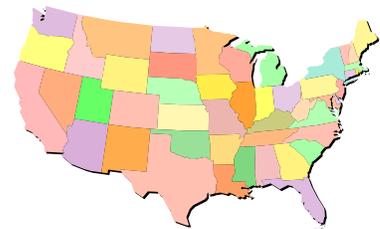
A division of a state



**Example:** Michigan is divided into 83 counties.

### 6 state

one of the 50 parts of our country



**Example:** States have their own land, borders and government.

### 7 border

The place where one area ends and another begins.



**Example:** You can see the borders of states on a United States map.

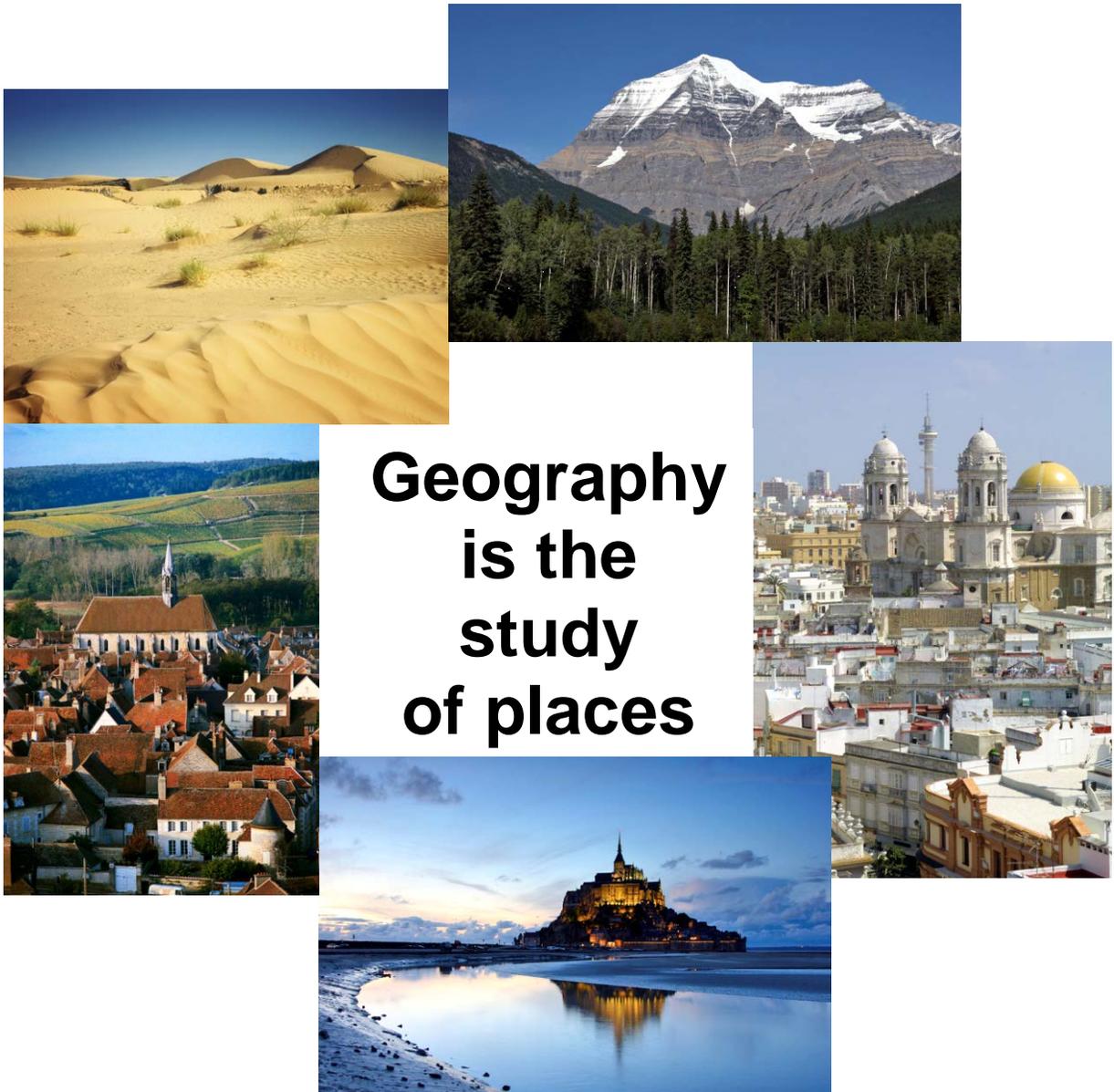
### 8 government

A group of elected citizens who make and carry out the rules for a community, state or country.



**Example:** A city government may have a mayor and a city council.

# What is Geography?



## Questions about the Geography of our Community

**Where is our community?**

**What are some important natural characteristics of our community?**



**What are some important human characteristics of our community?**



## Questions about the Geography of the Community We Read About

**Where is the community?**

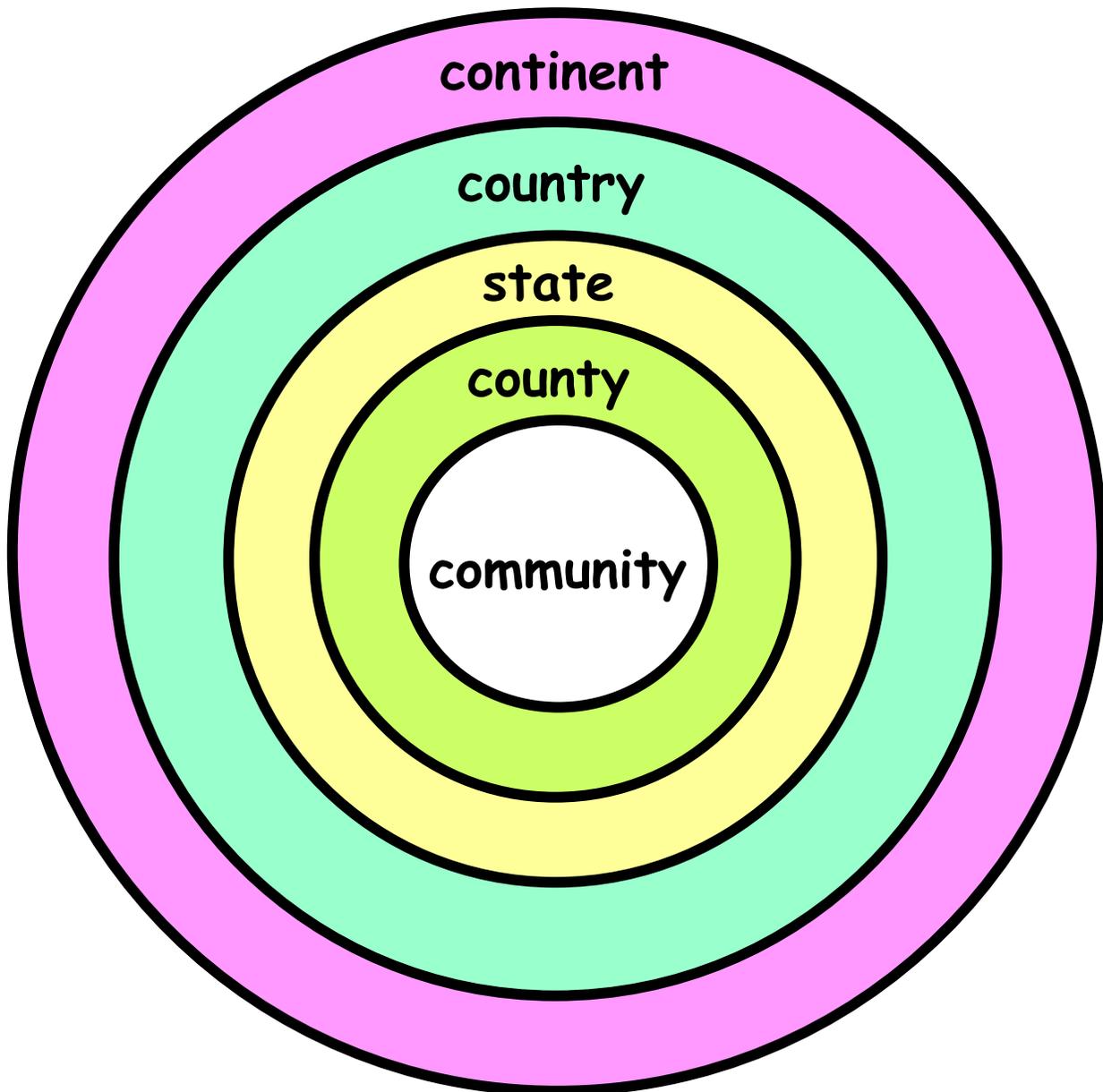
**What are some important natural characteristics of the community?**



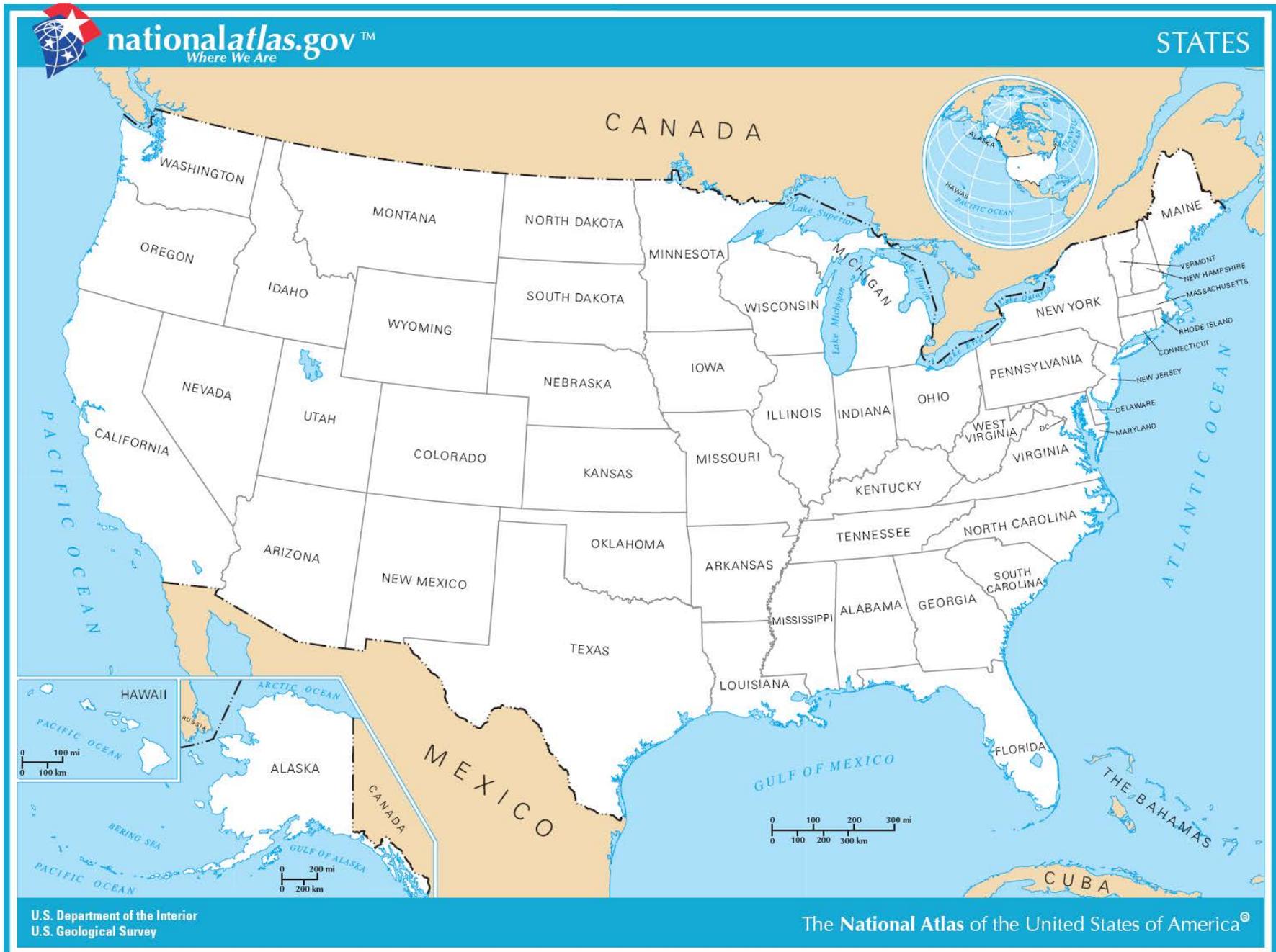
**What are some important human characteristics of the community?**



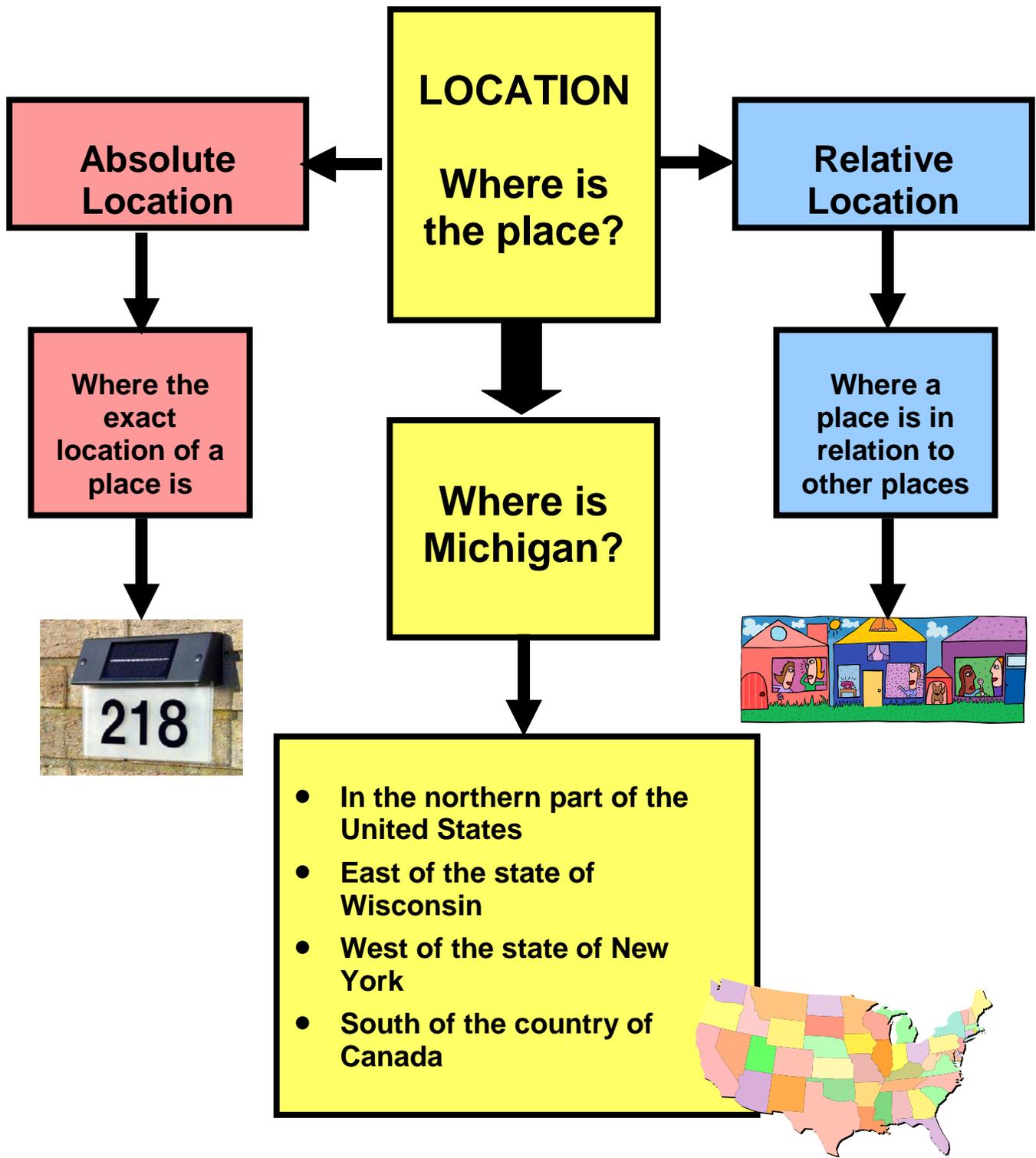
# Regions to Which My Community Belongs







## Lesson 2 Graphic Organizer



## Big Ideas of Lesson 2, Unit 1

- To study a place geographers ask the question: Where is the place located?
- The absolute location of a place is the exact location of the place. Your address is the absolute location of your house.
- The relative location of a place means where the place is in relation to other places.
- Direction words like north, south, east, and west are used to describe the relative location of places.

## Word Cards

### 9 location

where a place is found



**Example:** An address helps to describe the location of a house.

### 10 absolute location

where the exact location of a place is



**Example:** Your address shows the absolute location of your house.

**11**  
**relative location**

where a place is in relation to other places.

**Example:** The relative location of Michigan is in the northern part of the United States.

**12**  
**direction words**

words like north, south, east and west



**Example:** Direction words are used to help describe the relative location of places.

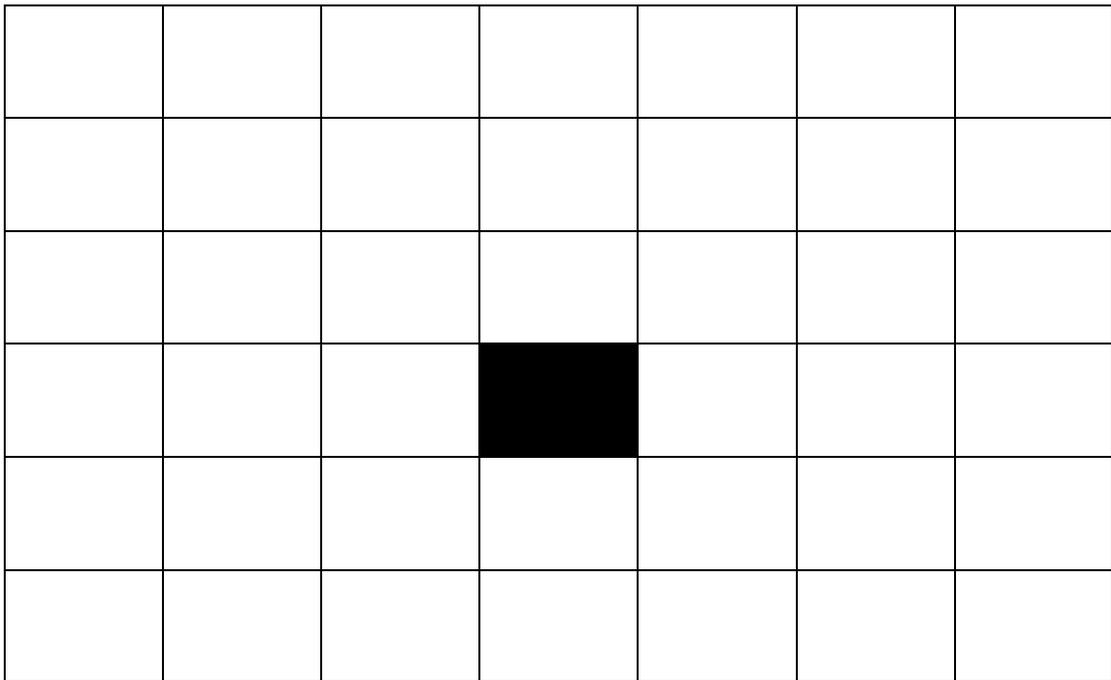
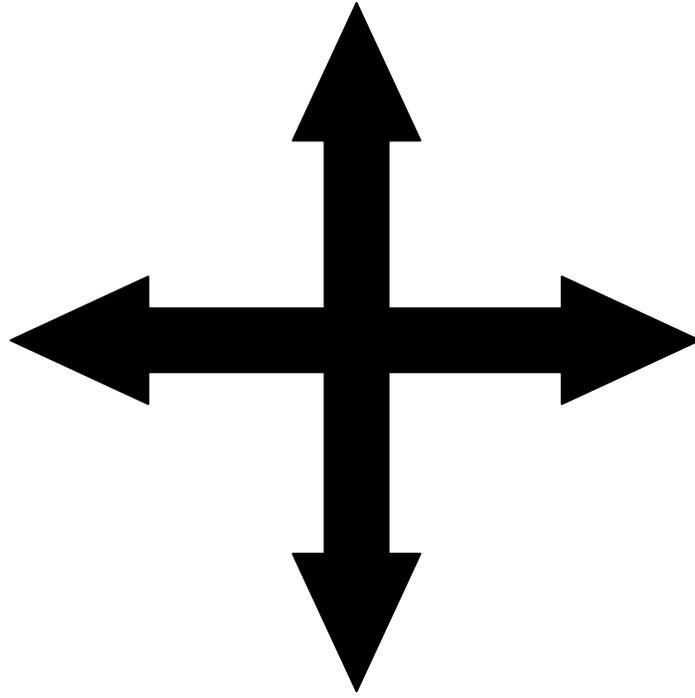
**13**  
**map**

A picture that shows the location of something.



**Example:** A map could show a city, river or country.

# Direction



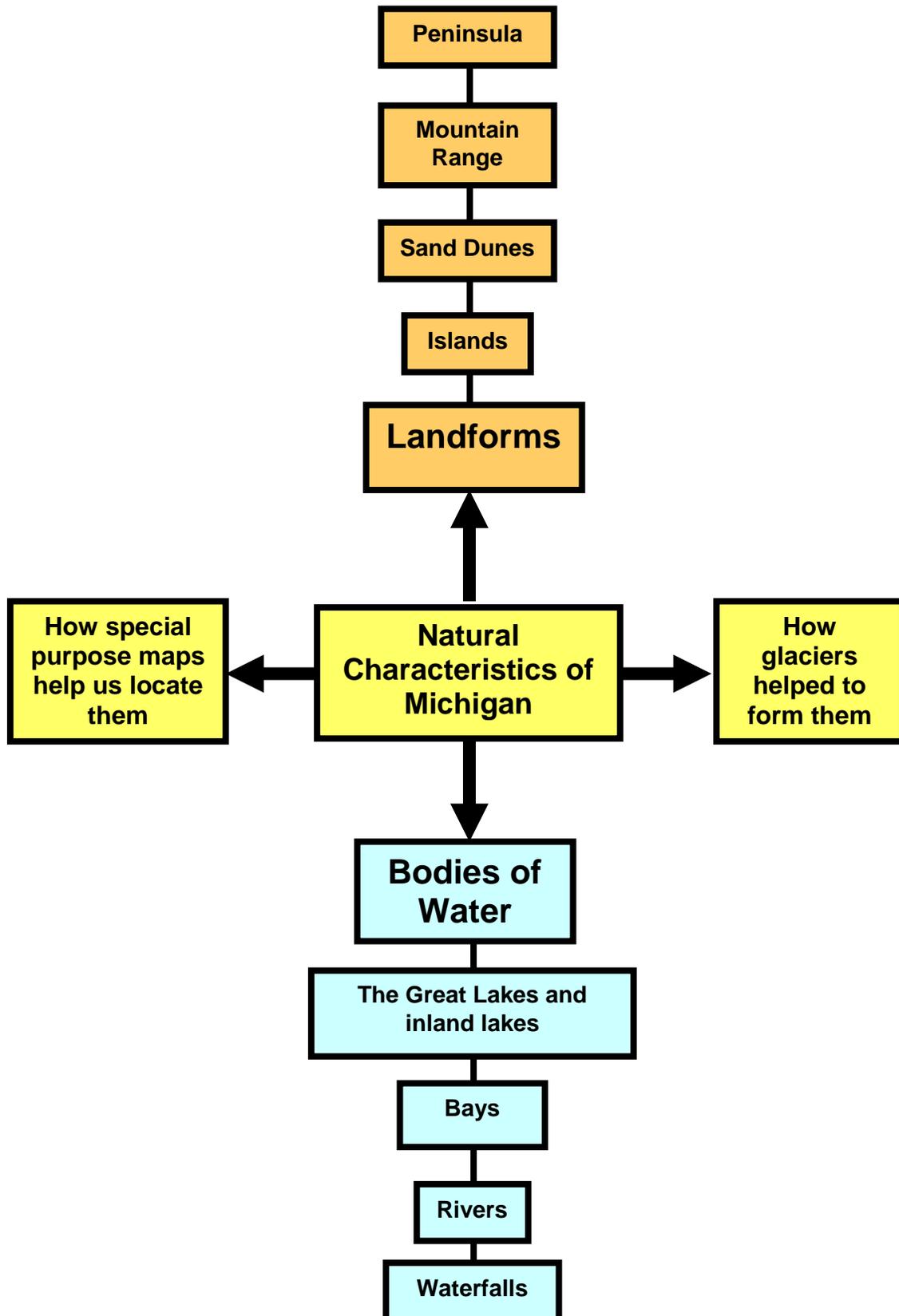


## Describing the Relative Location of Michigan

**Michigan is** \_\_\_\_\_

\_\_\_\_\_

### Lesson 3 Graphic Organizer



### Big Ideas of Lesson 3, Unit 1

- To study a place geographers ask the question: What is the place like?
- To answer that question geographers study the natural characteristics of the place.
- Natural characteristics include landforms, bodies of water, vegetation and climate.
- Special purpose maps can be used to learn about these natural characteristics.
- Important landforms of Michigan include peninsulas, islands, mountain ranges and sand dunes.
- Important bodies of water include the Great Lakes, inland lakes, rivers and waterfalls.

### Word Cards

#### Word Cards from previous lessons needed for this lesson:

- Natural Characteristics – Word Card #3 From Lesson 1
- Map – Word Card #13 from Lesson 2

#### 14 landforms

different kinds of land on the Earth



**Example:** Mountains, hills and islands are different landforms.

#### 15 peninsula

land surrounded by water on three sides



**Example:** Michigan is made up of two peninsulas.

## 16 island

a piece of land that is surrounded by water

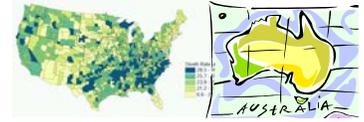
**Example:** Beaver Island and Mackinac Island are important Michigan islands.



## 17 special purpose maps

maps that show characteristics of an area such as landforms, climate, or forests

**Example:** Studying special purpose maps can help you better understand a place.



## 18 elevation

how high a place is

**Example:** A mountain has higher elevation than a hill.



## 19 mountain range

a row of connected mountains

**Example:** The Huron mountains are a mountain range in Michigan.



## 20 sand dunes

ridges or hills of loose sand piled up by the wind

**Example:** There are many sand dunes along the shore of Lake Michigan.



## 21 The Great Lakes

Five huge lakes located in the northern part of the United States.

**Example:** Four of the Great Lakes border Michigan.



## 22 bay

a body of water that is partly blocked off by land

**Example:** Michigan has many bays.



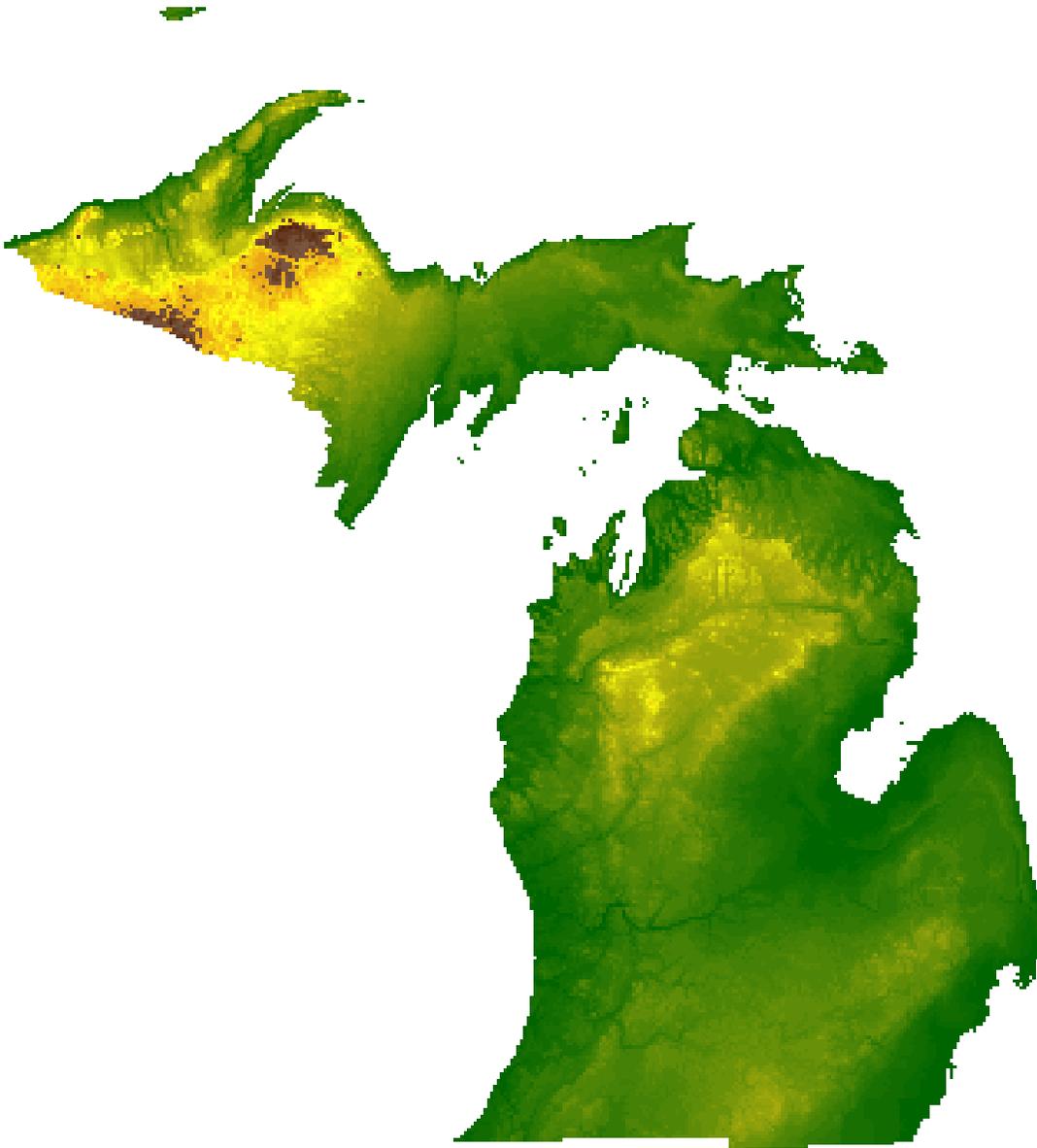
## 23 glacier

giant sheets of slowly moving ice

**Example:** Glaciers help create many of the natural characteristics of Michigan.



## Michigan Elevation Map



Source: *Michigan Elevation Map*. 30 June 2009 <<http://www.iwr.msu.edu/edmodule/data/img/mielev.gif>>.

# LANDFORMS OF MICHIGAN

## Peninsulas

Landforms are natural characteristics of the Earth. They include mountains, hills, valleys, plains, plateaus, and islands. When you look at a map of Michigan, the first landform most people think about is a peninsula. That's because Michigan is made of two peninsulas, the Upper and the Lower Peninsula.

## Mountains

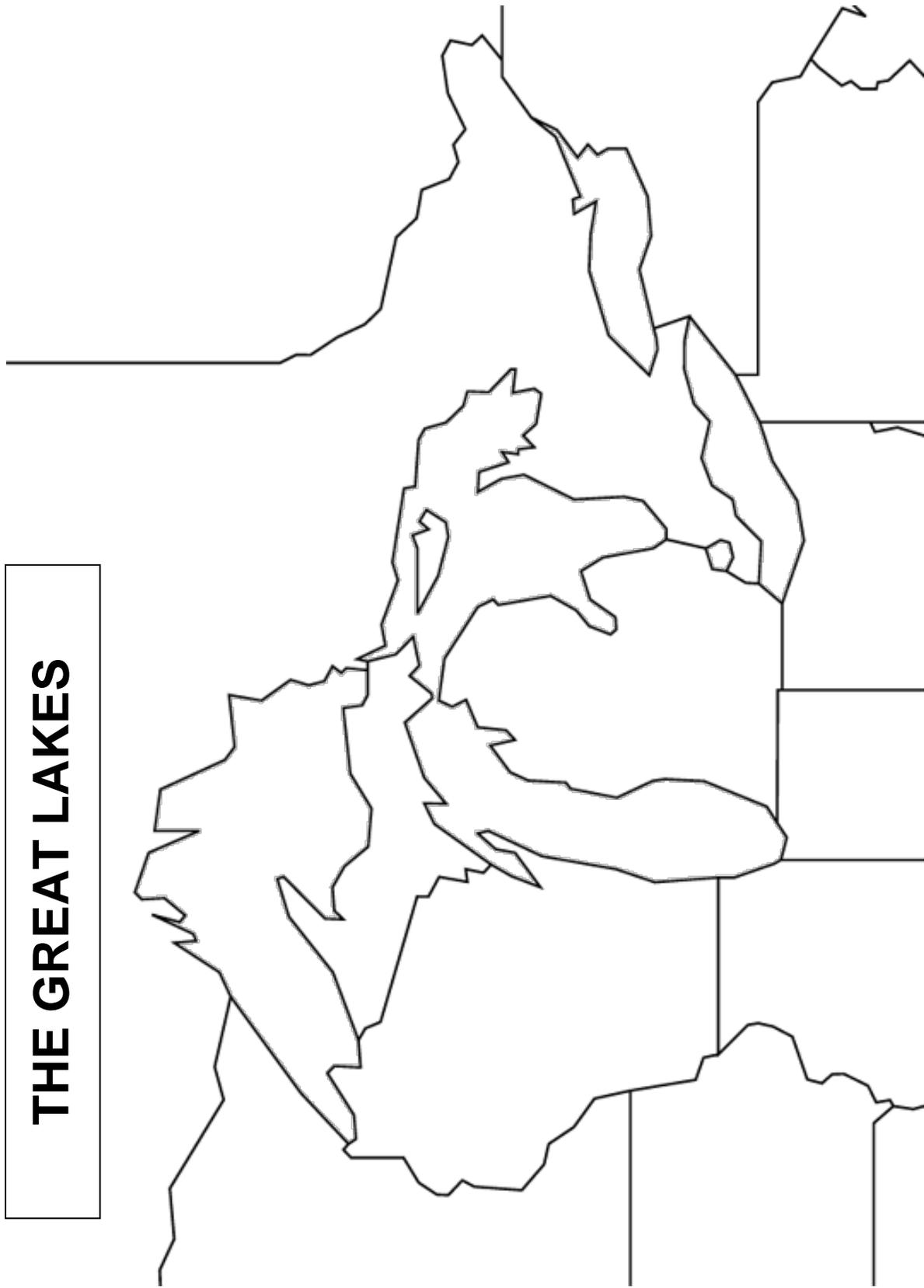
Compared to states like Vermont and Colorado, Michigan is not very mountainous. Much of it is level with some rolling hills. The Upper Peninsula does have two mountain ranges, however. **Mountain ranges** are rows of connected mountains. Michigan's two ranges are called the Huron Mountains and the Porcupine Mountains. Michigan's highest point is Mount Arvon. It is located in the Huron Mountains and is about 2000 feet high.

## Islands

Because Michigan has so much water it also has a lot of islands. An island is a piece of land that is completely surrounded by water. More than 500 islands belong to Michigan. Michigan's largest island is Isle Royale, which is located in Lake Superior. Isle Royale is Michigan's only National Park. Other important islands include Beaver Island and Mackinac Island.

## Sand Dunes

Probably Michigan's most famous landforms are sand dunes. These are hills of loose sand that have been piled up by the wind. Most of Michigan's sand dunes are found along the shores of Lake Michigan. This area has the largest amount of freshwater sand dunes in the world. Sand dunes support many plants and animals that cannot be found any place else. Michigan's most famous dunes are the Sleeping Bear dunes.



## **BODIES OF WATER OF MICHIGAN**

Two of Michigan's nicknames are "**The Great Lakes State**" and "**Water Wonderland**." Both of these names show the importance of water to the state.

### **Lakes**

Michigan borders four of the five Great Lakes. These are Huron, Erie, Michigan and Superior. Besides the Great Lakes, Michigan has over 11,000 inland lakes. The largest of these is Houghton Lake, which is found in the northern part of the Lower Peninsula. Other big lakes include Lake Gogebic, Black Lake and Burt Lake.

### **Bays**

Bays are also an important natural characteristic of Michigan. Bays are bodies of water that are partly enclosed by land. Many early towns in Michigan were located on bays. Important bays include Saginaw Bay on Lake Huron and Grand Traverse Bay on Lake Michigan.

### **Rivers**

Rivers are large, flowing bodies of water that usually empty into a large lake, sea or ocean. Michigan's rivers all empty into one of the Great Lakes. Michigan has more than 49,000 miles of rivers.

The longest river is the Grand River, which flows through cities like Lansing and Grand Rapids. This river is about 260 miles long. The Escanaba River is the longest river in the Upper Peninsula. Other important rivers include the Au Sable, Detroit Muskegon River and Menominee Rivers.

### **Waterfalls**

Michigan is known for its many beautiful waterfalls. These are formed when a river falls steeply down. Most of Michigan's waterfalls are found in the Upper Peninsula. Two famous waterfalls are the Upper and Lower Falls of the Tahquamenon River. Many tourists visit these waterfalls each year.

**Bodies of Waters Chart**

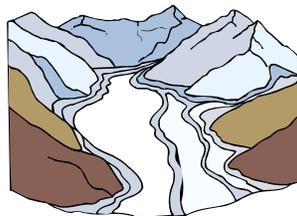
<b>Body of Water</b>	<b>Definition</b>	<b>Important Facts</b>	<b>Michigan Example</b>
<b>bay</b>	A body of water that is partly enclosed by land		
<b>lake</b>	A large body of water surrounded by land on all sides		
<b>river</b>	A large, flowing body of water that usually empties into a large lake, sea or ocean.		
<b>waterfall</b>	Where a river falls steeply down		

## GLACIERS AND MICHIGAN'S GEOGRAPHY

- Long ago in Michigan glaciers worked like bulldozers. They carried rocks, pebbles, soil, and sand along in front of them.



- Many of the soils in Michigan developed from these rocks, sand, and other materials left behind by the glaciers.
- Big boulders from the northern parts of the state were carried to southern Michigan and left there.
- Glaciers picked up the soil in northern parts of the state also. This soil was deposited in the southern part of the state leaving this area with richer farmland.
- Glaciers carved out deep holes. As the glaciers melted these holes filled with water and became Great Lakes.
- The glaciers also helped form many of the inland lakes and rivers.



## LESSON REVIEW

List three important landforms of Michigan that you learned about:

<b>1</b>	
<b>2</b>	
<b>3</b>	

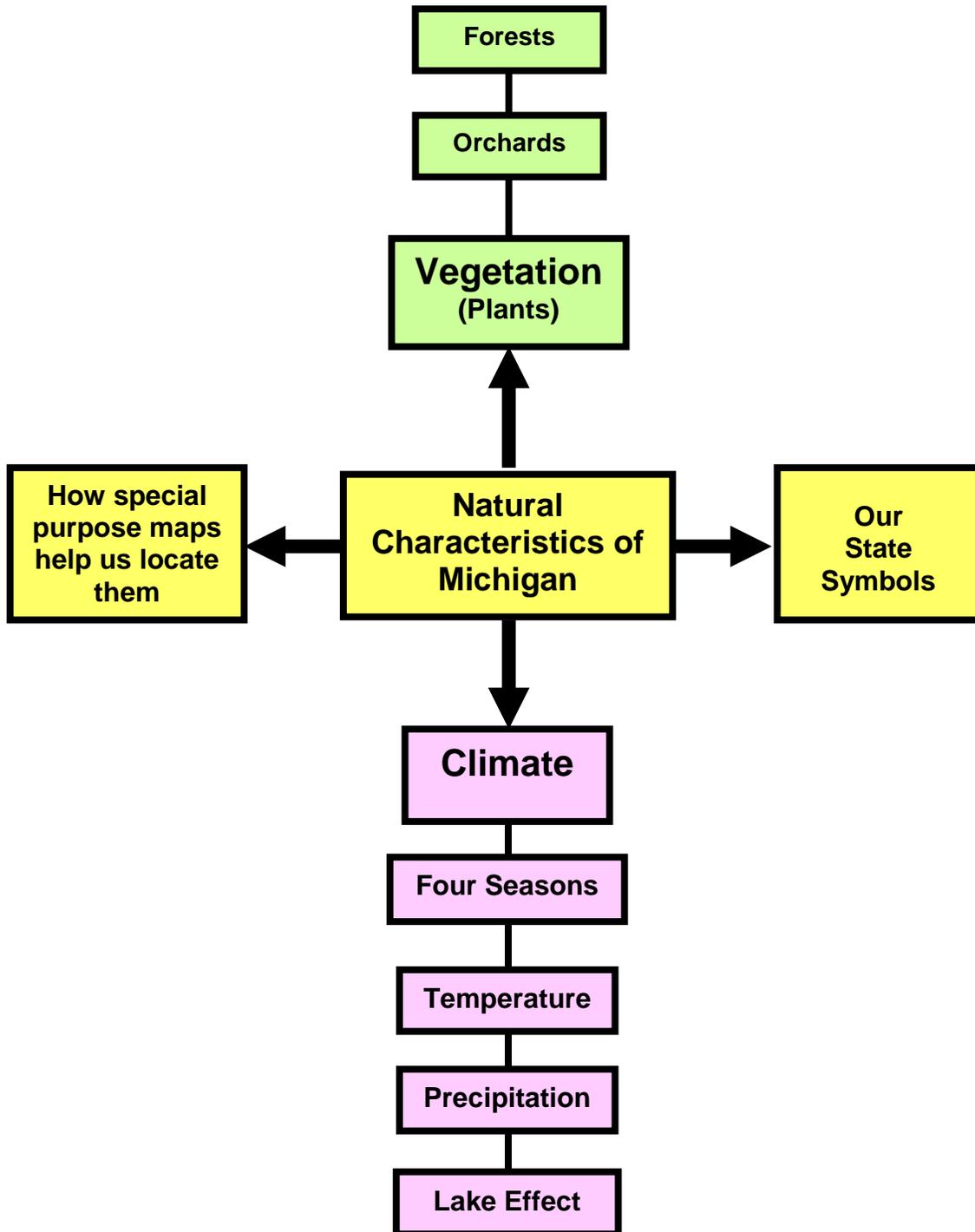
List three important bodies of water of Michigan that you learned about:

<b>1</b>	
<b>2</b>	
<b>3</b>	

Describe one other important thing you learned in this lesson.

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### Lesson 4 Graphic Organizer



### Big Ideas of Lesson 4, Unit 1

- To study a place geographers ask the question: What is the place like?
- To answer that question geographers study the natural characteristics of the place.
- Natural characteristics include landforms, bodies of water, vegetation and climate.
- Special purpose maps can be used to learn about these natural characteristics.
- Forests and orchards are important types of vegetation in Michigan.
- Michigan's climate has four seasons and is influenced by the Great Lakes.

## Word Cards

### Word Cards from previous lessons needed for this lesson:

- Natural Characteristics – Word Card #3 from Lesson 1
- Map – Word Card #13 from Lesson 2
- Special Purpose Map – Word Card #17 from Lesson 3

### 24 vegetation



the plants of an area

**Example:** The vegetation of Michigan includes apple trees, white pines and many different wildflowers.

### 25 climate



weather over a long period of time

**Example:** Michigan's climate has four different seasons.

**26**  
**temperature**

how hot or cold the air is



**Example:** Temperatures in the Upper Peninsula are often colder than in the Lower Peninsula.

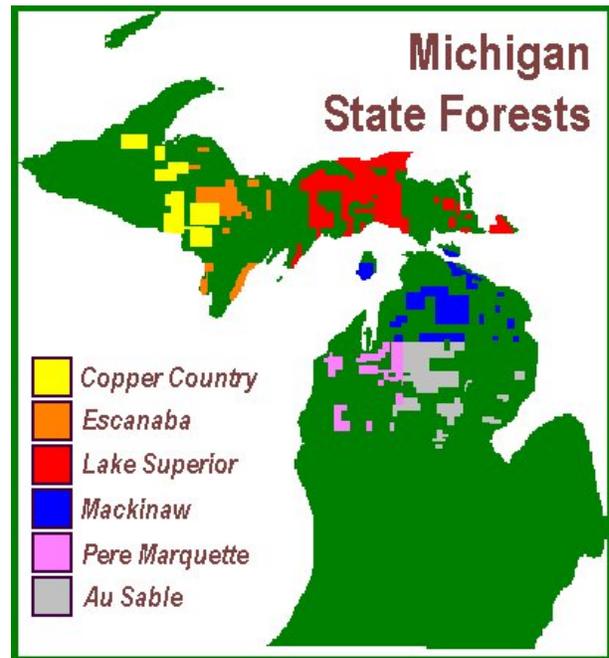
**27**  
**precipitation**

water that falls to the ground as rain, sleet, hail or snow



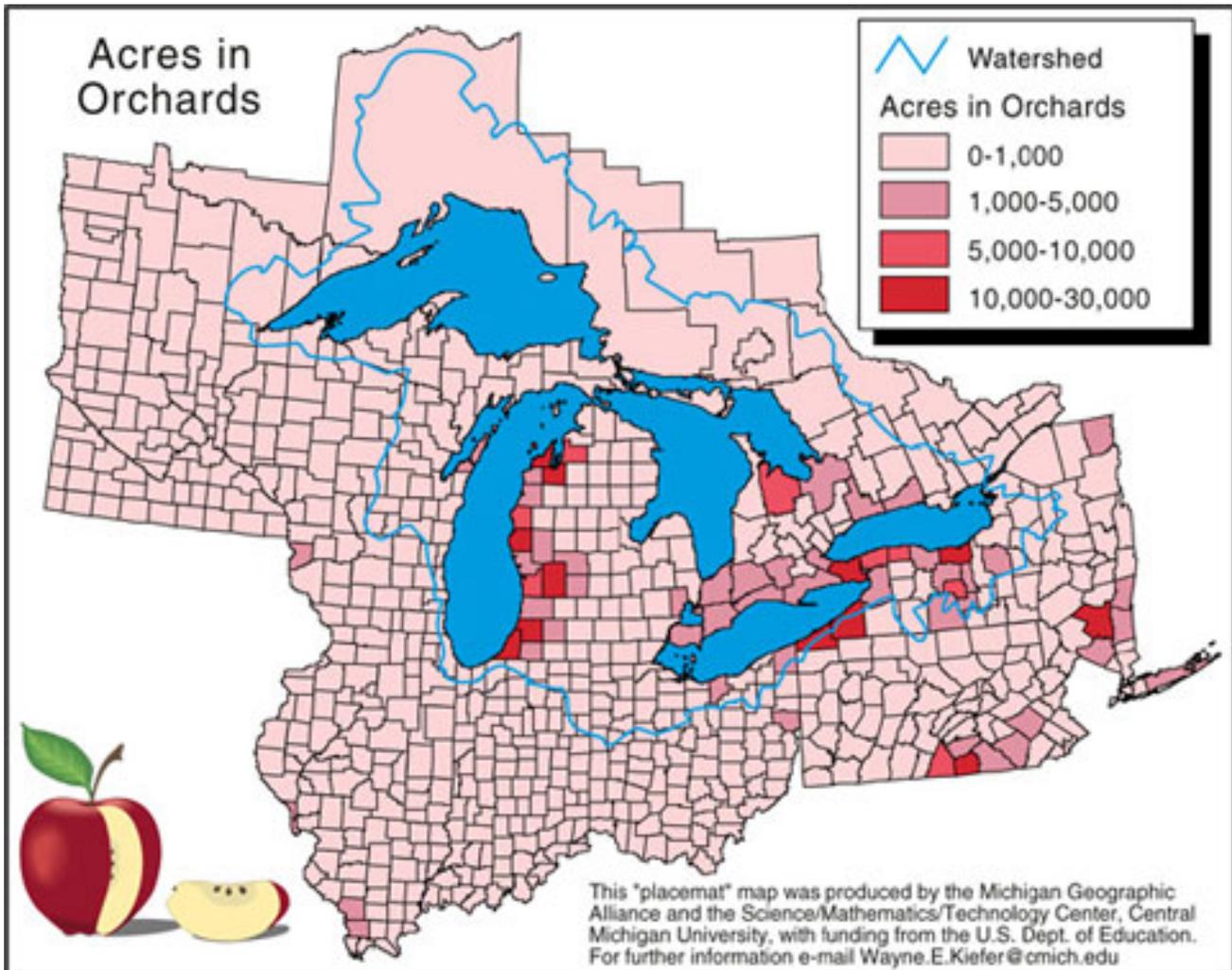
**Example:** Areas near the Great Lakes often get more precipitation than other areas.

## MICHIGAN FORESTS



Source: *Michigan Forests Maps*. 30 June 2009 <<http://mff.dsisd.net/Recreation/Ownership.htm>>.

# MICHIGAN ORCHARDS



Source: Michigan Orchards Map. 30 June 2009 <[http://www.michiganfruitbelt.org/picture\\_library/orchard-map.jpg](http://www.michiganfruitbelt.org/picture_library/orchard-map.jpg)>.

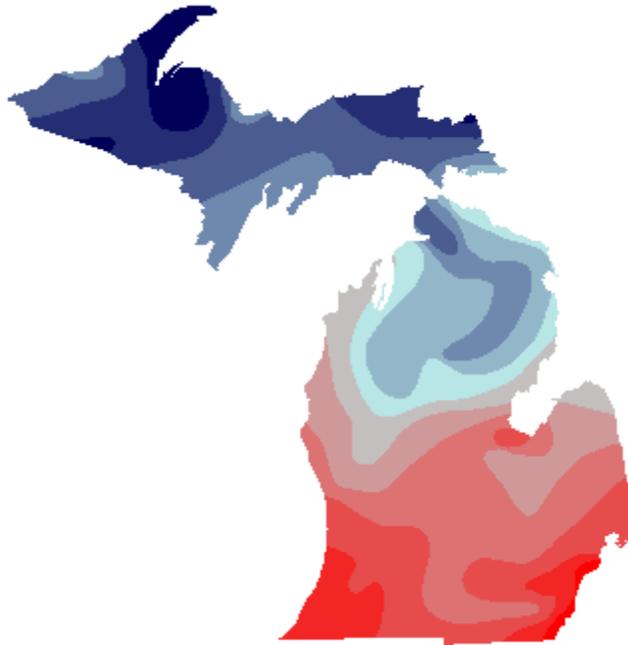
**STATE SYMBOLS CHART**

<b>Symbol</b>	<b>Year chosen</b>	<b>Information</b>
<b><u>State flower</u></b> Apple Blossom	<b>1897</b>	<ul style="list-style-type: none"> <li>• 8.5 million apple trees in Michigan</li> <li>• Michigan is the second leading apple-producing state</li> </ul>
<b><u>State bird</u></b> Robin	<b>1931</b>	<ul style="list-style-type: none"> <li>• Sponsors of the robin as state bird said the robin was “the best-known and best-loved of all the birds in Michigan.”</li> <li>• Michigan has over 9 million robins</li> </ul>
<b><u>State soil</u></b> Kalkaska	<b>1990</b>	<ul style="list-style-type: none"> <li>• Can only be found in Michigan</li> <li>• Covers nearly a million acres of land in Michigan</li> </ul>
<b><u>State stone</u></b> Petoskey Stone	<b>1965</b>	<ul style="list-style-type: none"> <li>• Fossilized coral that existed in the northern part of the Lower Peninsula about 350 million years ago</li> </ul>
<b><u>State Fish</u></b> Brook Trout	<b>1988</b>	<ul style="list-style-type: none"> <li>• Found throughout the state</li> <li>• Has a long body with a large mouth that extends past the eye.</li> <li>• Olive green, blue-gray, or black above with a silvery white underside</li> </ul>
<b><u>State Reptile</u></b> Painted Turtle	<b>1995</b>	<ul style="list-style-type: none"> <li>• Chosen after a group of fifth graders discovered that Michigan did not have a state reptile</li> </ul>
<b><u>State Fossil</u></b> Mastodon	<b>2002</b>	<ul style="list-style-type: none"> <li>• Fossils of this prehistoric mammal have been found in more than 250 locations in the state</li> </ul>
<b><u>State Tree</u></b> White Pine	<b>1955</b>	<ul style="list-style-type: none"> <li>• Chosen as a symbol of lumbering, one of Michigan’s greatest industries</li> </ul>
<b><u>State Gem</u></b> Chlorastrolite (Isle Royale Greenstone)	<b>1972</b>	<ul style="list-style-type: none"> <li>• Found mainly in the Upper Peninsula</li> <li>• Ranges in color from yellow-green to almost black</li> </ul>
<b><u>State Wildflower</u></b> Dwarf Lake Iris	<b>1998</b>	<ul style="list-style-type: none"> <li>• An endangered flower</li> <li>• Grows along the northern shorelines of Lake Michigan and Lake Huron</li> </ul>
<b><u>State Game Mammal</u></b> White-Tailed Deer	<b>1997</b>	<ul style="list-style-type: none"> <li>• A group of fourth graders led the campaign to make this the state game mammal</li> <li>• Found in every Michigan county</li> </ul>

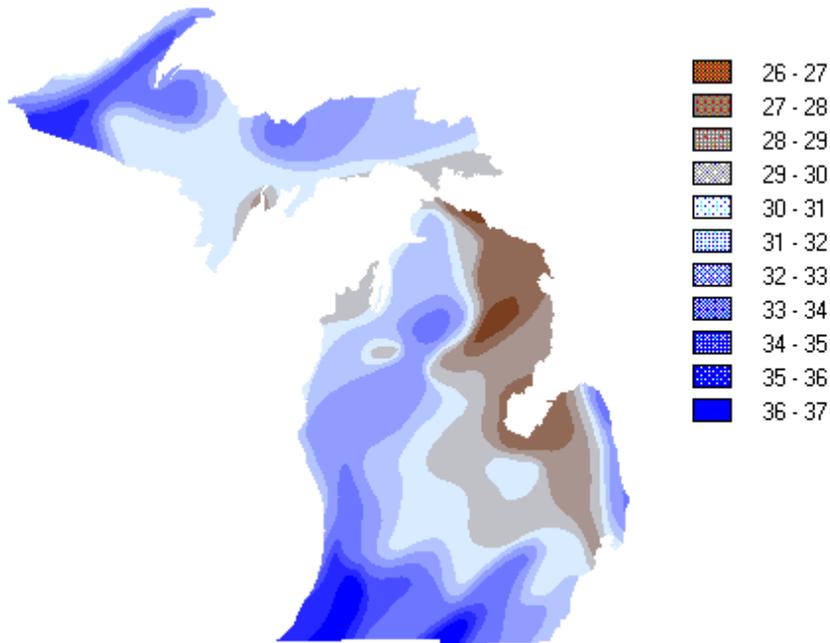
## READING A CHART

1. What symbol has been a state symbol the longest?
2. Which is the newest symbol to be chosen?
3. Which two things involved students working to make them symbols?
4. Which two symbols are both related to fossils?
5. Which three symbols are examples of the natural characteristic of vegetation, or plants?
6. Besides being a beautiful flower, what is another reason you think the apple blossom was chosen as the state flower?

## Michigan Average Temperature Map



## Michigan Average Precipitation in Inches Map



Source: *Michigan Statewide Data Index*. 30 June 2009  
<<http://www.iwr.msu.edu/edmodule/data/datainx.html>>.

## Lesson Review

Describe two things you learned about the vegetation of Michigan

<b>1</b>	
<b>2</b>	

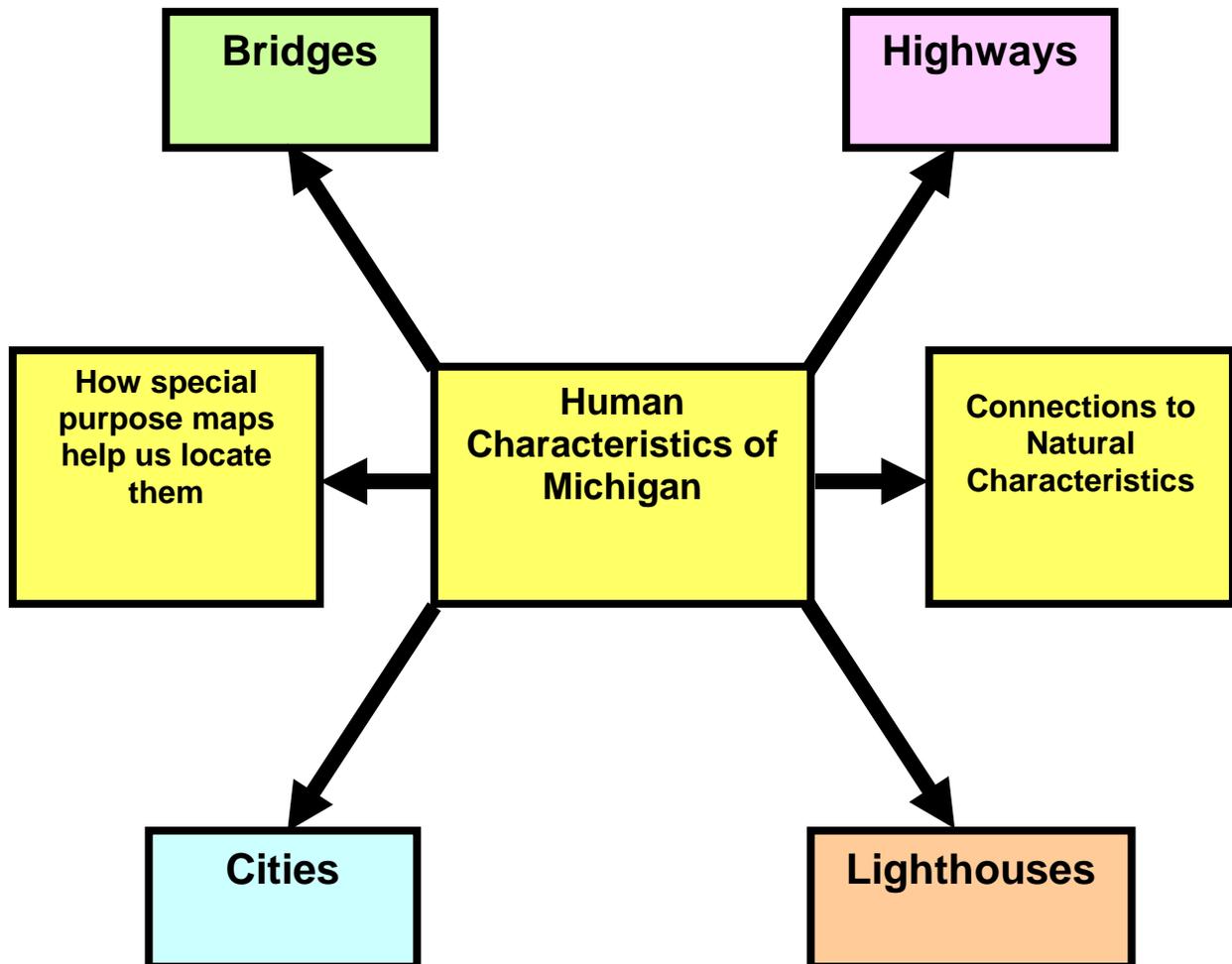
Describe two important things you learned about climate.

<b>1</b>	
<b>2</b>	

Describe one other important thing you learned in this lesson.

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## Lesson 5 Graphic Organizer



**Big Ideas of Lesson 5, Unit 1**

- To study a place geographers ask the question: What is the place like?
- To answer that question geographers study the human characteristics of the place.
- Human characteristics are often connected to natural characteristics. For example, people often build bridges across rivers and cities next to rivers.
- Human characteristics include bridges, highways, cities and buildings.
- Special purpose maps can be used to learn about these human characteristics.

**Word Cards****Word Cards from previous lessons needed for this lesson:**

- Human Characteristics – Word Card #4 from Lesson 1
- Map – Word Card #13 from Lesson 2
- Special Purpose Map – Word Card #17 from Lesson 3

**28  
lighthouse**

A tall building like a tower that has a light in the top to guide ships



**Example:** Lighthouses are found along the shores of the Great Lakes and on islands in the Great Lakes.

## Reviewing What We've Learned

<b>LANDFORMS</b>	
<b>BODIES OF WATER</b>	
<b>VEGETATION</b>	
<b>CLIMATE</b>	

## Different Points of View

**Directions:** Describe how each of these characters in the book viewed the building of the Mackinac Bridge

<b>The father</b>	
<b>The youngest son</b>	
<b>The oldest son</b>	



Major Highways Map. Michigan Economic Development Website. 30 June 2009  
<http://ref.michiganadvantage.org/cm/attach/ab7251e3-c65b-4867-8584-90278c437381/majorhighways.pdf>.

## Reading a Highway Map

1. If you were traveling from Detroit to Mackinaw City what highway would you probably take?
2. If you were traveling from Lansing to Flint what highway would you probably take?
3. What highway goes around Michigan's Thumb?
4. What highway goes from St. Ignace all the way to Ironwood?
5. What highway goes from Detroit through Ann Arbor and all the way to Benton Harbor?

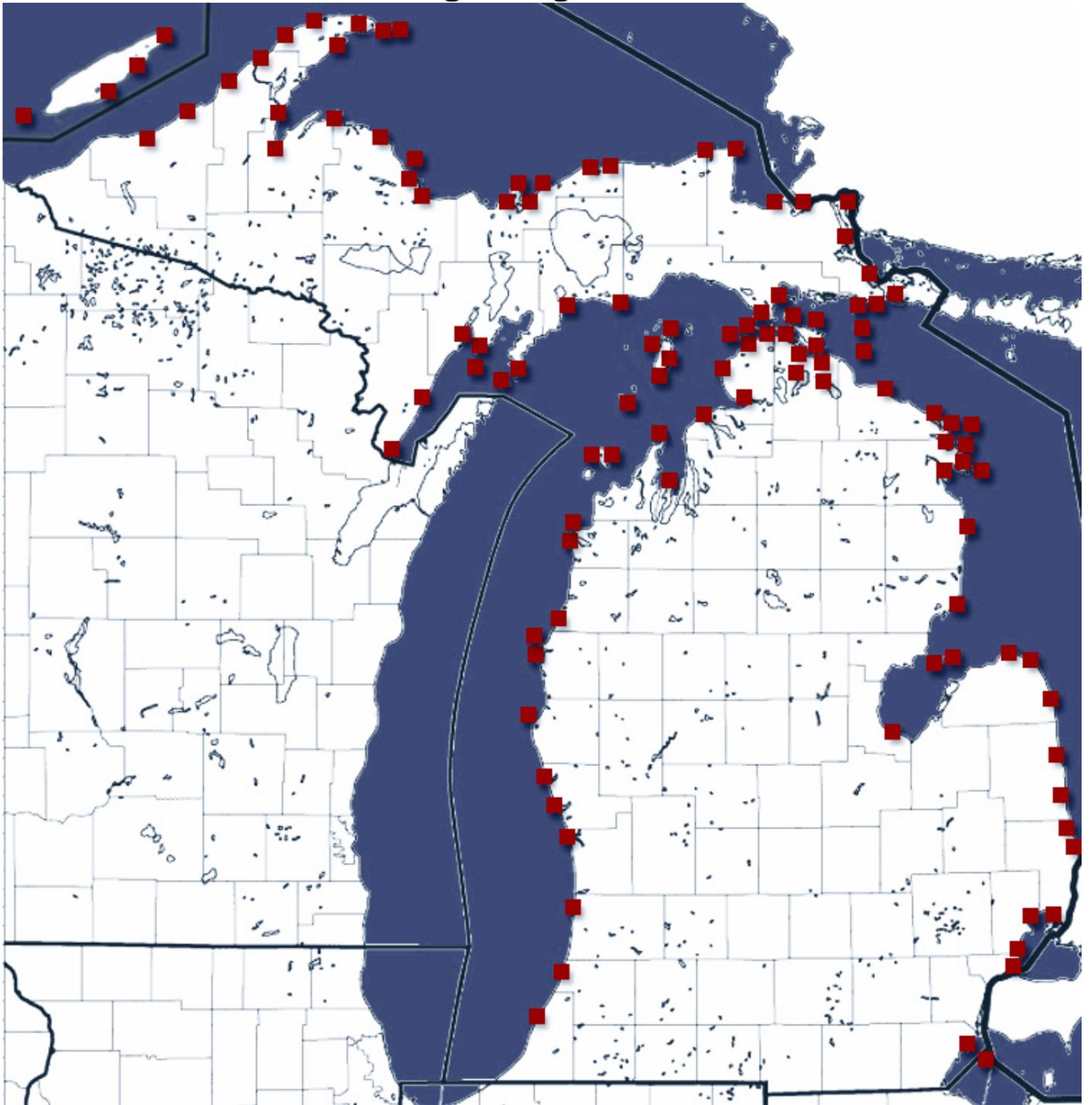
## Plan a trip!

Choose a city in the Lower Peninsula to start with and write it here:

Choose a city in the Upper Peninsula to travel to and write it here:

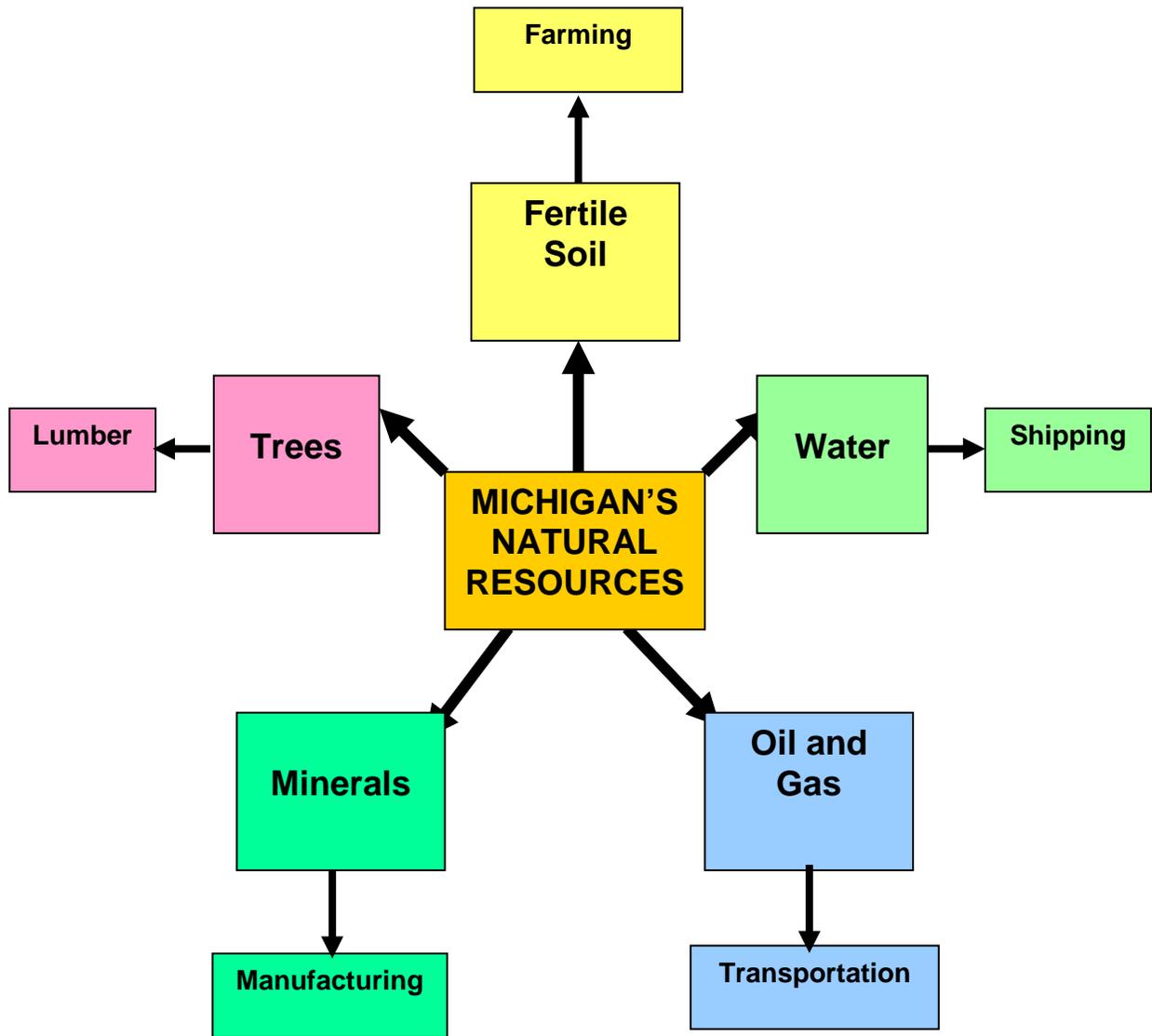
List the highways you would have to travel to get to the city in the Upper Peninsula:

## Michigan Lighthouses



Source: *Map of Michigan Lighthouses*. 30 June 2009 <[http://michiganlighthouse.org/lh\\_map.htm](http://michiganlighthouse.org/lh_map.htm)>.

## Lesson 6 Graphic Organizer



## Big Ideas of Lesson 6, Unit 1

- To study a place geographers ask the question: How have people interacted with the environment of the place?
- To answer that question geographers study how people have used the natural resources of the place.
- Natural resources are things in nature that people find useful.
- Important natural resources of Michigan include trees, fertile soil, the Great Lakes, other bodies of water and minerals.
- It is important for people to use natural resources wisely.

## Word Cards

### Word Cards from previous lessons needed for this lesson:

- Natural Characteristics – Word Card #3 from Lesson 1
- The Great Lakes – Word Card #21 from Lesson 3

### 29 natural resources

things in nature that people find useful



**Example:** Water, soil and trees are natural resources.

### 30 fertile soil

soil that is good for growing things



**Example:** Michigan has a lot of fertile soil in the Lower Peninsula.

### 31 minerals

natural resources  
found in the ground  
such as iron ore



**Example:** Minerals are removed from the ground by mining.

### 32 iron ore

a mineral that is used to  
make steel



**Example:** Iron ore is mined in the Upper Peninsula.

### 33 copper

a mineral that is used to  
make things such as  
pipes for plumbing.



**Example:** For many years Michigan was a world leader in copper mining.

### 34 limestone

a stone that is mined  
and used to make steel and cement



**Example:** Limestone is mined in Rogers City, Michigan.

### 35 renewable resources

natural resources that  
can be replaced



**Example:** Water and trees are renewable resources.

### 36 nonrenewable resources

natural resources that cannot be  
replaced



**Example:** Iron and oil are nonrenewable resources.

### Natural Resource Cards

1



2



3



4



5



6



7



8



9

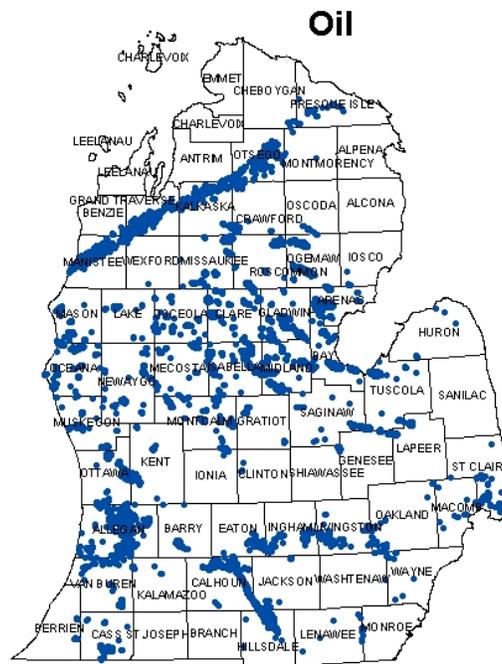
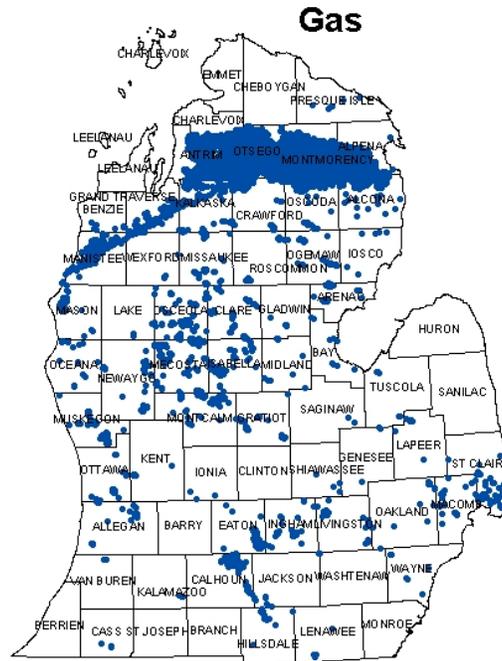


10



## Natural Resources Chart

Natural Resource	Where Found	How is it used?
	Around and throughout Michigan	<ul style="list-style-type: none"> <li>• Shipping</li> <li>• Recreation</li> <li>• Drinking</li> <li>• Fishing</li> <li>•</li> </ul>
	<ul style="list-style-type: none"> <li>• Upper Peninsula</li> <li>• Northern part of the Lower Peninsula</li> </ul>	<ul style="list-style-type: none"> <li>• Shade</li> <li>• Paper</li> <li>• Lumber</li> <li>•</li> </ul>
	<ul style="list-style-type: none"> <li>• Southern part of the Lower Peninsula</li> <li>• Along the Lake Michigan shoreline of the Lower Peninsula</li> </ul>	<ul style="list-style-type: none"> <li>• Farming</li> <li>•</li> </ul>
	<ul style="list-style-type: none"> <li>• Iron and copper in Upper Peninsula</li> <li>• Limestone, salt and sand in Lower Peninsula</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> <li>•</li> </ul>
	<ul style="list-style-type: none"> <li>• Lower Peninsula</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel for heating</li> <li>•</li> </ul>

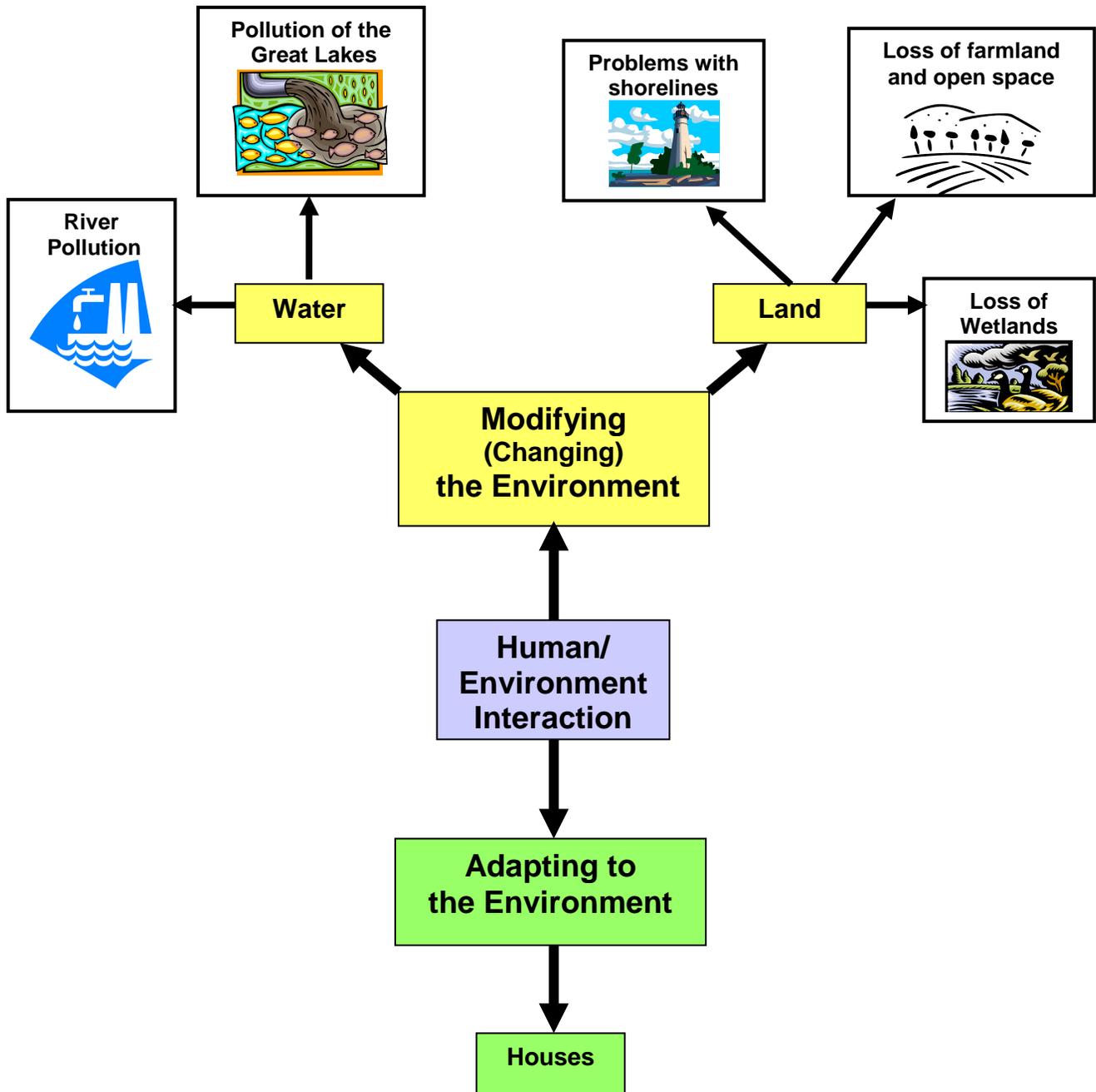


**Source:** *Maps of Oil and Gas Wells*. 30 June 2009 <[http://www.michigan.gov/deq/0,1607,7-135-3311\\_4111\\_4231-14421--,00.html](http://www.michigan.gov/deq/0,1607,7-135-3311_4111_4231-14421--,00.html)>.

**Consequences of Using Natural Resources**

<b>Natural Resource</b>	<b>Positive Consequence</b>	<b>Negative Consequence</b>
Water		
Forests		
Fertile soil		
Minerals		
Gas and Oil		

## Lesson 7 Graphic Organizer



### Big Ideas of Lesson 7, Unit 1

- To study a place geographers ask the question: How have people interacted with the environment of the place?
- To answer that question geographers study how people changed the environment of the place.
- People changed the environment of Michigan by polluting the Great Lakes and rivers.
- They also changed the environment of Michigan by filling in wetlands, cutting down forests and building cities.
- Geographers also study how people have adapted to the environment of a place.
- In Michigan, houses can be studied in order to understand how people adapt to Michigan's four seasons.

### Word Cards

Word Cards from previous lessons needed for this lesson:

- Natural Resources – Word Card #29 From Lesson 6

#### 37 human/environment interaction



ways in which people use and interact with the Earth.

**Example:** When people build new roads they are interacting with the Earth.

#### 38 modifying the environment



when people change the environment to fit them

**Example:** People in Michigan modified the environment by cutting down trees to clear land for farming.

**39**  
**adapting to the  
natural environment**



when people change to fit the environment

**Example:** People in Michigan wear warm coats, hats and mittens to fit the environment in winter.

**Using and Modifying the Environment**

<b>How People Used the Environment in the Story</b>		
<b>River</b>	<b>Land</b>	<b>Forest</b>

<b>How People Changed the Environment in the Story</b>		
<b>River</b>	<b>Land</b>	<b>Forest</b>

## Lake Erie Timeline

**The coastline of Lake Erie became more and more developed. Farms, factories, and cities increased.**



**Pollution began to fill Lake Erie. Phosphorous from fertilizer and soap was the main problem.**



**These pollutants caused plant growth and algae to increase. Lots of plants began growing, dying, and decomposing in the lake.**



**This caused a severe lack of oxygen at the bottom of the lake. It also caused the surface to become smelly.**



**Fish began to die. Tourists were kept away by the smelly surface and dying fish.**



**Growing public concern led to the Great Lakes Water Quality Agreement. This did much to reduce phosphorous levels and Lake Erie made a comeback.**

## Comparing Two Houses



California Home. 30 June 2009 <[http://imgs.sfgate.com/c/pictures/2008/08/07/ba-comingup10\\_de\\_0498882016.jpg](http://imgs.sfgate.com/c/pictures/2008/08/07/ba-comingup10_de_0498882016.jpg)>.



Michigan Home. 30 June 2009

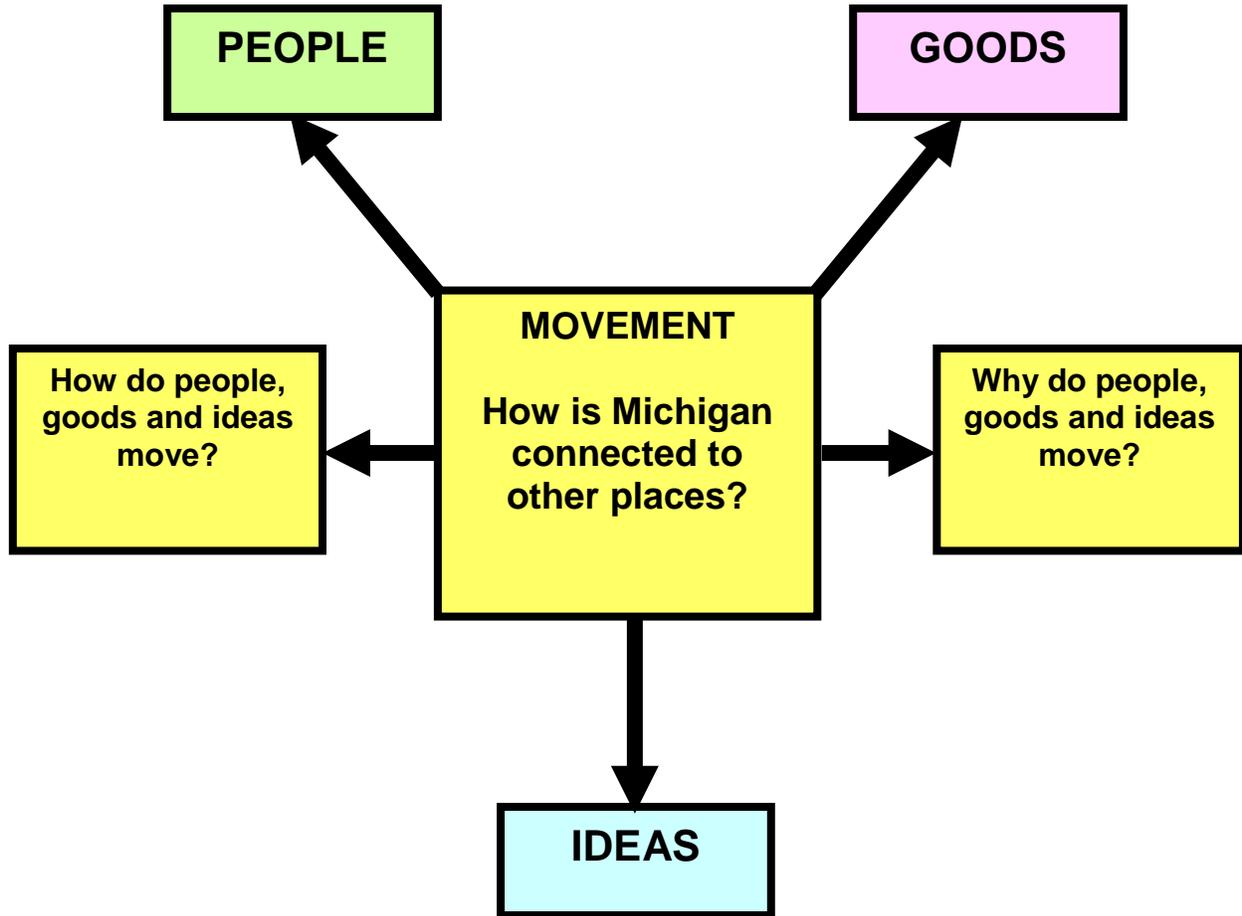
<<http://www.salinemichiganrealestate.com/m/blogs/vanceshutes/Beaver%20Crossing%20925.JPG>>

## Lesson Review

<b>Ways people have changed the environment of Michigan</b>	

<b>Ways people have adapted to the environment of Michigan</b>	

## Lesson 8 Graphic Organizer



### Big Ideas of Lesson 8, Unit 1

- To study a place geographers ask the question: How is the place connected to other places?
- To answer that question geographers study how people, goods and ideas move?
- Geographers also study why people, goods, ideas and jobs move.
- The Great Lakes are very important in moving goods within, to and out of Michigan.
- Sometimes things move into an area that people don't want like zebra mussels.

## Word Cards

### 40 movement

the theme of geography that explains how and why people, goods and ideas move



**Example:** The theme of movement helps us understand how places are connected to other places.

### 41 transportation

ways of moving things and people from one place to another



**Example:** Boats, trains and cars are methods of transportation.

### 42 hub

a city where many roads and railroads meet



**Example:** Detroit is a transportation hub in Michigan.

### 43 port

a city on a body of water where ships load and unload



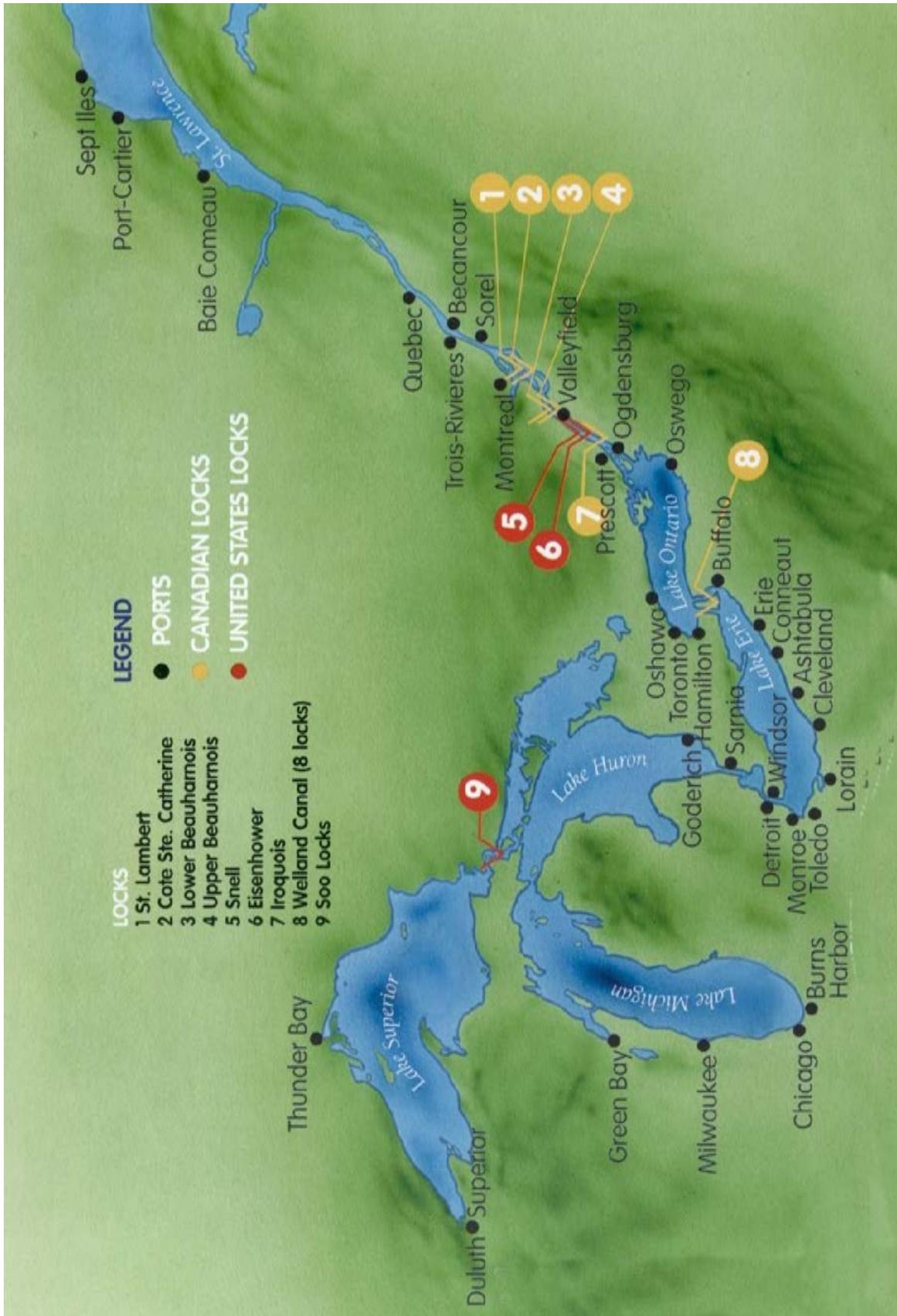
**Example:** Detroit is an important Michigan port.





Michigan Maps. Michigan Advantage.org. 30 June 2009





St. Lawrence Seaway Map. 30 June 2009  
[http://www.lre.usace.army.mil/storage/Pages/1721/seaway\(SLSMC\).jpg](http://www.lre.usace.army.mil/storage/Pages/1721/seaway(SLSMC).jpg)



### Zebra Mussels Information Cards

#### **What are they?**

- Zebra mussels are small, freshwater animals like clams about three centimeters long.
- They were originally from Caspian Sea region of Asia. Now they have spread throughout the Great Lakes region.

#### **Where do they get their name?**

They get their name from small white and black markings on their shells.

#### **Where do they live?**

Zebra mussels live in large rivers and lakes.

## **What carries zebra mussels from one place to another?**

- Plants and animals
- Fishing gear, bait buckets, boats, and boat trailers
- Water
- Snorkeling and scuba gear

## **How did they get into the Great Lakes?**

- They were carried in ballast water of ships.
- Ships carry ballast water to keep them stable as they cross the ocean.

## **How do they affect or change the ecosystem?**

- They are killing off some of our Great Lakes water creatures.
- When water birds or fish eat zebra mussels they often get contaminated.

## **How do they affect the food web?**

- They decrease the food supply for fish.
- They filter feed on algae which is very important in the Great Lakes food chain.
- They eat so much that it cuts down on the food supply for baby fish that also eat algae.

## **How do they affect humans?**

- They clog water intake pipes like those at water intake plants and power plants.
- They mess up docks, buoys, breakwalls, and boats.
- They can completely cover historical sunken ships and artifacts.
- The shells are sharp and can easily cut human skin.

## **How can people prevent or control the spread of zebra mussels?**

- Rinse boat hulls with hot water.
- Wash bait pails with hot water.
- Check boat trailers for water and drain it on land.
- Inspect screens and water intakes for mussels.

## Zebra Mussels



This shopping cart was left in zebra mussel-infested waters for a few months. The mussels have colonized every available surface on the cart.

(J. Lubner, Wisconsin Sea Grant, Milwaukee, Wisconsin.)

Source: <http://www.epa.gov/glnpo/atlas/glat-ch4.html>



Zebra Mussels. 30 June 2009 <<http://www.fishingireland.net/environment/zebramussels.htm>>.



Zebra Mussels on a Barge. 21 June 2009  
<[http://www.fws.gov/midwest/mussel/images/zebra\\_mussels\\_on\\_barge.html](http://www.fws.gov/midwest/mussel/images/zebra_mussels_on_barge.html)>.



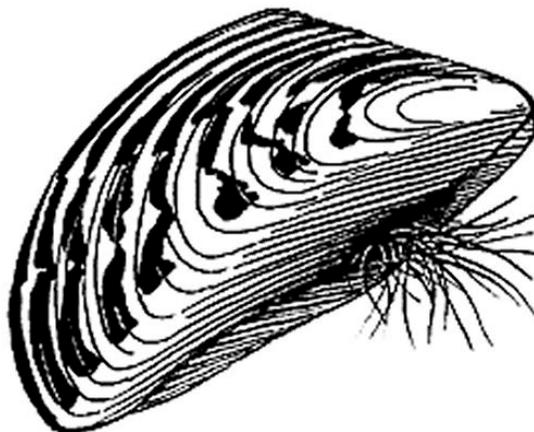
Zebra Mussels on Pipe. 30 June 2009 <<http://www.wpatenaude.com/ZMUSSEL.JPG>>.



Zebra Mussels in a Pipe. 30 June 2009 <[http://www.zeestop.com/images/mussels\\_in\\_pipe.jpg](http://www.zeestop.com/images/mussels_in_pipe.jpg)>.



Zebra Mussels. 30 June 2009 <<http://www.gpnc.org/images/jpegs/animals/zebra.jpg>>.



Drawing of Zebra Mussel. 30 June 2009 <[http://vilaslandandwater.org/ais\\_images\\_species/zebra\\_mussel1.gif](http://vilaslandandwater.org/ais_images_species/zebra_mussel1.gif)>.



Zebra Mussels. 30 June 2009 <<http://www.des.ucdavis.edu/faculty/Springborn/Large-Zebra-Mussel--US%20FWS.jpg>>.



Zebra Mussels and Catfish. 30 June 2009 <<http://www.thousandislandslife.com/ThePlace/OurNaturalSetting.aspx>>.



Zebra Mussels Attached to a Crayfish. 30 June 2009

<<http://www.dnr.state.wi.us/org/caer/ce/eeek/critter/invert/images/zmussel2.jpg>>.



Zebra Mussels inside a Boat Pump. 30 June 2009 <<http://www.zebramussel.com/>>.

## Zebra Mussel Photos from the National Atlas

Source: <[http://nationalatlas.gov/articles/biology/a\\_zm.html](http://nationalatlas.gov/articles/biology/a_zm.html)>



Worker removing zebra mussels from water intake pipes.



Zebra mussels on Luna Pier beach, Monroe County, Michigan.



Clump of zebra mussels on native clam.

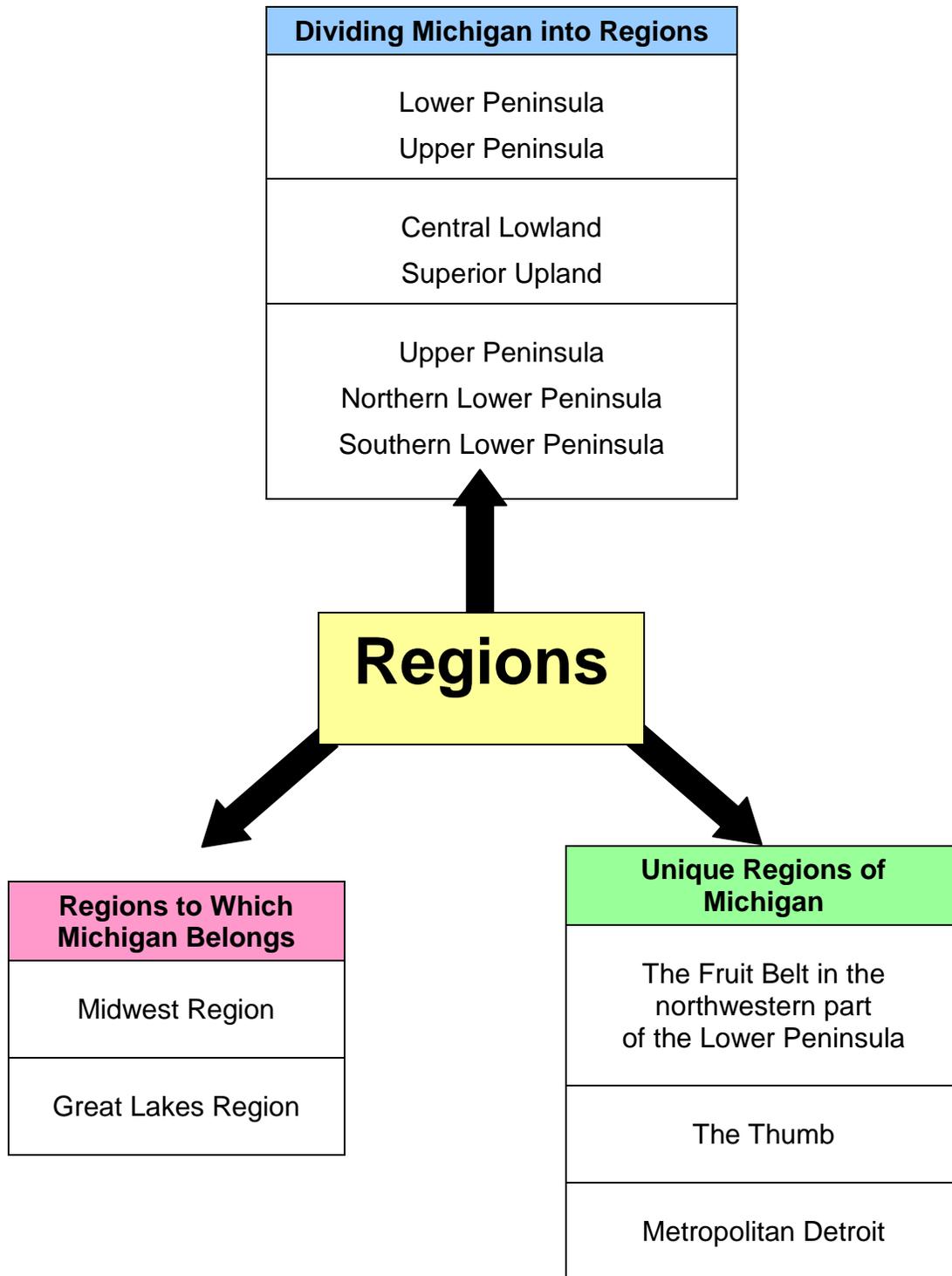


Closeup of zebra mussels on stick.

## Lesson Review

1. What is one reason a person might move within Michigan?
2. What is one reason a person might move out of Michigan?
3. What are two ways goods move into and out of Michigan?
4. Why do goods move?
5. What are two ways information, or ideas, move in and out of Michigan?
6. What is an example of something moving into Michigan that people did not want?

## Lesson 9 Graphic Organizer



## Big Ideas of Lesson 9, Unit 1

- A region is an area that has at least one feature that sets it apart from other areas.
- Regions can be many different sizes.
- One way to divide Michigan into regions is the Upper Peninsula and the Lower Peninsula.
- Michigan also has some unique regions like the Thumb.
- Michigan belongs to U.S. regions such as the Midwest Region and the Great Lakes Region.

## Word Cards

### 44 region

an area with one or more common features



**Example:** The Upper Peninsula can be one region of Michigan.

### 45 Midwest Region

a region of the United States that includes the state of Michigan



**Example:** States in the Midwest Region have many things in common.

### 46 Great Lakes Region

the states of that border the Great Lakes along with the province of Ontario, Canada



**Example:** Michigan belongs to the Great Lakes Region

## Dividing Michigan into Regions Activity

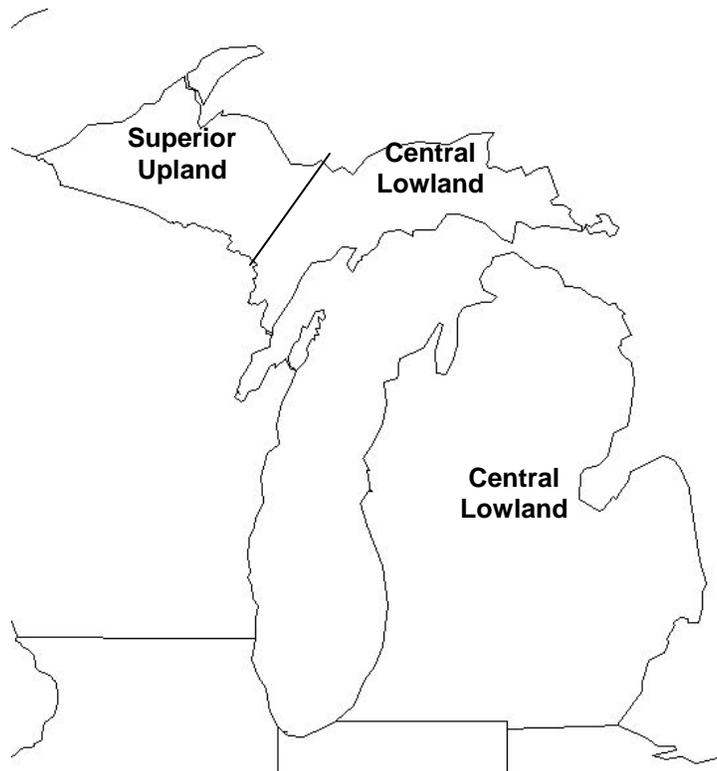


<b>Describe the regions</b>	
<b>Why did you divide it this way?</b>	



<b>Describe the regions</b>	
<b>Why did you divide it this way?</b>	

## Two Natural Regions of Michigan

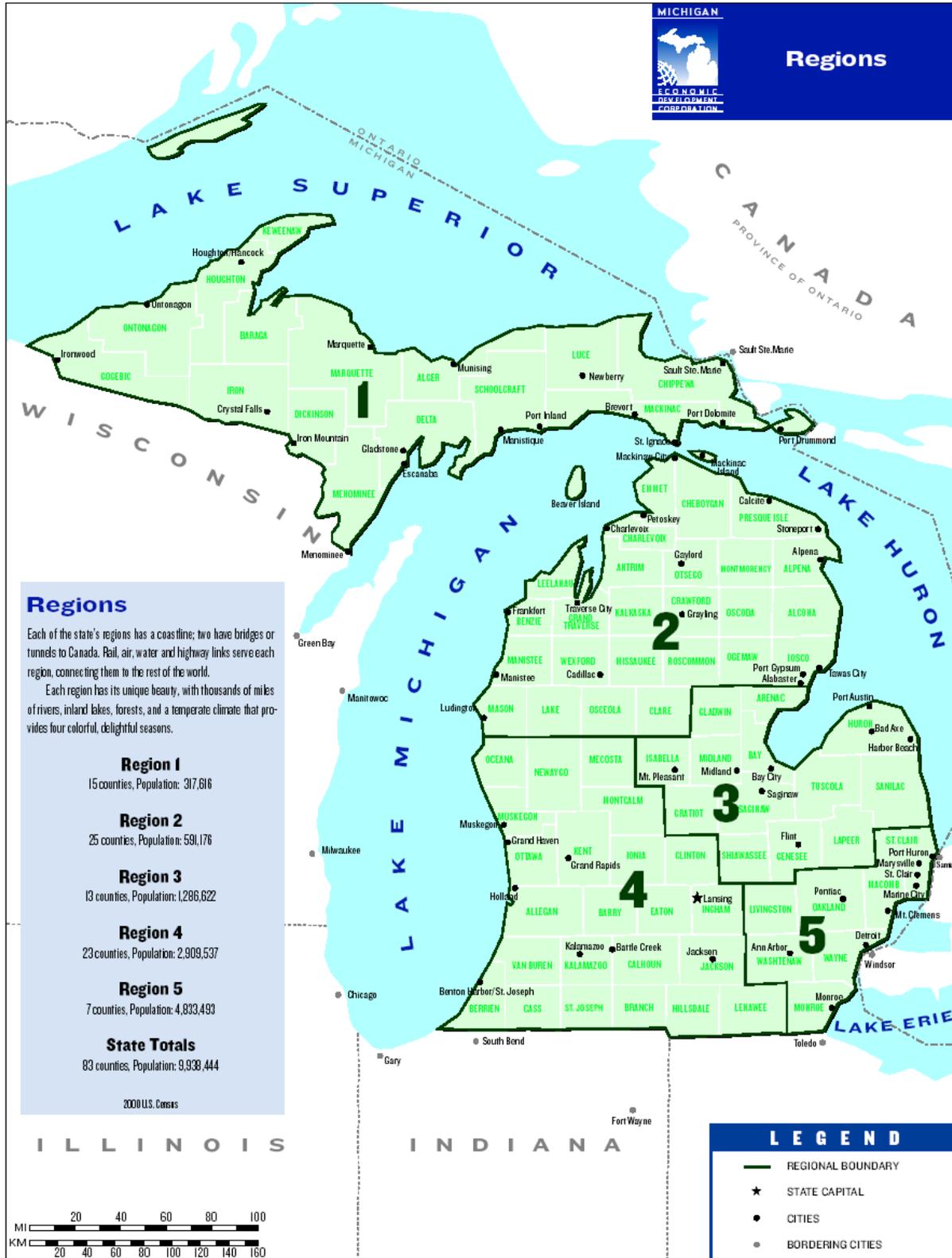


### Central Lowland (Great Lakes Plains)

- All of the Lower Peninsula and the eastern part of the Upper Peninsula
- Part of the Interior Plains of the United States
- A mainly flat area with a few areas of hills

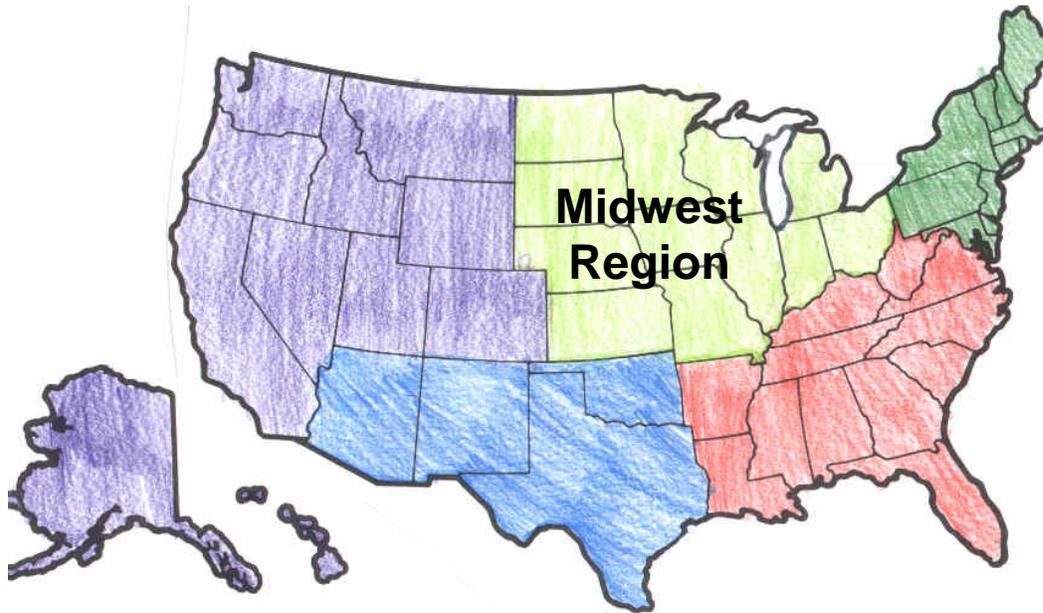
### Superior Upland

- Part of the Canadian Shield, a large rocky area
- Lots of natural resources
- Includes the Huron and Porcupine Mountains



Michigan Maps. Michigan Advantage.org. 30 June 2009  
<http://www.michiganadvantage.org/Reference/Maps/Default.aspx>.

## Five Regions of the U.S.



### The Midwest Region

- Mainly flat land
- Lots of fertile farm land
- Includes with lots of manufacturing near cities
- Largest city is Chicago, which is an important port and railroad center.
- Includes four of the Great Lakes
- Also called the “Heartland”
- Also called the “Breadbasket” of the U.S. because a lot of food crops like corn and wheat come from here.

# Mystery Map



## Lesson Review

**Describe a way to divide Michigan into regions:**

Regions	Reason for dividing Michigan like this

**Describe one unique region of Michigan:**

Region	What characteristics make it a region?

**Describe a region of the U.S. to which Michigan belongs:**

Region	What characteristics make this a U.S. Region?

## Lesson 10 Graphic Organizer



**Big Ideas of Lesson 10, Unit 1**

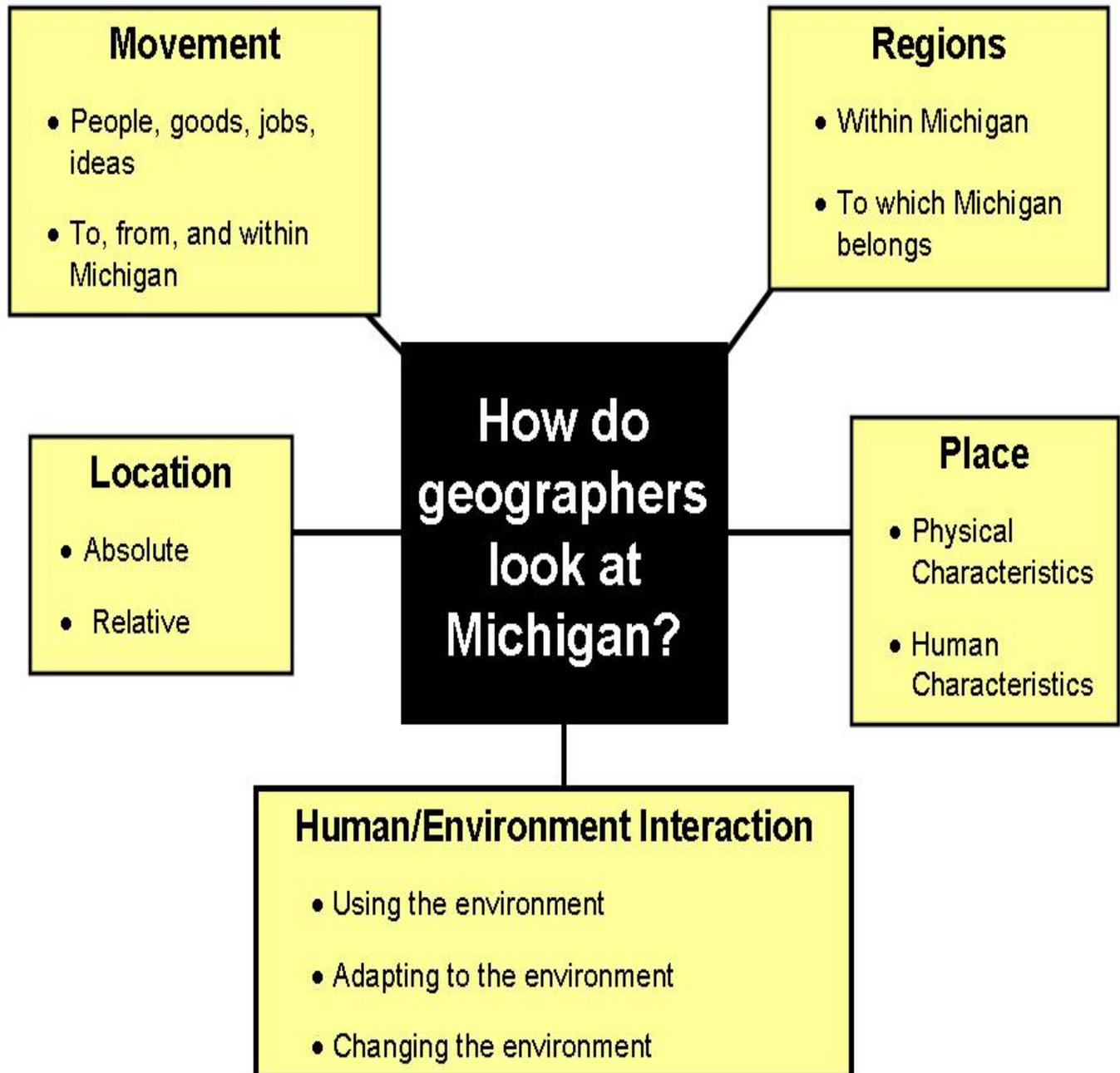
- To study a place geographers ask questions about the place and try to find answers.
- Geographers explore where a place is located by studying maps.
- Geographers explore what a place is like by studying the natural and human characteristics of the place.
- Geographers study how people have used the environment of a place by exploring its natural resources.
- Geographers explore how people have changed the environment of the place and how they have adapted to the environment.
- Geographers explore how a place is connected to other places by studying how people, goods and ideas move in and out of the place.
- Geographers explore how a place can be divided into regions and to what regions the place belongs.

## Project Planning Sheet

What kind of presentation will we make? \_\_\_\_\_

	How will you answer this question in your project?
<b>Where is Michigan located?</b>	
<b>What are important natural characteristics of Michigan?</b>	
<b>What are important human characteristics of Michigan?</b>	
<b>What are important natural resources of Michigan?</b>	
<b>How have people changed the environment of Michigan?</b>	
<b>How have people adapted to the environment of Michigan?</b>	
<b>How and why do goods move into and out of Michigan?</b>	
<b>How can Michigan be divided into regions?</b>	
<b>To what regions of the United States does Michigan belong?</b>	

# Unit 1 Graphic Organizer



## Unit 1 Vocabulary Words

absolute location.....	13
adapting to the natural environment.....	54
bay.....	20
border.....	5
climate.....	29
copper.....	46
county.....	5
direction words.....	14
elevation.....	20
fertile soil.....	45
geographer.....	4
geography.....	4
glacier.....	21
government.....	5
Great Lakes region.....	78
hub.....	60
human characteristics.....	5
human/environment interaction.....	53
iron ore.....	46
island.....	20
landforms.....	19

lighthouse .....	38
limestone .....	46
location .....	13
map.....	14
Midwest region.....	78
minerals .....	46
modifying the environment.....	53
mountain range.....	20
movement.....	60
natural characteristics.....	5
natural resources .....	45
non-renewable resources .....	46
peninsula .....	19
port.....	60
precipitation .....	30
region.....	78
relative location.....	14
renewable resources .....	46
sand dunes .....	20
special purpose maps.....	20
state .....	5
temperature .....	30
The Great Lakes .....	20
transportation.....	60

vegetation .....29

## Key Concepts

geography

Great Lakes

human/environment interaction

location

Michigan

movement

natural resources

place

region

state