


Enrichment Activity 1

Gerardus Mercator: Mapmaker

Use with Chapter 1

 Read the following article about the sixteenth-century mapmaker Gerardus Mercator. Then answer the questions.

Have you ever wondered how some of the map projections in use today got their names? The Mercator projection was named for Gerardus Mercator, a geographer and mapmaker who lived during the 1500s.

Mercator was born on March 8, 1512, in Flanders (now Belgium). He was of German descent and his original name was Gerhard Kremer, but he was most commonly known by the Latinized form of his name—Gerardus Mercator.

Mercator studied with a well-known geographer and engraver and completed his degree in 1532. When Mercator was 25 years old, he produced a map of the Holy Land. This map is thought to be his first independent work. In 1538 Mercator produced his first map of the world. In addition to geography, Mercator was accomplished in engraving, astronomy, mathematics, and in making scientific instruments.

In 1569 Mercator produced a new type of map that showed all compass courses as straight lines that intersect meridians and parallels at constant angles. This projection, which became known as a Mercator projection, proved ideal and is still in use today. The projection used by Mercator may have been used by cartographers as early as 1511.

Mercator also made a collection of maps that he titled *Atlas*. This was the first time the word *atlas* was used to describe a map collection.

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1. What map is thought to be Mercator's first independent work? _____
2. Where was Mercator born? _____
3. What was Mercator's original name? _____
4. In addition to geography, what were some other fields in which Mercator was accomplished?

5. How does a Mercator projection show compass courses? _____
6. What did Mercator call his collection of maps? _____

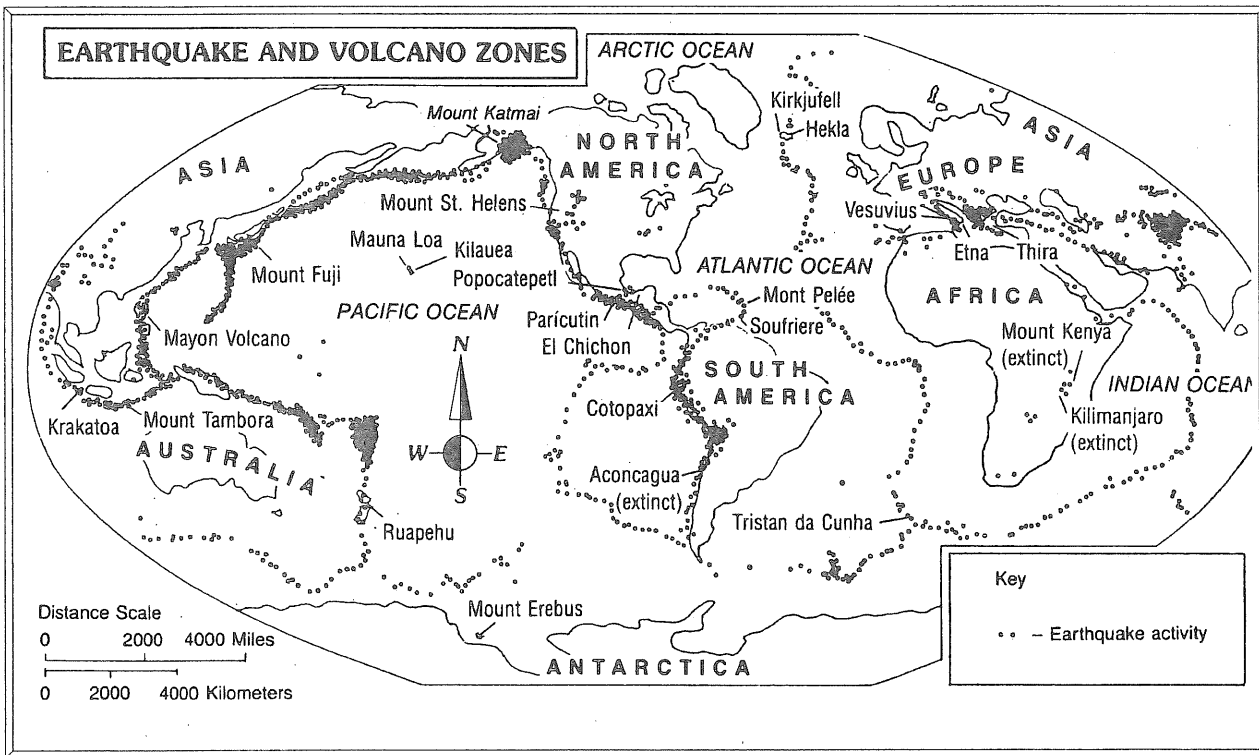
Chapter
2

Enrichment Activity 2

Earthquakes and Volcano Zones

Use with Chapter 2

Study the map showing the earth's volcano and earthquake zones. Then answer the following questions about the map.



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1. Which continent contains no earthquake zones? _____
2. Which ocean contains almost no earthquake zones? _____
3. Which ocean is ringed with volcano and earthquake zones? _____
4. Which continents have volcano and earthquake zones extending almost the entire length of their western coasts? _____
5. On what continent is Etna located? _____
6. On what continent is Cotopaxi located? _____
7. Which African volcanoes shown are extinct? _____

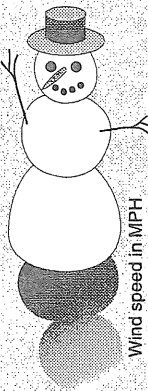
**Chapter
3**

Enrichment Activity 3

Wind Chill Factors

Use with Chapter 3

- The combination of temperature and wind causes loss of heat from the surface of the body. A combination of cold temperatures and wind can thus make the body feel colder than the actual temperature. This effect is called the wind chill factor. The chart below shows how wind speeds and temperatures act together to produce various wind chill factors. Study the chart and answer the questions that follow.



		WIND CHILL FACTORS																
		Actual temperature in °F																
		35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind speed in MPH	5	33	27	21	16	12	7	0	-5	-10	-15	-21	-26	-31	-36	-42	-47	-52
	10	22	16	10	3	-3	-9	-15	-22	-27	-34	-40	-46	-52	-58	-64	-71	-77
	15	16	9	2	-5	-11	-18	-25	-31	-38	-45	-51	-58	-65	-72	-78	-85	-92
	20	12	4	-3	-10	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81	-88	-95	-103
	25	8	1	-7	-15	-22	-29	-36	-44	-51	-59	-66	-74	-81	-88	-96	-103	-110
	30	6	-2	-10	-18	-25	-33	-41	-49	-56	-64	-71	-79	-86	-93	-101	-109	-116
	35	4	-4	-12	-20	-27	-35	-43	-52	-58	-67	-74	-82	-89	-97	-105	-113	-120
	40	3	-5	-13	-21	-29	-37	-45	-53	-60	-69	-76	-84	-92	-100	-107	-115	-123
	45	2	-6	-14	-22	-30	-38	-46	-54	-62	-70	-78	-85	-93	-102	-109	-117	-125

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1. How cold does it feel when the temperature is 25°F and the wind speed is 30 miles per hour?

2. How cold does it feel when the temperature is -15°F and the wind speed is 5 miles per hour?

3. What is the difference in degrees between an actual temperature of 35°F and that temperature combined with a wind speed of 40 miles per hour?

4. What generalization can you make regarding wind speed and how cold an actual temperature feels?

5. In winter, why would knowing the wind chill factor in addition to the actual temperature be important?

Chapter 4

Enrichment Activity 4

Archaeologists and Their Work

Use with Chapter 4.

- Read the following article carefully. Then in the blank at the left of each statement, write *T* if the statement is true and *F* if the statement is false.

When investigating the past, archaeologists must be careful as they dig for artifacts, so that ancient objects are not damaged or destroyed. Archaeologists do not begin digging haphazardly when they search for information about how ancient peoples lived.

Archaeologists look for clues that might indicate the presence of important archaeological evidence before they begin digging. Local museums may house collections that suggest that more objects are buried in an area. Bits of broken pottery or stones in a field may be signs that additional objects are below the surface of the soil. In addition, the manner in which natural vegetation grows in an area may indicate what is under the soil.

A more sophisticated method of deciding where to dig is based upon testing for changes in an area's magnetic fields. There are also machines that record how electricity is conducted through the soil. Such machines give archaeologists an idea what might be present in the soil.

Many different tools are used when digging for artifacts. These tools range from soft brushes to large bulldozers. Many types of picks and shovels are also used.

To an archaeologist, almost any object can provide a clue to the way that ancient people lived. For example, a seed may suggest what crops were grown by early groups. Tools may be evidence of the kind of work done by ancient peoples. A fireplace may indicate how food was prepared or how early groups used fire. Such evidence is studied carefully after being excavated. This is done to try to determine the time when the artifacts were used.

Through the slow process of excavation and study, archaeologists can determine the way of life of ancient peoples. Thus, these scientists are slowly assembling the puzzle of the human past.

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- _____ 1. Archaeologists must be very careful when digging for artifacts.
- _____ 2. Most archaeologists begin digging in any location hoping to find evidence of past civilization.
- _____ 3. Archaeologists sometimes use sophisticated methods and machines to determine where to dig for ancient artifacts.
- _____ 4. Brushes, bulldozers, picks, and shovels are among the tools used by archaeologists.
- _____ 5. To an archaeologist, only a few specific objects can show how ancient people lived.