Name: **Period:**

Unit 1 Packet:
Map Skills and Geographic Tools

Why Study Geography?

Geography is the study of the world and its people. The word "geography" comes from two ancient Greek words—the word for "Earth" and the word for "writing." Modern geography covers the study of Earth's **physical geography,** which includes the study of climate zones, vegetation, landforms, and forces that change the earth's surface. It also includes Earth's **cultural geography—**people's ways of life, patterns of migration, religions, governments, and economic systems.

People sometimes say that our world is "shrinking," by which they mean that people around the world are more interconnected and dependent upon each other all the time. People, goods, and ideas can move from one place to another in the blink of an eye! The study of geography makes us better able to understand and thrive in our world today.

Learning Targets

(These are the things you need to know and be able to do)

Essential Map Skills: Who Needs to Use Maps?

1. Identify the earth's continents, oceans, gridlines, and landforms on a world map.
2. Identify and use the parts of a map (compass rose, scale bar, key).
3. Use coordinates of latitude and longitude to identify the absolute location of different places.

The Geographer's Tools: How Can I Learn About Different Places?

4. Explain the special purposes of and interpret information from different types of maps (physical, political, topographic, population density, climate, and product).
5. Describe and evaluate the uses of different tools and technologies used by geographers (globes, maps, photographs, satellites, GIS).

Unit 1 Vocabulary Challenge

Look at the words below. You are probably familiar with many of them; but for any that are new to you, look them up in the textbook Glossary and familiarize yourself, jotting down notes as needed. Then, using the space below, create a colorful drawing/illustration/mural that incorporates <u>each</u> of the words in some way. Complete this challenge by the end of the Unit to earn a Jag Award.

Important Vocabulary:

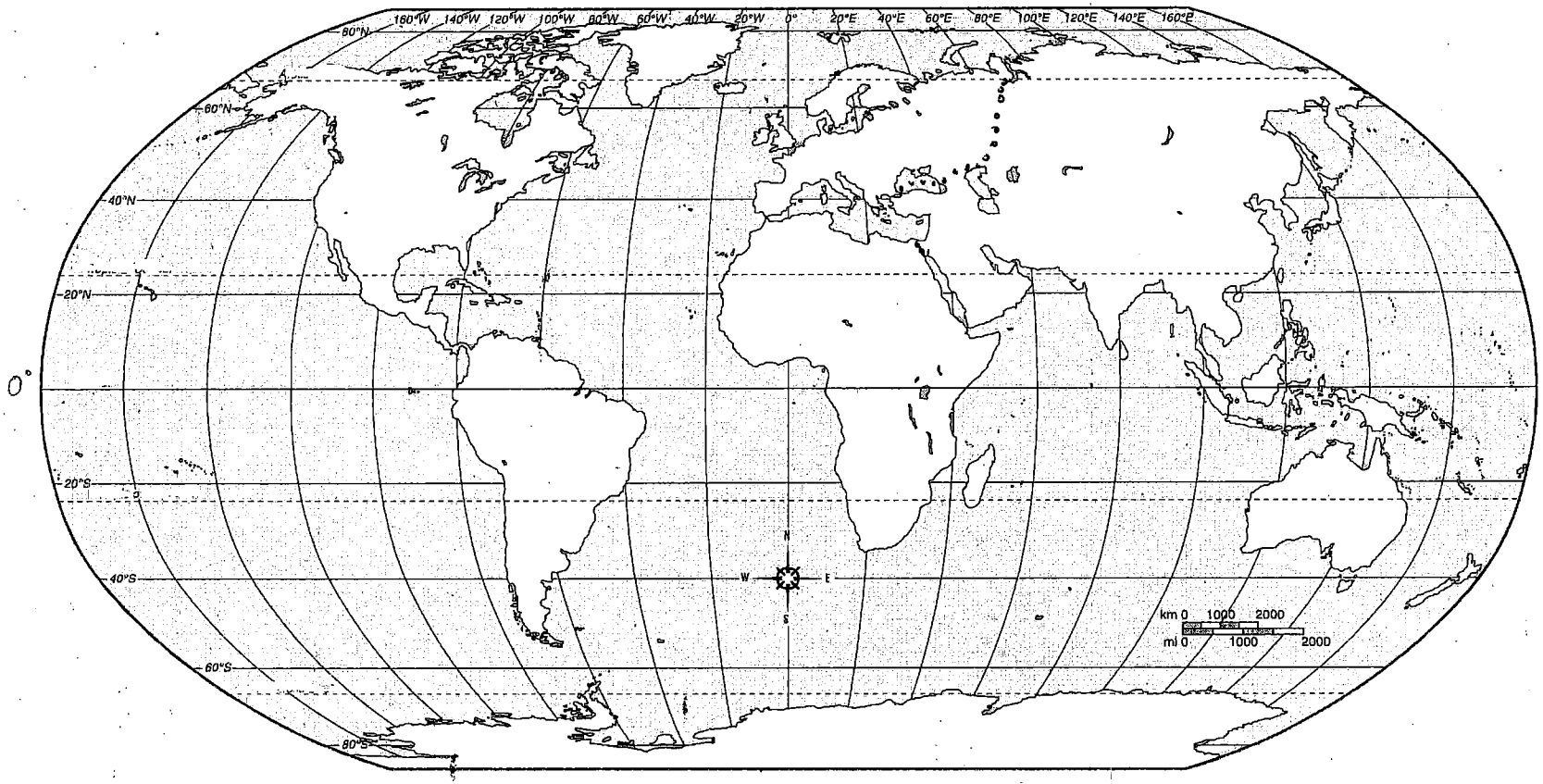
compass rose	absolute location	distort	hemisphere
Equator	Prime Meridian	scale bar	longitude
key	*cartographer	latitude	elevation

Target 1

- 7 Continents : Label, Color
- 5 Oceans : Label
- Grid lines : Label

World Continents

Name _____ Date _____



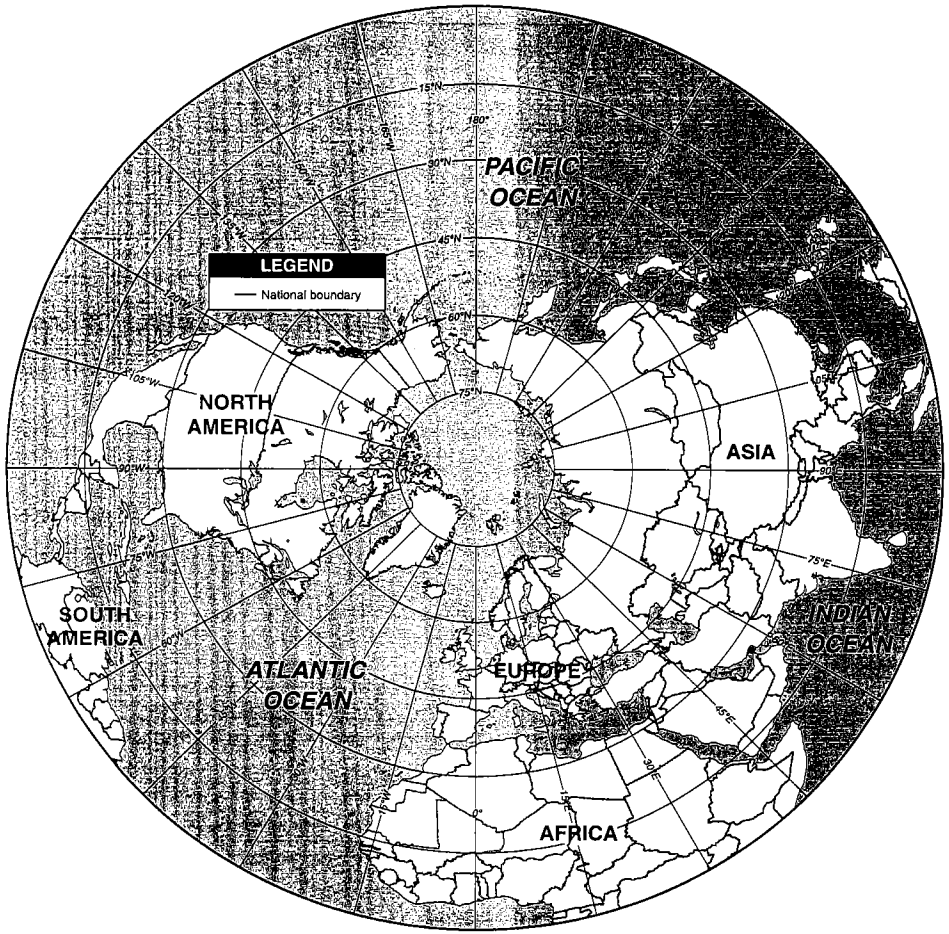
Continent
Africa
Antarctica
Asia
Australia
Europe
North America
South America

Oceans
Arctic
Atlantic
Indian
Pacific
Southern

Grid Lines
Arctic Circle
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic Circle
Prime Meridian

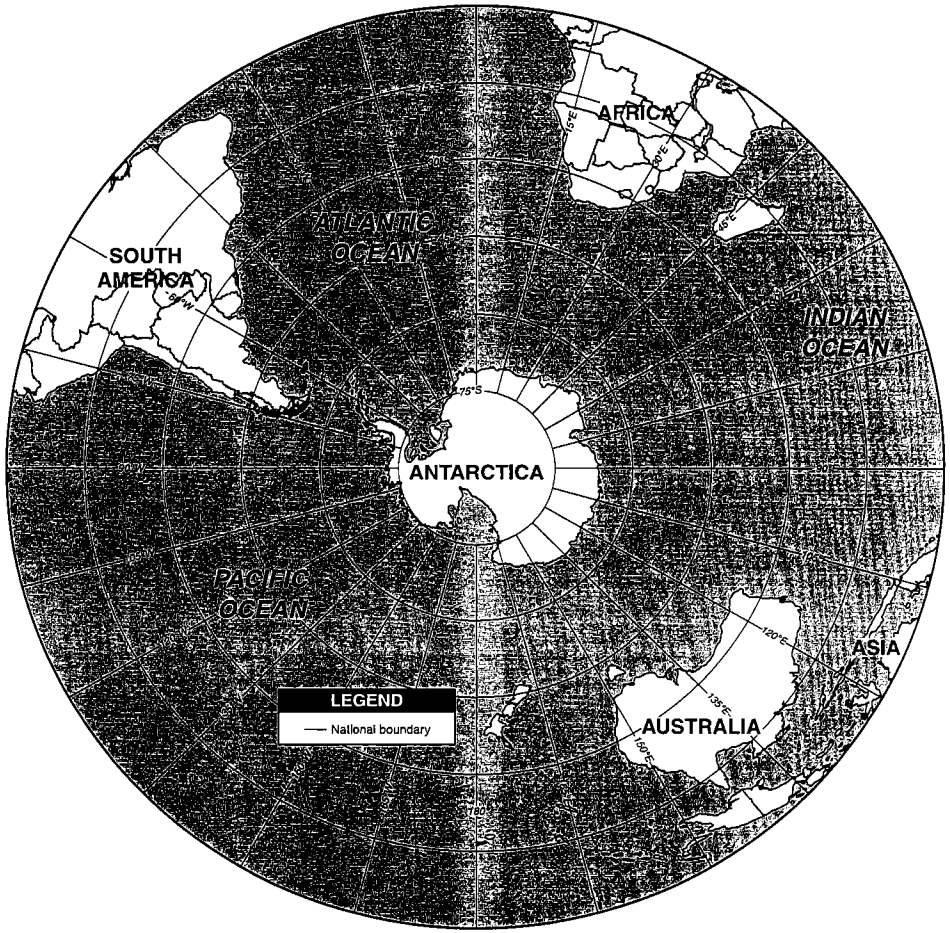
Name _____ Date _____

Northern Hemisphere



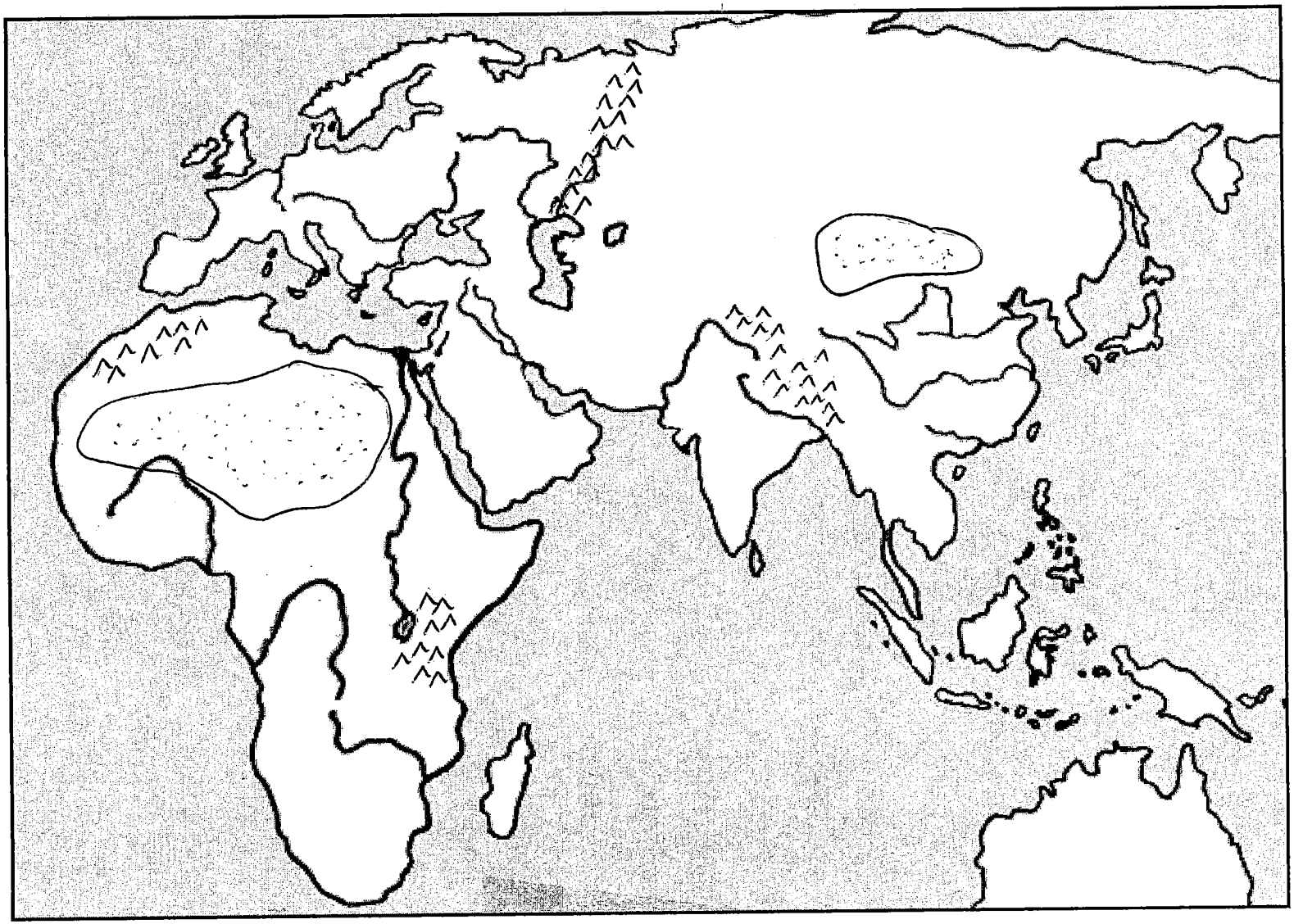
Name _____ Date _____

Southern Hemisphere



Target 1

Physical Outline Map of the Eastern Hemisphere



Europe
Danube R
Volga R
Ural Mts
Mediterranean Sea

Africa
Sahara Desert
Nile R
Congo R
Atlas Mts
Ethiopian Highlands

Asia
Himalaya Mts
Yellow R
Yangtze R
Indus R
Ganges R
Tigris R
Euphrates R
Gobi Desert

Target 2: Parts of a Map

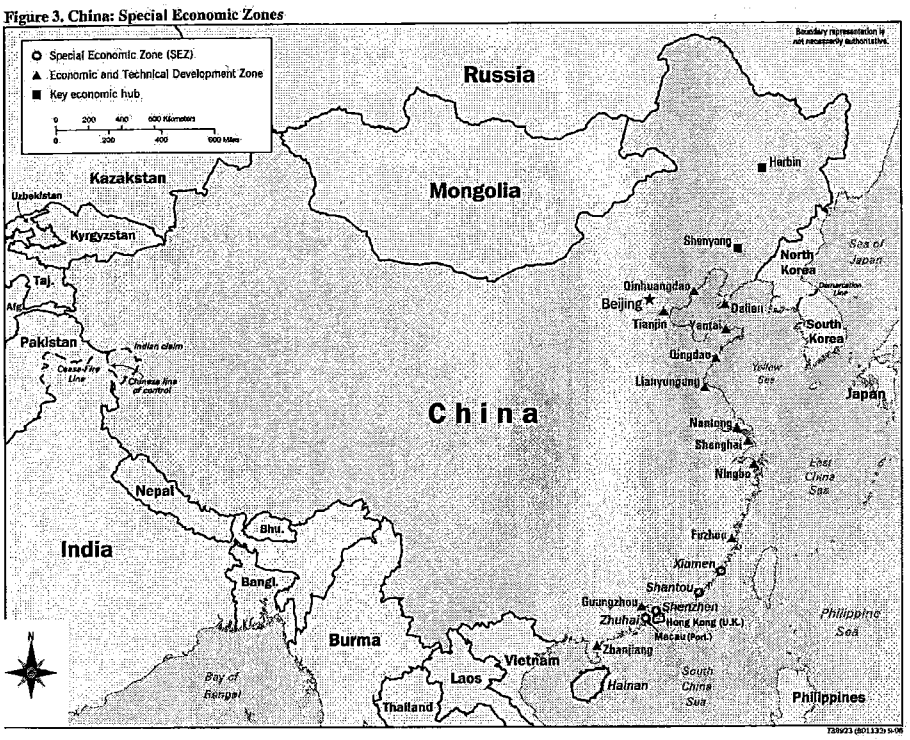
Identify and use the parts of a map (compass rose, scale bar, key)

Main Idea: Maps are drawings that represent a portion of the Earth's surface on a flat piece of paper that can be folded and transported easily. A map is a "snapshot" showing geographic information. We use maps to find our way from one place to another, to see where places are located, or to show how far one place is from another. To grasp the information on a map, you need to understand its different parts.

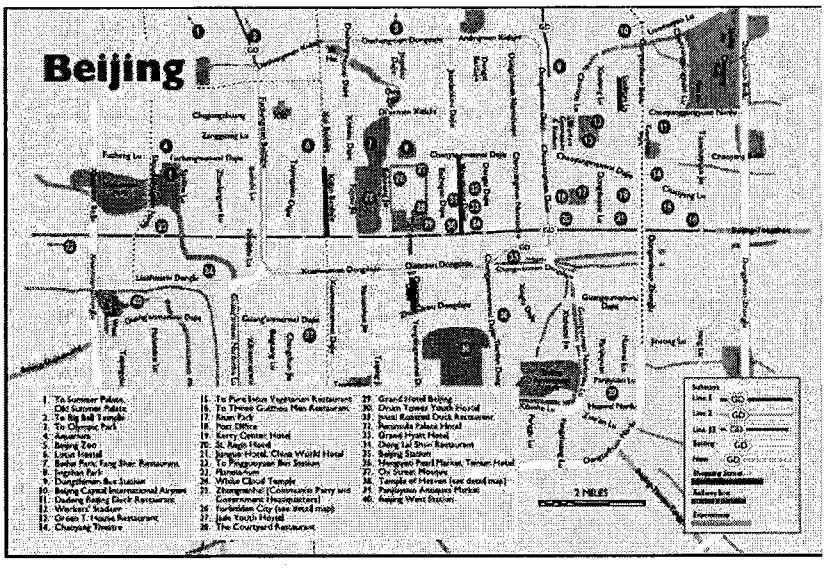
Key or Legend:

Scale Bar:

Compass Rose:



Source: www.chinaforeignrelations.net



Large-Scale:

Small-Scale:

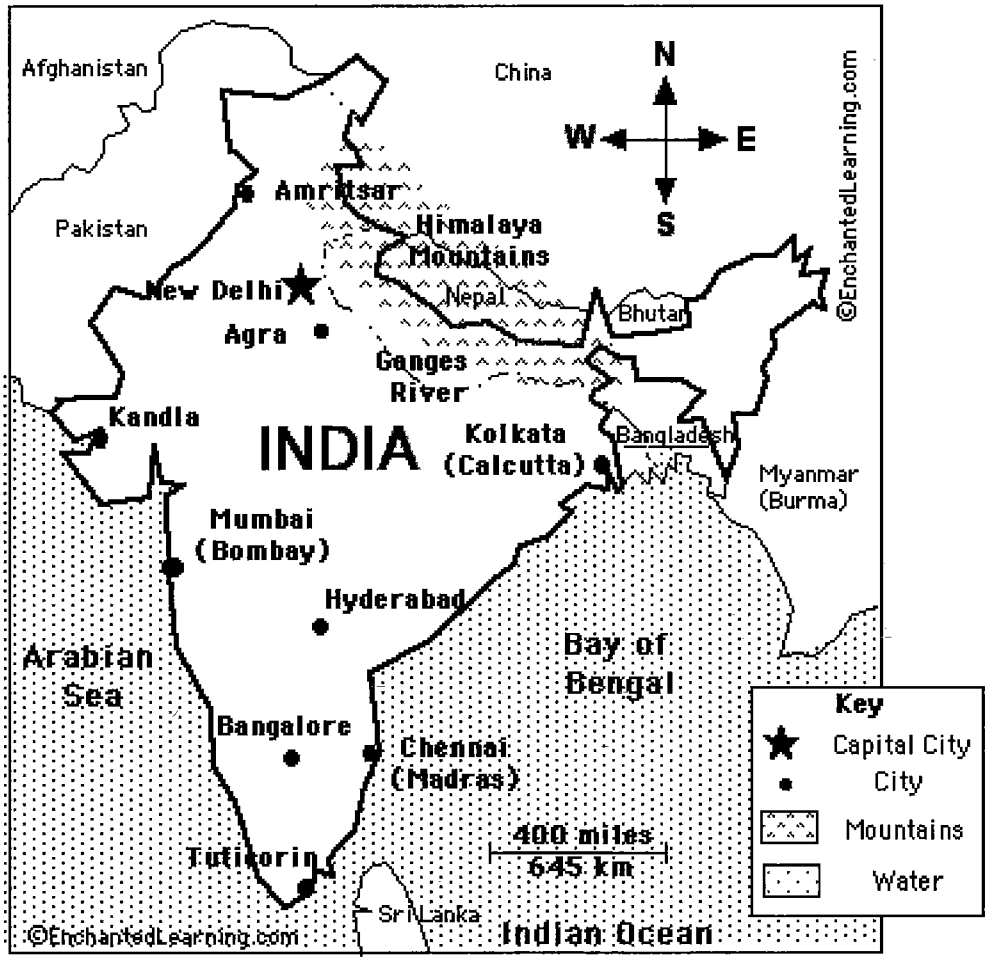
This map of Beijing, China is a _____-scale map!

Source: www.china-mike.com

Target 2: Using the Parts of a Map

Directions: Use the map below to practice using a map key, compass rose, and scale bar.

Map 1: India *(Source: www.enchantedlearning.com)*



Map Key

1. What does the symbol of a star mean on this map? _____

Compass Rose

2. What direction would you travel to go from New Delhi to Kolkata? _____

3. What direction would you travel to go from Kolkata to Hyderabad? _____

4. _____ A: _____

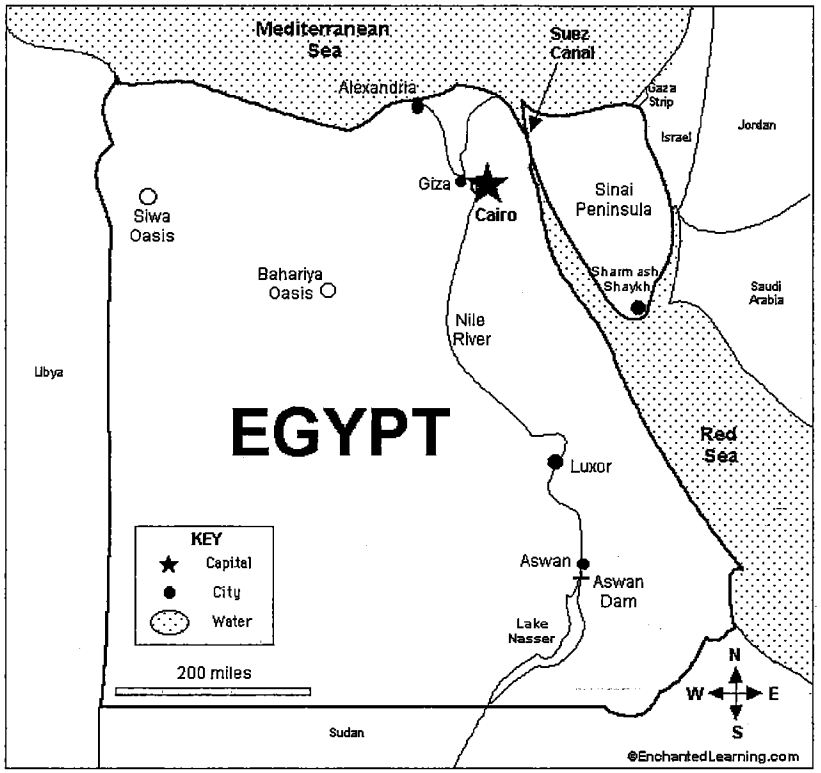
Scale Bar

5. How many miles is it from Agra to Chennai? _____

6. How many miles is it from Agra to Mumbai? _____

7. _____ A: _____

Map 2: Egypt *(Source: www.enchantedlearning.com)*



Compass Rose

1. What direction would you travel to go from Alexandria to Cairo? _____
2. What direction would you travel to go from the Aswan Dam to the Bahariya Oasis? _____
3. _____ A: _____

Scale Bar

4. How many miles is it from Aswan to Luxor? _____
5. How many miles is it from Aswan to Giza? _____
6. _____ A: _____

Map 3: China *(Source: www.enchantedlearning.com)*

Compass Rose

1. What direction would you travel to go from Beijing to Lhasa? _____
2. What direction would you travel to go from Taipei to Shanghai? _____
3. _____ A: _____

Scale Bar

4. How many miles is it from Beijing to Guangzhou? _____
5. How many miles is it from Macau to Taipei? _____
6. _____ A: _____

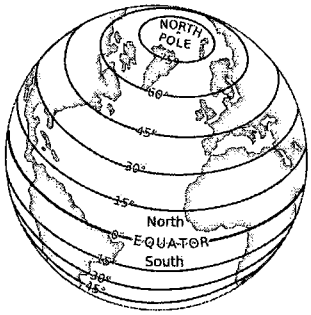
Target 3: Latitude and Longitude

Use coordinates of latitude and longitude to identify the absolute location of different places

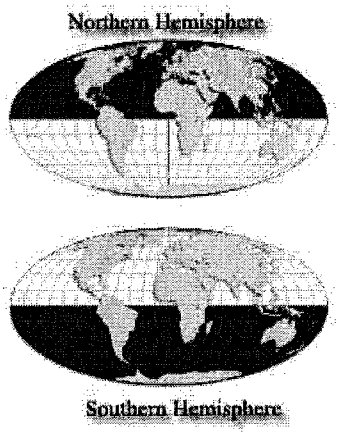
Main Idea: Absolute location is the exact place where something is found on Earth's surface. One of the ways cartographers pinpoint absolute location is by using latitude and longitude. When latitude and longitude lines appear together on the same map, they form a grid. This makes it possible to identify the precise location of any place on the Earth.

Lines of Latitude

Cartographers (mapmakers) use imaginary lines, called **latitudes,** to show the distance north or south of a place from the Equator. Latitude lines run east and west around the globe and are parallel. This means they never intersect, or meet.

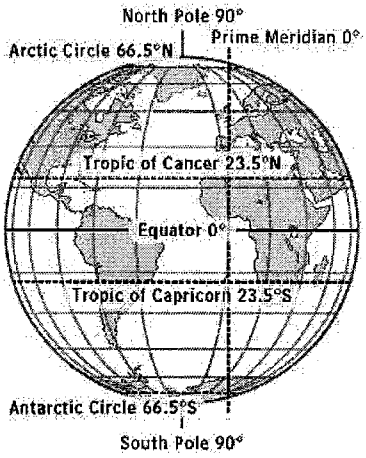


Equator: The most important latitude line is the **Equator**. Think of the Equator as a long belt that circles the Earth's waist. Other latitude lines are similar circles that are above or below the Equator. They are like stripes on Earth's pants and shirt! These latitude lines are all parallel.



Northern and Southern Hemispheres:
The half of the Earth north of the Equator is known as the Northern Hemisphere (*hemisphere* means "half circle"). The half of the Earth south of the Equator makes up the Southern Hemisphere.

The Equator is identified as 0° latitude. Each latitude line is assigned a number in degrees marking its distance from the Equator. From the top to bottom of Earth, there are 180 degrees. 90 degrees are found between the Equator and the North Pole, and the other 90 degrees are between the Equator and the South Pole. Latitudes north of the Equator have an "N" after them to show that they are lines of north latitude. Lines south of the Equator use an "S."

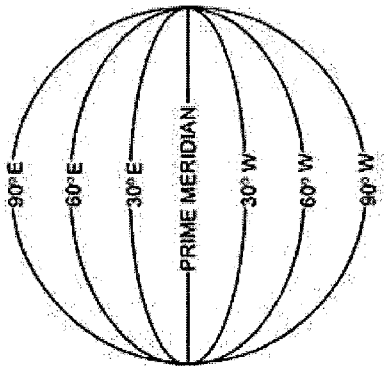


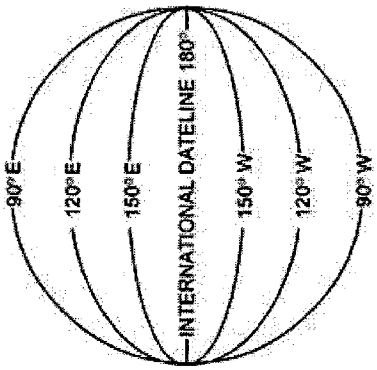
Other Important Latitude Lines:

- Tropic of Cancer: 23 ½° north of the Equator
- Tropic of Capricorn: 23 ½° south of the Equator
- Arctic Circle: 66 ½° north of the Equator (within the Arctic Circle, the sun never sets in the summer, and never rises in the winter!)
- Antarctic Circle: 66 ½° south of the Equator (within the Antarctic Circle, the sun also never sets in summer or rises in winter)

Lines of Longitude

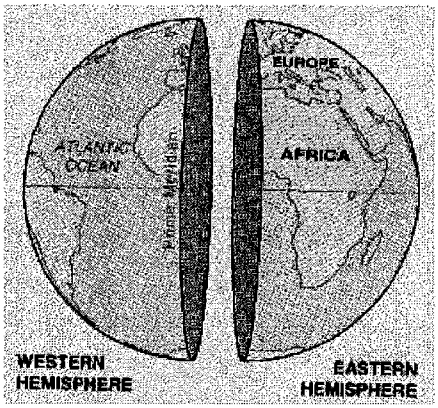
Longitudes are a set of imaginary lines that run north and south (up and down) on a map or globe from the North Pole to the South Pole. Unlike latitude lines, longitude lines (or meridians) are not parallel. They actually meet at the two Poles.





Prime Meridian: Longitude lines are used to measure distances east and west of the Prime Meridian. It is the most important longitude line. Like the Equator, the Prime Meridian divides the Earth into two hemispheres.

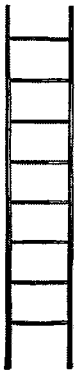
All lines west of the Prime Meridian belong to the Western Hemisphere. All lines east of the Prime Meridian are known as the Eastern Hemisphere.

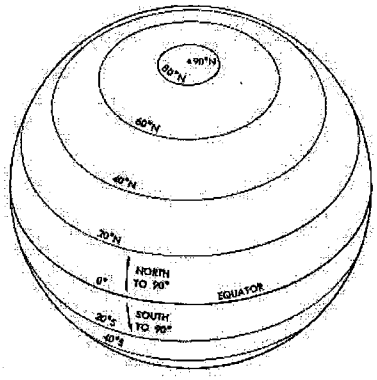


The Prime Meridian is identified as zero degrees (0°) longitude. Going in either direction, we mark longitude lines as increasing from 1° to 180°, adding "E" or "W" to indicate if the line is east or west of the Prime Meridian.

How to Find the Absolute Location of a Place

You can think of latitude like the rungs of a ladder (*ladder* sounds a lot like *latitude*). Latitude lines run east and west, but they tell how far up (north) you can go or how far down (south) you can go.

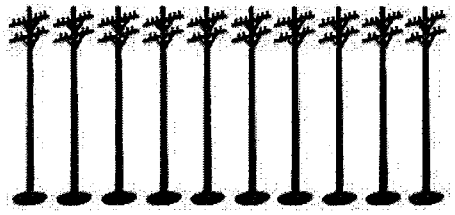


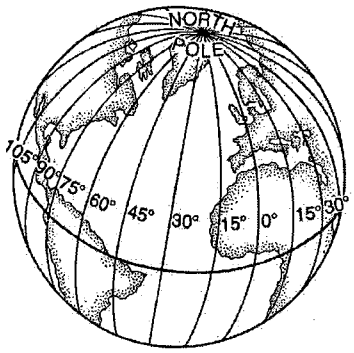


To find a **latitude** line such as 60 degrees north latitude, you must do four things:

1. Go to your starting line (the Equator).
2. Determine which direction you must go (north or south).
3. Use the "two finger trick" to see which two lines of latitude your location is in between.
4. Estimate the exact degree of latitude (like 60°N).

When you think of longitude, think of long, tall telephone poles (because longitude lines run from pole to pole). Longitude lines run north and south, but they tell how far east or how far west you can go.





To find a **longitude** line such as 40 degrees east longitude, you must do four things:

1. Go to your starting line (the Prime Meridian).
2. Determine which direction you must go (east or west).
3. Use the "two finger trick" to see which two lines of longitude your location is in between.
4. Estimate the exact degree of longitude (like 40ºW).

Try It!
Remember: When finding absolute location, it is a geographic RULE that you must find the latitude first!

Use the map of East Asia on page 317 of your textbook to find the **latitude** for each of these cities. Label your answers **ºN** or **ºS.** Then find the **longitude** for each of these cities. Label your answers **ºE** or **ºW.**

	Latitude	**Longitude**
Tokyo, Japan		
Taipei, Taiwan		
Ulaanbaatar, Mongolia		
Seoul, South Korea		
Beijing, China		

Image sources: www.worldatlas.com, www.infoplease.com, www.freepik.com

Topic: _____

Questions	Notes

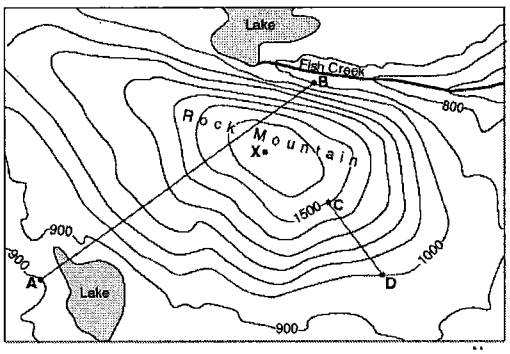
Summary

Target 4: Types of Maps

Explain the special purposes of and interpret information from different types of maps (physical, political, topographic, population density, climate, and product)

Main Idea: Cartographers, or mapmakers, use a variety of different types of maps. Each type of map serves a specific purpose. Learning to recognize and analyze the different types of maps is an important skill. Use the world maps on pages 4–13 in your textbook to look at some different types of maps and complete the chart below.

Type of map	What information does it show?	What is something interesting you observe that makes this type of map unique?	Write a question (and answer) based on this map
Physical	Natural features of an area, such as mountains, deserts, and rivers		*Example:* *What desert is located across northern Africa? (Sahara)*
Political	Boundaries and locations of countries, states, and major cities		
Population Density	How many people live on a unit of space (square mile/km) in an area; shows how *crowded* an area is		
Product (or Economic Resources)	Natural resources of an area, as well as the goods that are made there		
Climate	Average yearly temperatures and precipitation (rain, snow)		
Topographic *(not in textbook)*	Special type of physical map that shows *elevations*--how high a place is above sea level		



← Topographic Map

Source: http://peter-mulroy.squarespace.com/reading-topographic-maps/

Target 5: Geographic Tools

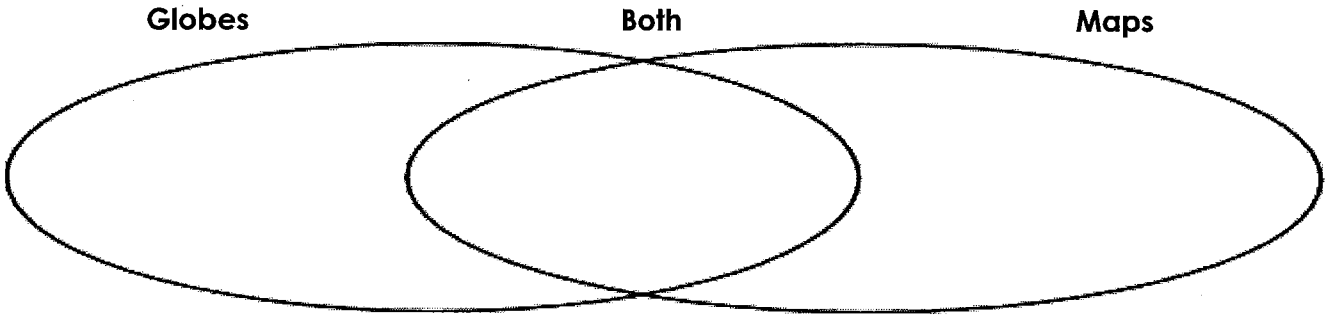
Describe and evaluate the uses of different tools and technologies used by geographers (globes, maps, GPS, GIS)

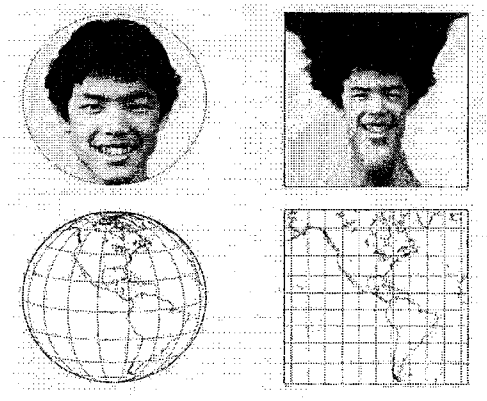
Main Idea: How's your spatial thinking? The word *spatial* comes from "space." Spatial thinking means thinking about where things are located in space. Geographers do this by using globes, maps, and other geographic tools to gather, process, and report information about people, places, and environments. By understanding the characteristics of these tools, you too will be able to read, interpret, and create maps and other geographic representations that show where things are located in space.

1) Read about globes and maps on pages 26–27 in your textbook. Take notes by deciding how to organize the information you read onto the chart of notes below.

Globe			
Map			

2) Use the Venn diagram below to identify THREE similarities and THREE differences you can think of with maps and globes.





Map Projections

A **map projection** shows the spherical Earth on a flat surface. When you take a sphere, or ball, and flatten it, some kind of distortion (or mis-shaping) happens. Look what happens to the boy's head when it is "flattened" out!

There are MANY different styles for showing the Earth on a flat map, and each way has certain pros and cons.

Source: Geography Alive!

3) Look at the various map projections shown on the following pages. There are a lot of different ways to represent the earth two-dimensionally! Analyze them, then answer these two questions:

Which map projection do you think is MOST useful for students like you? _____

Explain why. _____

_____

Which map projection do you think is LEAST useful for students like you? _____

Explain why. _____

_____

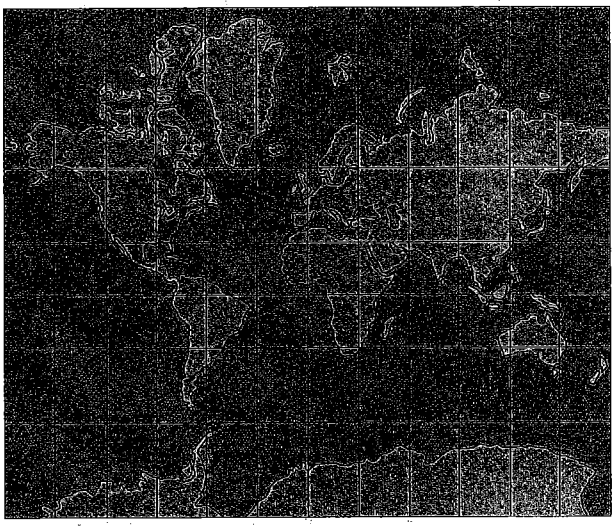
Geospatial Technologies: Maps and globes are no longer the only tools used by geographers (or regular people like you and me!). We'll first watch a video clip about several different technologies, then you'll read pages 30–33 in the textbook to complete the chart below.

	From the text	**From the video clips**
Global Positioning System (GPS)	*Three elements/parts*: 1. 2. 3.	
Geographic Information Systems (GIS)	What is it? How is it helpful?	
Satellites, Sensors, and Aerial Photography	What kinds of information can satellites provide? (Give at least 3.)	

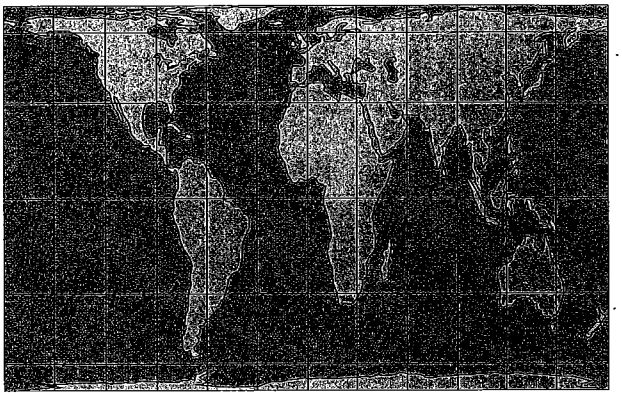
WORLD MAP PROJECTIONS

Map projections are the means by which the curved surface of the earth is transferred to the flat surface of a map. There are an infinite number of map projections, but none is as accurate as a globe. Because the earth is a sphere, a globe is its only perfect model. A globe simultaneously shows accurate shapes, sizes, distances, and directions. No world map shows all four of these properties accurately. Every world map distorts at least one of them.

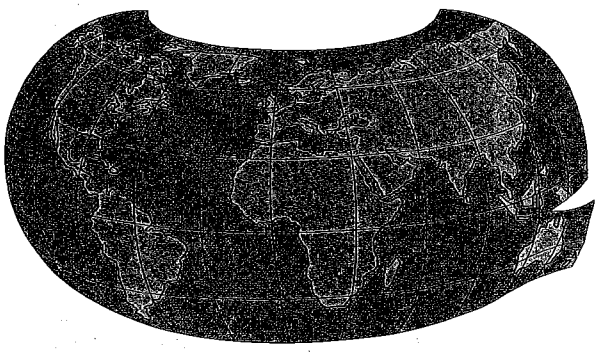
The projections shown here belong to three categories. *Conformal* projections show true shapes, but distort sizes. (You can remember this term's meaning by associating *shape* with the word *form* in *conformal.) Equal-area* projections show all areas in their true relative sizes, but distort shapes. *Compromise* projections allow some size distortions in order to portray shapes more accurately. In all types of world maps, distortion is generally least near the center and greatest at the edges.



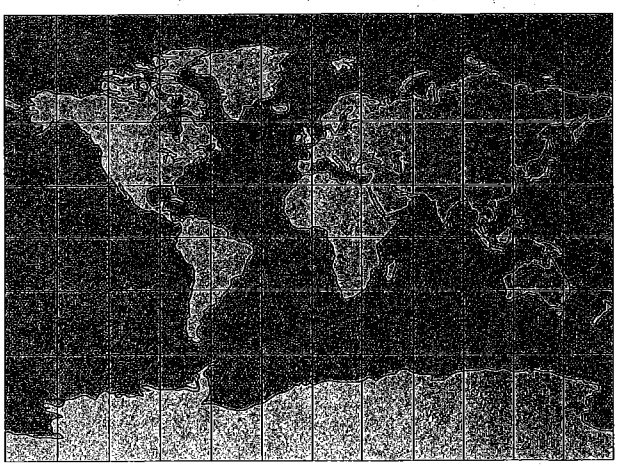
MERCATOR First published in 1569, the Mercator is a conformal projection. The poles are shown not as points, but as lines the same length as the Equator. The result is extreme size distortion in the higher latitudes. The Mercator was designed for navigation, and the true compass direction between any two points is shown by a straight line.



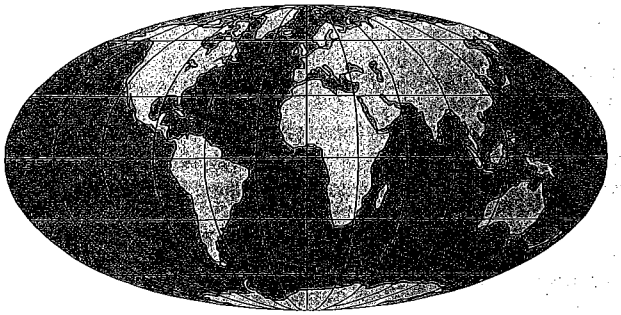
GALL-PETERS An equal-area projection first produced in the 1850s, the Gall-Peters greatly distorts shapes. Features near the Equator are stretched vertically, while features near the poles are flattened horizontally. The resulting shapes are quite different from those on a globe.



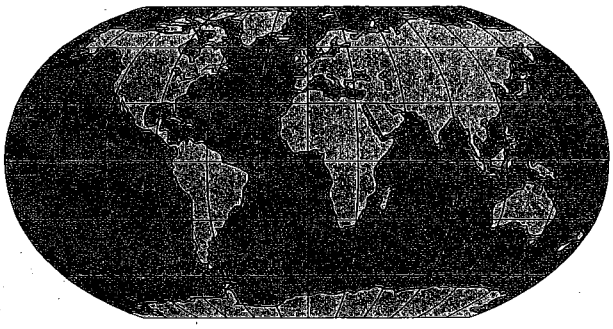
ARMADILLO This compromise projection is intended to give young students the impression of a map being peeled from a globe. Because its unique appearance causes severe distortions, especially at the outer edges, it is seldom used outside the classroom.



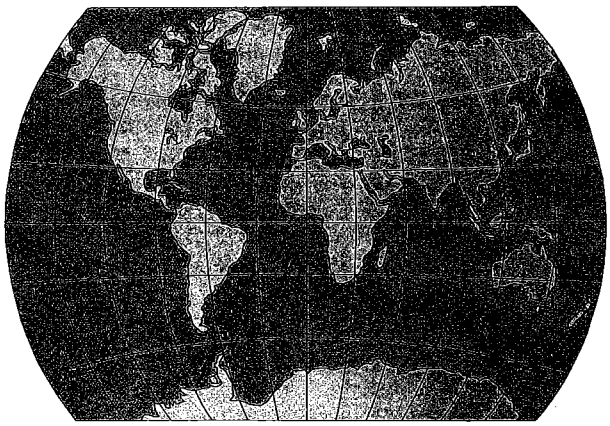
MILLER CYLINDRICAL The Miller is a compromise projection based on the Mercator. Its shapes are not as accurate as those of the Mercator, but it has much less size distortion. The Miller cylindrical projection is often used when mapping world time zones.



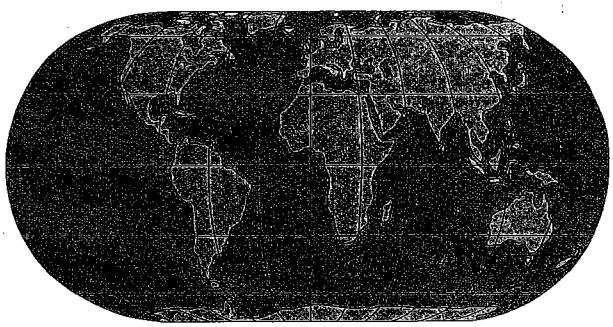
MOLLWEIDE The Mollweide's oval shape reminds viewers of a globe. An equal-area projection, it is frequently used for world distribution maps. (A distribution map shows the location and extent of something—such as crops, livestock, or people—across the face of the earth.)



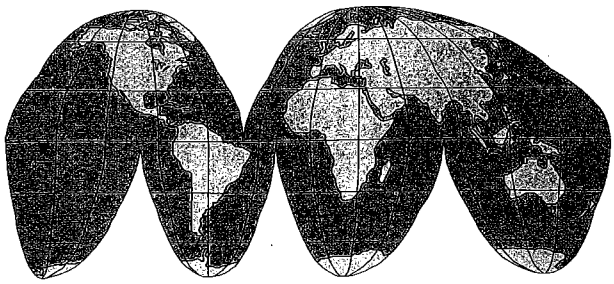
ROBINSON First used in 1963, the Robinson is a compromise projection. Because it presents a reasonable overall picture of the world, it is often used for educational materials. It looks similar to the Eckert IV (below), but has more distortion in the polar areas.



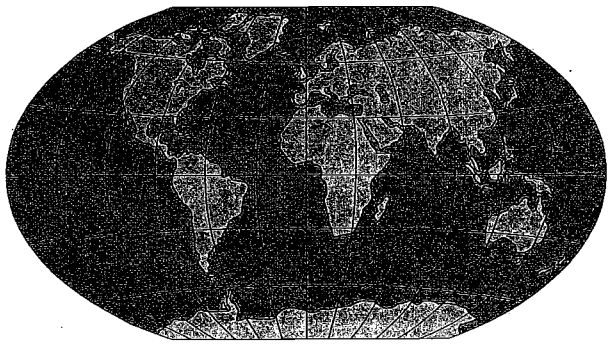
VAN DER GRINTEN The Van der Grinten is a compromise between the Mercator and the Mollweide. The full projection forms a circle, but the polar areas are normally not shown. Shapes and directions are reasonably accurate between 60°N and 60°S, where most of the world's people live.



ECKERT IV An equal-area projection, the Eckert IV has relatively minor shape distortions near the Equator and poles. The result is a map well-suited either for general reference or for showing world distributions. It is often used to map world climates and other themes.



GOODE'S HOMOLOSINE Goode's is an equal-area projection that also shows shapes extremely well. Shapes can be shown more accurately than on most equal-area maps because the grid is *interrupted* or split in the ocean areas. The interruptions allow land areas to be shown with less stretch or distortion.



WINKEL TRIPEL The Winkel is a compromise projection. Its oval shape and curving parallels result in a map with realistic shapes and minor size distortions at all latitudes. It has less size distortion than the Van der Grinten and less shape distortion than the Robinson.