



Name _____

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Class _____

Map and Globe Skills

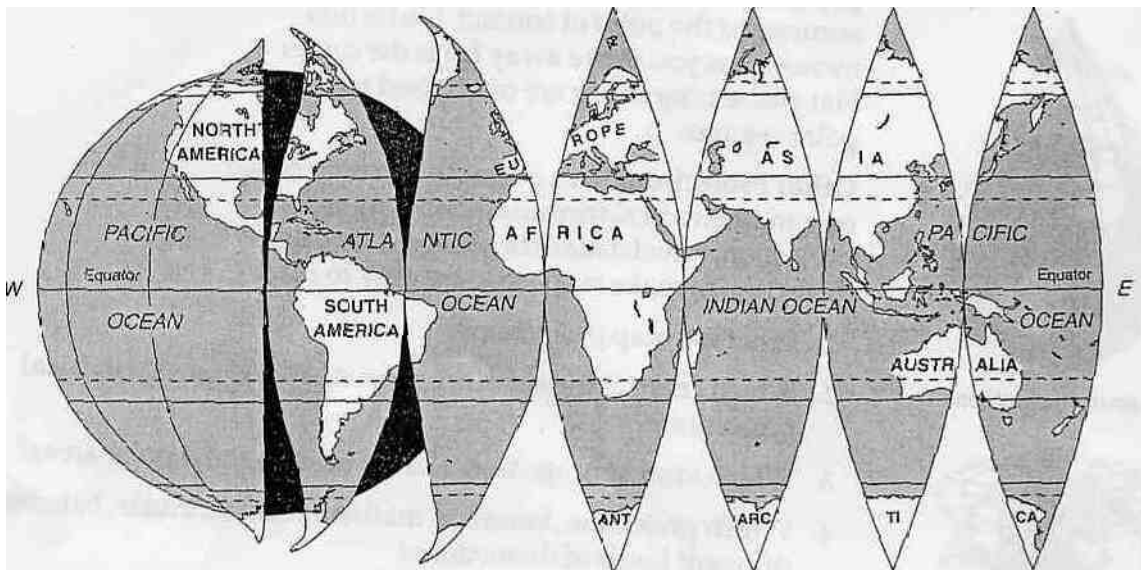
Comparing Globes and Maps

Globes and maps are used frequently in geography- To make the best possible use of maps and globes, you need to understand how they relate to one another and what kind of information each can provide.

Directions: Read the information about globes and maps below. Then, answer the questions that follow. Use a separate piece of paper for your answers.

Globes. A globe is the most accurate way of showing the world's surface. It is a scale model of the earth, showing actual shapes, relative sizes, and locations of landmasses and bodies of water. A globe also provides accurate information about distances and directions between two points. Globes, however, are very small representations of the earth. Even a large globe cannot show much detail. Also, globes are difficult to carry around, and you can look at only one half of a globe at any one time.

Maps. Maps are flat representations of the curved surface of the earth. Because they are flat, they can be shown in a book. They can be folded up and used for planning trips. They can show very large areas or very small areas. They are flexible tools that can provide large amounts of information very efficiently. Maps are not as accurate as globes, however. To create a flat representation of the curved surface of the earth, something has to be distorted. You can understand this by studying the illustration below. The surface of the globe has been "peeled off" and cut along the lines of longitude. The resulting map is not easy to read.



1. What advantage does a globe have over a flat map?
2. What are the main disadvantages of a globe?
3. What advantages do maps have over globes?
4. Why are maps less accurate than globes?
5. What does the illustration on this page tell you?

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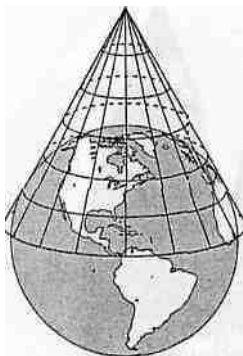
Understanding Projection

The method used to show the curved surface of the earth as a flat map is called a projection. The three most common kinds of projections are based on different ways of placing a piece of paper around the globe and "pulling" the images off the globe and onto the paper. Other projections are based on mathematical formulas.

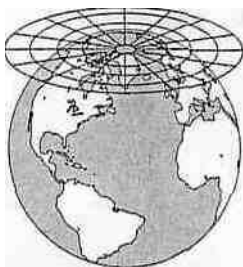
Directions: Study the projections described and illustrated below. Then answer the questions that follow. Use a separate piece of paper for your answers,



Cylindrical Projection



Conic Projection



Flat-Plane Projection

Cylindrical Projection. This projection is made by placing a rectangular piece of paper around the globe so that it touches the Equator. Lines of longitude that meet at the poles on a globe are parallel. The areas near the poles are distorted and look much larger than they really are.

Conic Projection. Here, a cone-shaped piece of paper is placed over the globe. The areas where the paper touches the globe are most accurately represented. Those near the tip of the globe are most distorted.

Flat-Plane Projection. Here a flat piece of paper is placed against the globe. The map is accurate at the point of contact. Distortion increases as you move away from the center. Flat-plane projections are often used to show polar regions.

Other Projections. An example of a map based on a mathematical formula is the Robinson projection, which balances different kinds of distortion to make maps that are easy to read.

1. What is a map projection?
2. Which areas of the earth are most distorted on a cylindrical projection?
3. Which kind of projection is often used to show polar areas?
4. Which projection, based on mathematical formulas, balances different kinds of distortions?

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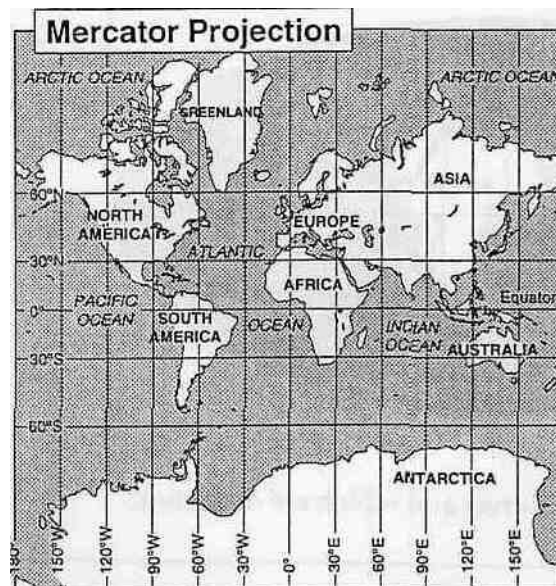


Map and Globe Skills

Maps With Accurate Shapes: Conformal Maps

Directions: Read the information about conformal maps, and study the map below. Then answer the questions that follow.

Conformal maps are so named because the shapes of the landmasses conform to, or look like, the shapes that appear on the globe. Directions are also correct. However, distances and size are greatly distorted, especially in the polar regions. Lines of latitude and longitude cross at right angles. The lines of longitude that meet at the poles on a globe, however, are parallel on this map. The Mercator projection below is an example of a conformal map.



1. Use a globe to compare the size of Antarctica on this map with the size of that continent on the globe. What do you observe?
2. Look at the comparative sizes of Greenland and Africa on the map and on the globe. What do you observe?
3. Which aspects of this map are correct and which are distorted?
4. Why do you think this projection is often used for making navigational charts?



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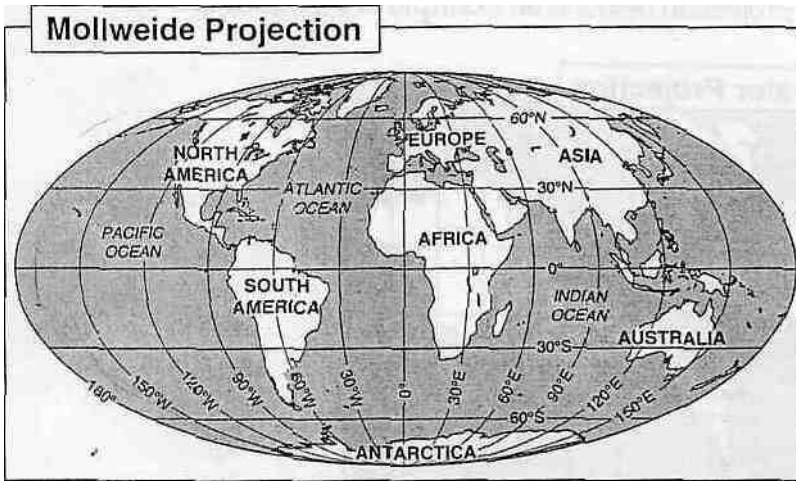
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Map and Globe Skills

Maps With Accurate Areas: Equal-Area Maps

Directions: Read the information about equal-area maps, and study the map below. Then, answer the questions that follow.

Equal-area maps show the correct sizes of landmasses in relation to other landmasses. A nation that is twice the size of another nation will appear that way on the map. However, in order to depict correct size, an equal-area map distorts both shape and direction. The Mollweide projection below is an example of an equal-area map.



1. Which aspects of this map are correct and which are distorted?
2. Describe the lines of longitude on this map.
3. Compare the shape of North America on this map with the shape of North America on a globe. What do you observe?

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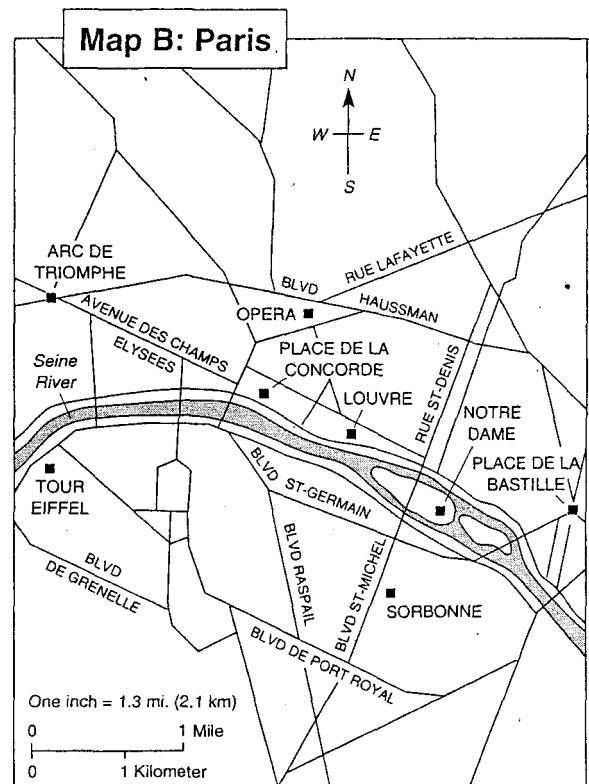
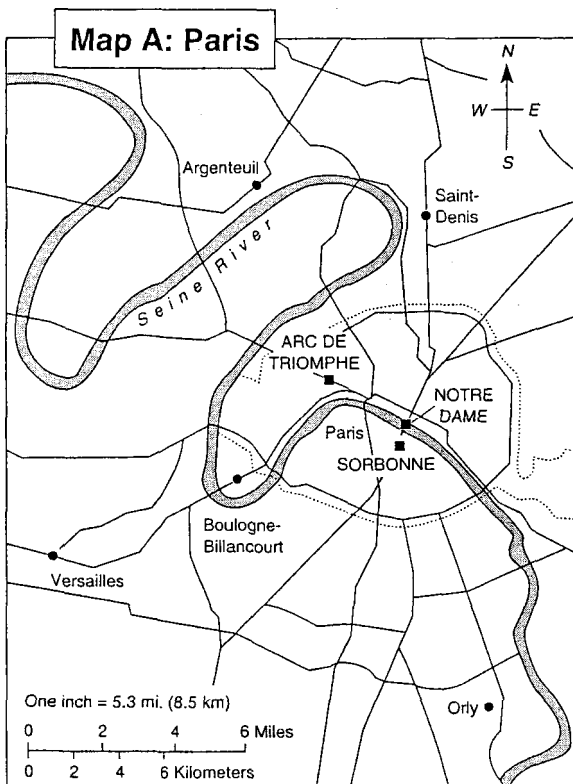


Map and Globe Skills

Maps With Accurate Distances: Equidistant Maps

Directions: Read the information about equidistant maps, and study the maps below. Then, answer the questions that follow.

Equidistant maps show the correct distance between places. Maps of the world can never show all distances accurately because it is not possible to show the correct lengths of all lines of latitude and longitude. Small areas, however, can be mapped with little distortion of distance. The maps below are examples of equidistant maps. On both maps, the scale is large enough that the maps could be used to measure distances accurately.



1. What does an equidistant map show correctly?
2. Why would it not be possible to have an equidistant map of the world?
3. What kind of areas lend themselves to equidistant maps?
4. What kinds of distances could you measure on Map A above?
5. What kinds of distances could you measure on Map B?



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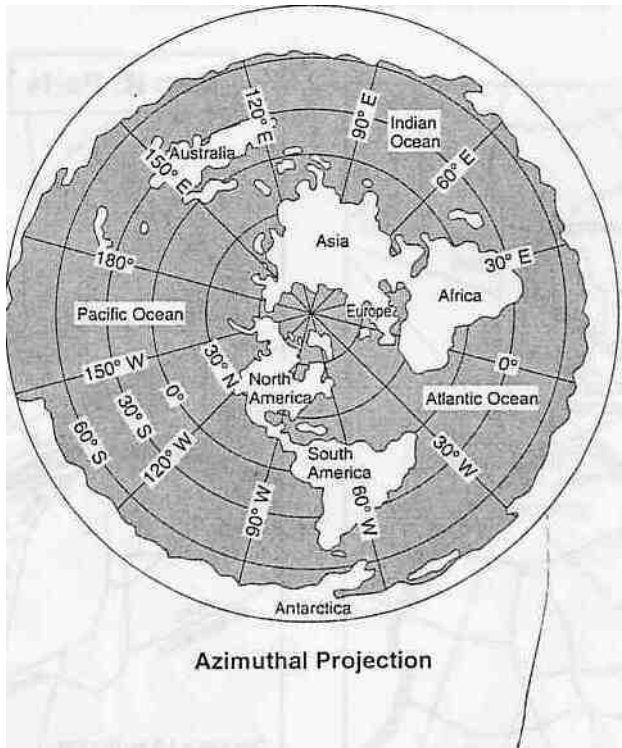
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Maps With Accurate Directions: Azimuthal Maps

Directions: Read the information about azimuthal maps, and study the map. Then, answer the questions that follow-

Azimuthal maps show direction correctly. Shape and size are distorted, with the greatest distortions on the outer edges of the map. Azimuthal maps are circular and often have the North Pole or the South Pole as their central point. The azimuthal projection below has the North Pole as its central point.



1. What does an azimuthal map show correctly?
2. What is distorted on this type of map?
3. Which continent on the map above is most distorted?
4. What direction would you take from the North Pole if you wanted to fly through the center of South America?
5. What direction would you take from the North Pole to reach Central America?