

Name _____ Date _____

UNDERSTANDING AND USING LATITUDE

What Is Latitude? How Is It Measured?

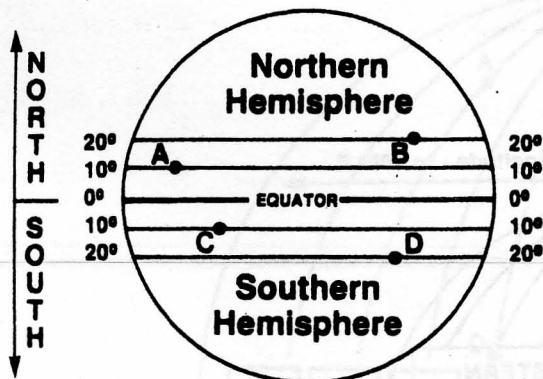
1. Lines of latitude are imaginary lines that run completely around the globe—full circles. If you travel along any of these lines you are going east or west.

2. The *equator* is numbered 0 degrees or 0°. The equator divides the world into two halves or *hemispheres*: the Northern Hemisphere and the Southern Hemisphere. All places that are north of the equator are said to have *north* latitude. All places south of the equator are said to have *south* latitude. So, place A on the diagram below is on the 10° north latitude line. A simple way to write 10° north is 10°N.

Place C is on the 10° south latitude line, or 10°S. What is the latitude of Place B?

_____ Your answer should be 20°N. What is the latitude of place D?

_____ If you wrote 20°S you were correct.



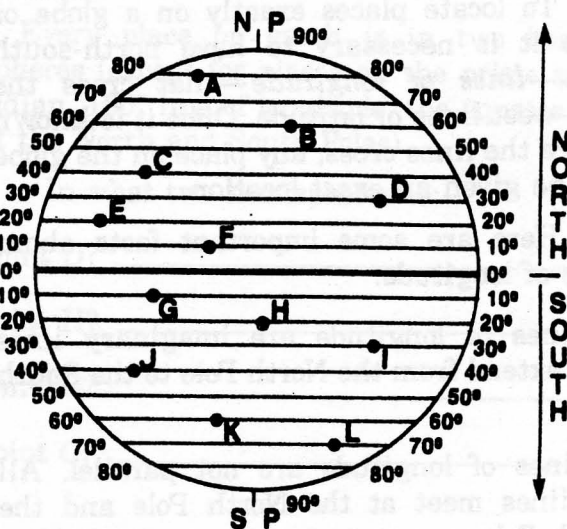
3. All lines of latitude are parallel. This means that no matter how far two lines of latitude are extended they would never meet. So, on the diagram above you can see that the equator, the 10°N line of latitude and the 10°S line of latitude are parallel. In fact, sometimes lines of latitude are called *parallels*.

4. To prevent maps from becoming too cluttered with lines, map makers show only a few lines of latitude, generally 10 or 20 degrees apart.

The diagram in the next column shows lines of latitude that are 10° apart. Starting

from 0°, the equator, the lines of latitude are numbered north and south to 90°. The North Pole is 90°N, and the South Pole is 90°S.

5. Here is an opportunity to practice finding the latitudes of a number of places. Place A has been given its latitude to help you get started.



- | | |
|---------------|----------|
| A: _____ 80°N | G: _____ |
| B: _____ | H: _____ |
| C: _____ | I: _____ |
| D: _____ | J: _____ |
| E: _____ | K: _____ |
| F: _____ | L: _____ |

6. You can easily determine how many degrees separate one place from another place. For example, B is on the 60°N line of latitude; C is on the 40°N line of latitude. By subtracting we find that B is 20° further north than C.

How many degrees of latitude separate:

- C from D? _____
- E from F? _____
- G from K? _____
- C from I? _____

UNDERSTANDING LONGITUDE

Your students have learned that latitude measures distances north and south of the equator. Now it is important that they learn how to locate places on lines of latitude. Suppose someone at sea reported that they were located on the 20°N line of latitude. A first question would be, "Where on the 20°N line are you located?" After all, the 20°N line goes all the way around the world—more than 23,000 miles!

To locate places exactly on a globe or map it is necessary to have north-south lines—*lines of longitude*—that cross the east-west lines of latitude. Once it is known where the lines cross, any place on the globe can be given an exact location.

Here are some important facts about lines of longitude:

1. Lines of longitude are imaginary lines that extend from the North Pole to the South Pole.
2. Lines of longitude are not parallel. All the lines meet at the North Pole and the South Pole.

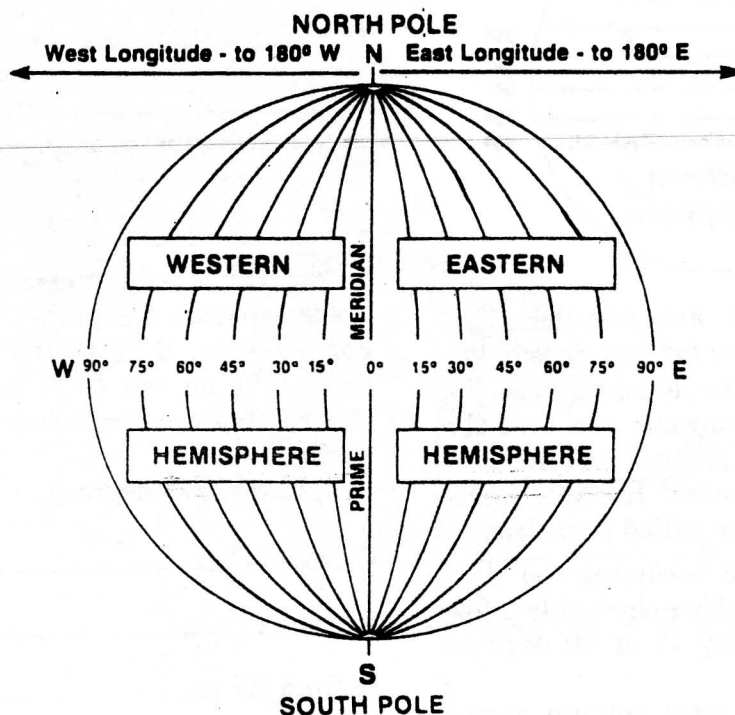
3. All same-numbered east or west lines of longitude are equidistant apart at the equator.

4. All lines of longitude are measured east or west of the *prime meridian*. Prime meridian is another way of saying the 0° line of longitude.

5. Lines of longitude are often shown on maps as being 10° apart at the equator. Sometimes they are shown as being 15° apart, or even 30° apart. How they are spaced and numbered depends on the purpose of the map.

6. The numbering of the lines continues for 180° to the east, and 180° to the west, for a total of 360°, a full circle.

7. The prime meridian and its continuation on the other side of the world, 180°, divides the world into two equal parts: The *Eastern Hemisphere* and the *Western Hemisphere*.



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LOCATING PLACES WITH LINES OF LONGITUDE

The exercises on this page will help you gain skill in locating places by longitude, and hemispheres. Later, you will apply your knowledge of both latitude and longitude to locate places around the world.

1. The lines of latitude on the diagram below are 15° apart. Notice that some of the lines are not numbered, that there are blank boxes on those lines. Study the numbers on the other lines, then print the proper numbers in the boxes.

2. What are the longitudes of the following points shown on the map? Remember: You must write E for east, or W for west to properly identify the location.

A _____	D _____	G _____
B _____	E _____	H _____
C _____	F _____	I _____

3. How many degrees of longitude are there between:

15°E and 45°E? _____

30°W and 90°W? _____

30°E and 30°W? _____

4. Every place on earth is in two hemispheres (except for places on the prime meridian, 180° line of longitude, the equator or at the North and South Poles).

In what two hemispheres is:

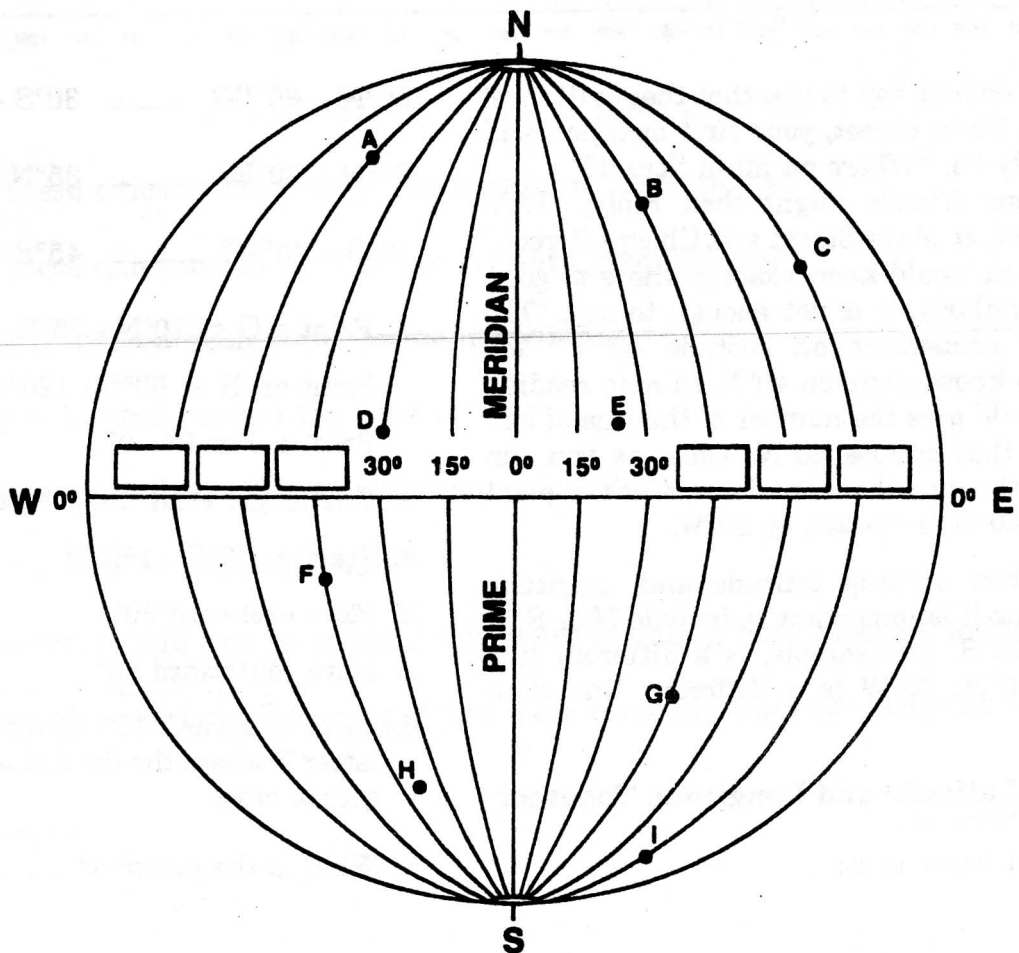
Point D? _____

Point H? _____

Point G? _____

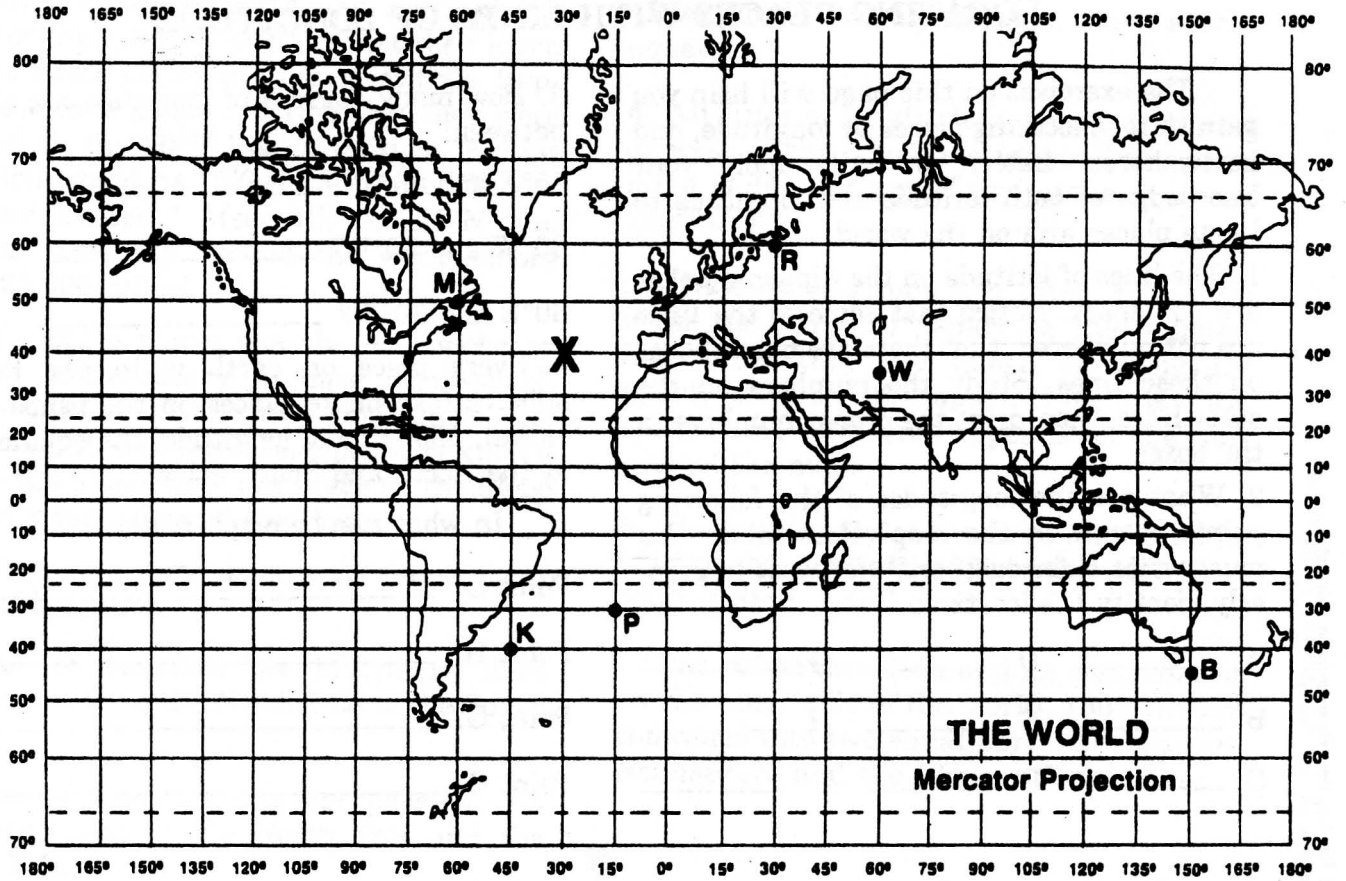
Point C? _____

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LOCATING PLACES WITH LATITUDE AND LONGITUDE



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If friends say to you that they will meet you on Main Street, your first question will probably be, "Where on Main Street?"

Your friends might then reply, "We'll meet you at Main Street and Cherry Street." Then you would know exactly where to go.

Similarly, it is not enough to say, "The city is somewhere on latitude 40°N." You have to know *where* on 40°N. In map reading you would give the number of the line of longitude that crosses 40°N. Thus, as you can see on the map there is a large X at the point where 40°N is crossed by 30°W.

When writing latitude and longitude positions it is important to include N or S, E or W. 10°S, for example, is a different line than 10°N; 90°W is a different line than 90°E.

Using Latitude and Longitude Together

1. What letter is at:

50°N - 60°W? _____ 30°S - 15°W? _____

60°N - 30°E? _____ 35°N - 60°E? _____

40°S - 45°W? _____ 45°S - 150°E? _____

2. Print a G at 10°N - 75°E.

Print an H at 60°S - 120°W.

Print a J at 0° - 0°.

3. Challenge: Find the position.

a. Start at 40°S - 150°W.

b. Move eastward 30°.

c. Move southward 20°.

d. Move eastward 15°. Print a dot and the letter T where the lines of latitude and longitude cross.

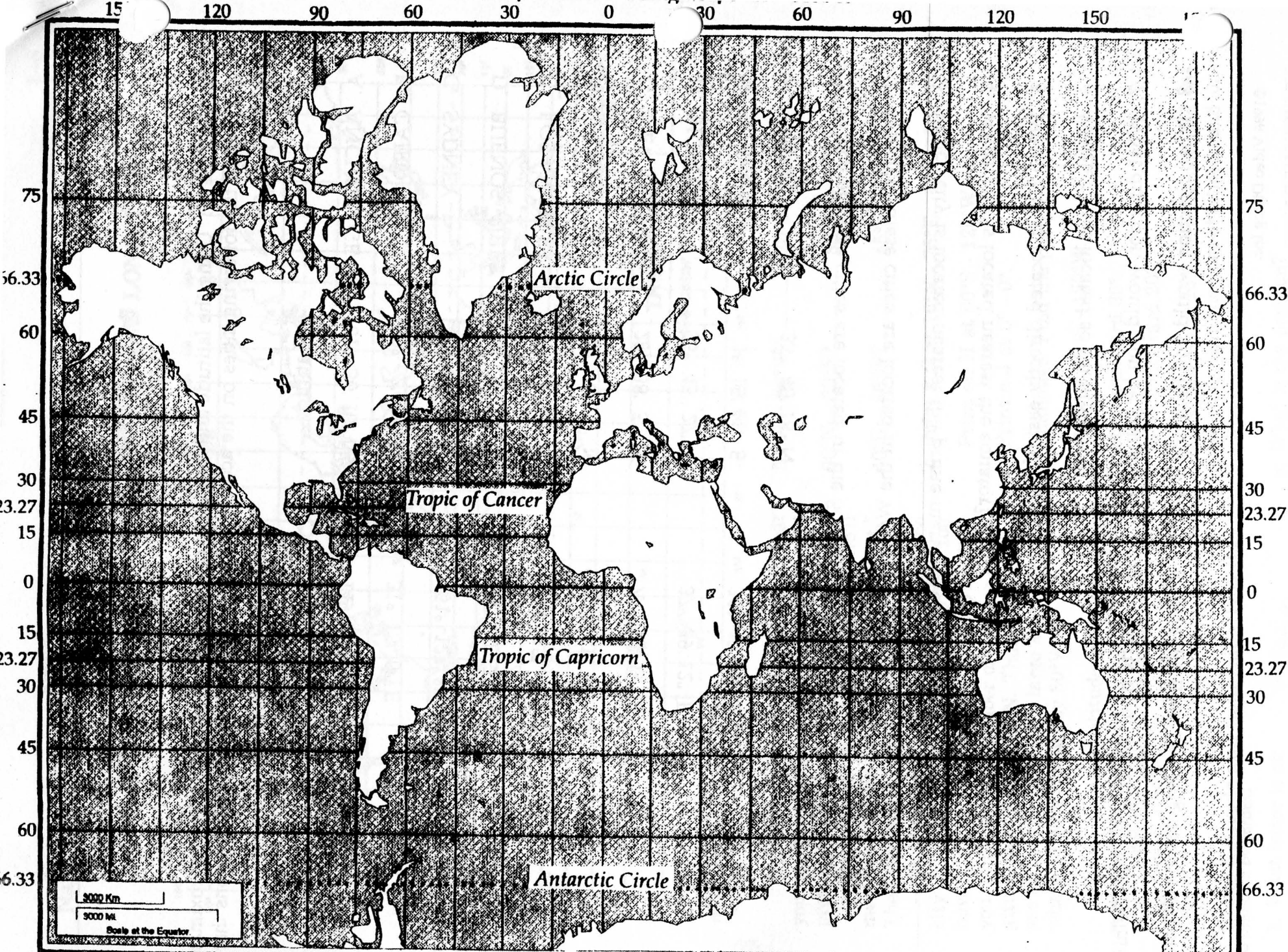
e. What is the position? _____

BASICS OF GEOGRAPHY: Water and Landforms
Map Exercise: Using Maps and Globes

DIRECTIONS: Using the latitude and longitude coordinates provided, plot the approximate locations of the following cities on the accompanying map. Then answer the questions that follow.

	<u>Latitude</u>	<u>Longitude</u>
A. ANCHORAGE	61° 30' 10" N	149° 50' 39" W
B. CAIRO	30° 2' 23" N	31° 15' 0" E
C. SYDNEY	33° 52' 46" S	151° 12' 8" E
D. BUENOS AIRES	34° 35' 59" S	58° 20' 27" W
E. LOS ANGELES	34° 3' 40" N	118° 17' 38" W
F. MADRID	40° 24' 14" N	3° 41' 51" W
G. NEW DELHI	28° 38' 5" N	77° 12' 33" E
H. MOSCOW	55° 45' 27" N	37° 39' 12" E
I. NAIROBI	1° 15' 41" S	36° 49' 54" E
J. TOKYO	35° 40' 18" N	138° 45' 6" E

- Which of these cities are located in the Southern Hemisphere?
- Which of these cities are located in the Western Hemisphere?
- Which city is located nearest the prime meridian?
- Which city is located nearest the equator?
- Which city is located directly east of Buenos Aires?
- Which city is located south of Cairo?
- What direction would you be going if you were traveling from Moscow to New Delhi?
- What direction would you be going if you were traveling from Los Angeles to Anchorage?



Arctic Circle

Tropic of Cancer

Tropic of Capricorn

Antarctic Circle

3000 Km
3000 Mi
Scale at the Equator