Math 1030 #18a
Problem Solving with Geometry
Angles

Degrees, Minutes, Seconds

$1° = 60'$ There are sixty minutes in a degree.

$1' = 60''$ There are sixty seconds in a minute.

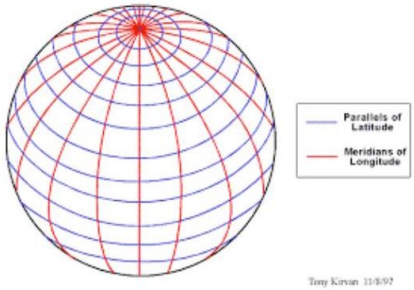
EX 1:

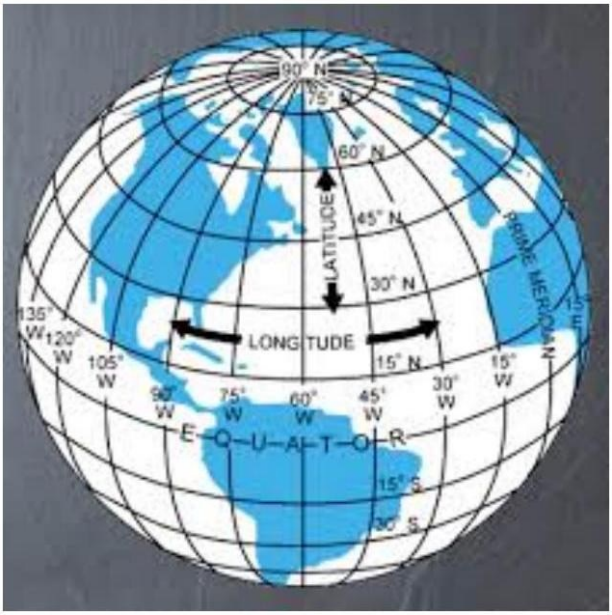
Convert 47.67° to degree-minutes-seconds.

EX 2:

Convert $150°15'27''$ to decimal degrees.

Latitude and Longitude





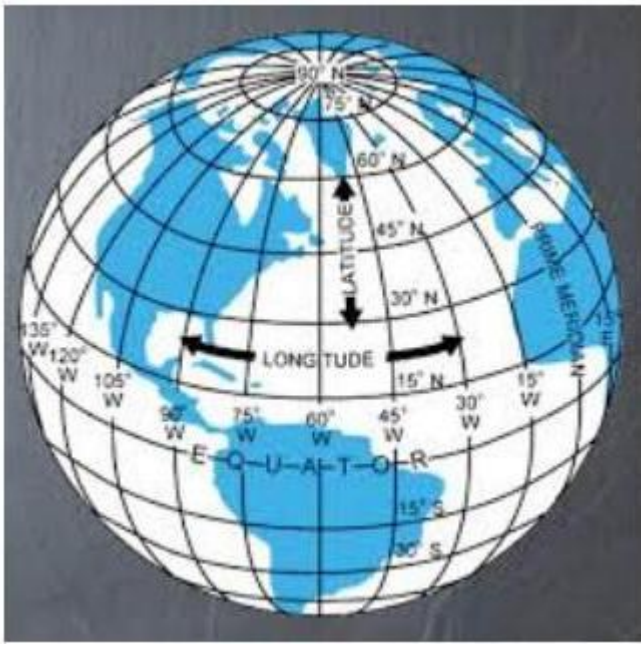
Latitude measures positions north or south of the equator. It will be a number between 0° and 90°.

Longitude measures east-west position from the prime meridian. It will be a number between 0° and 180°.

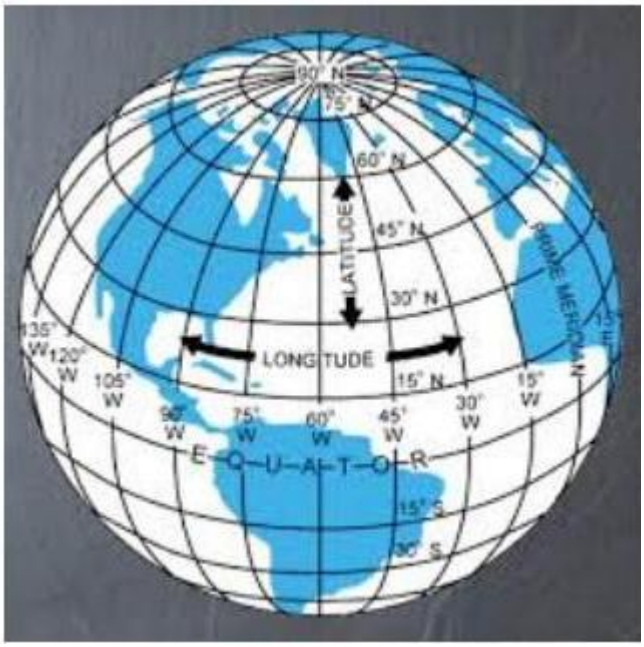
EX 3:

Determine the approximate latitude and longitude of the following places.

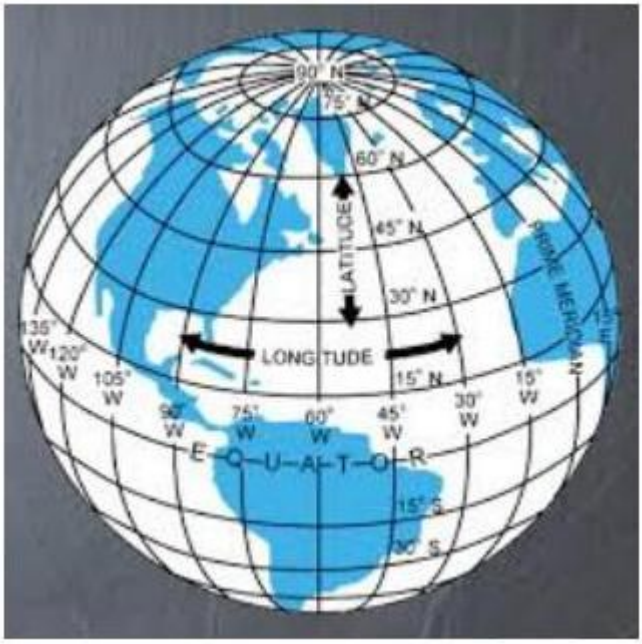
a) The Panama Canal



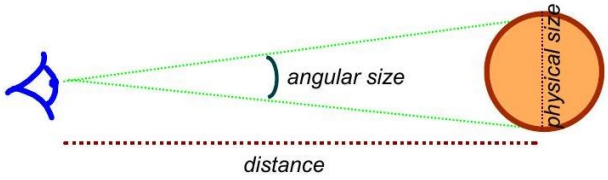
b) The eastern most point in South America



c) The western most point in Alaska.



Angular Size and Distance



$$\frac{\text{angular size}}{360^\circ} = \frac{\text{physical size}}{2\pi \text{distance}}$$

EX 4:

The moon has an angular size of 30 minutes (0.5°) and its distance from the earth is about 240,000 miles.

a) What is the diameter of the moon?

b) At what distance would a tennis ball (2.5" diameter) have to be so it would have the same angular size as the moon?

c) What is the angular size of the tennis ball when held at arm's length from the eye (about 25″)?

d) How far from Washington's face (60 ft in diameter) would you have to stand to have the tennis ball, held at arm's length, barely cover the face?