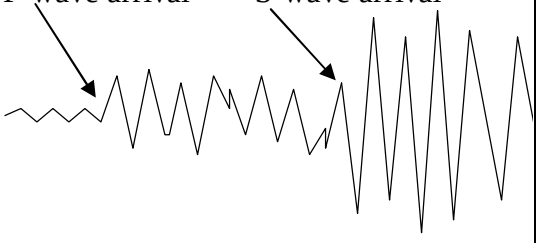
Locate an Earthquake Epicenter

When an earthquake occurs seismic waves are sent out in all directions. Earthquake waves come in three main types: P-waves (primary); S-waves (secondary); and L-waves (surface). These waves travel at different speeds:
P-waves being fastest, S-waves being next fastest, and L-waves the slowest. By knowing the time difference between when any two types of earthquake waves arrive at any particular place you can deduce how far away the earthquake epicenter is. By contacting other seismographic stations it is possible to determine where the earthquake occured.

In this activity you will use seismographic data and a compass to find the epicenter of an earthquake.

Procedure:

1. Calculate the time difference for when the waves were received at each station.
2. Use the Graph to find the distance from the station to the epicenter.
3. Using the scale on the map, draw a circle around each station, with a radius of the circle equal to that station's distance from the epicenter.
4. Mark the point of intersection for all circles: this is where the earthquake occurred.

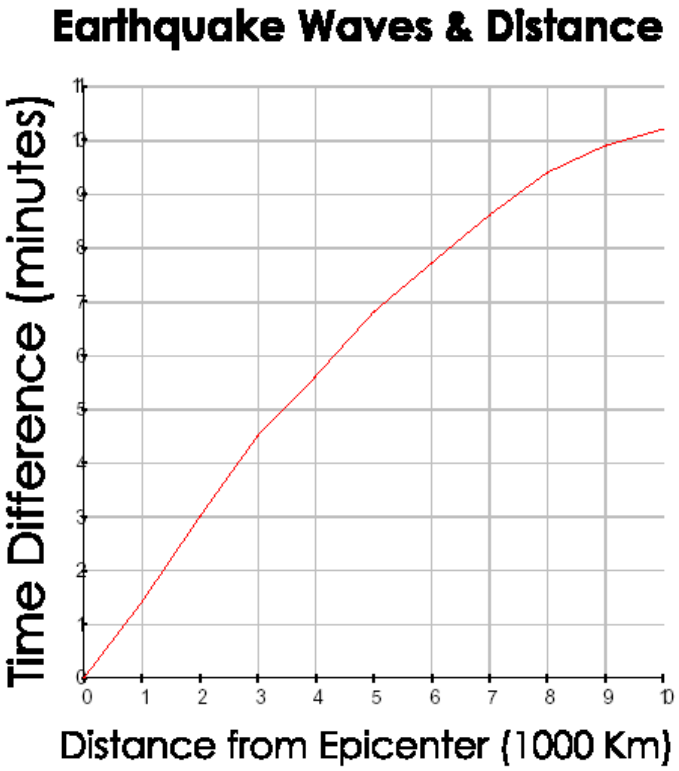


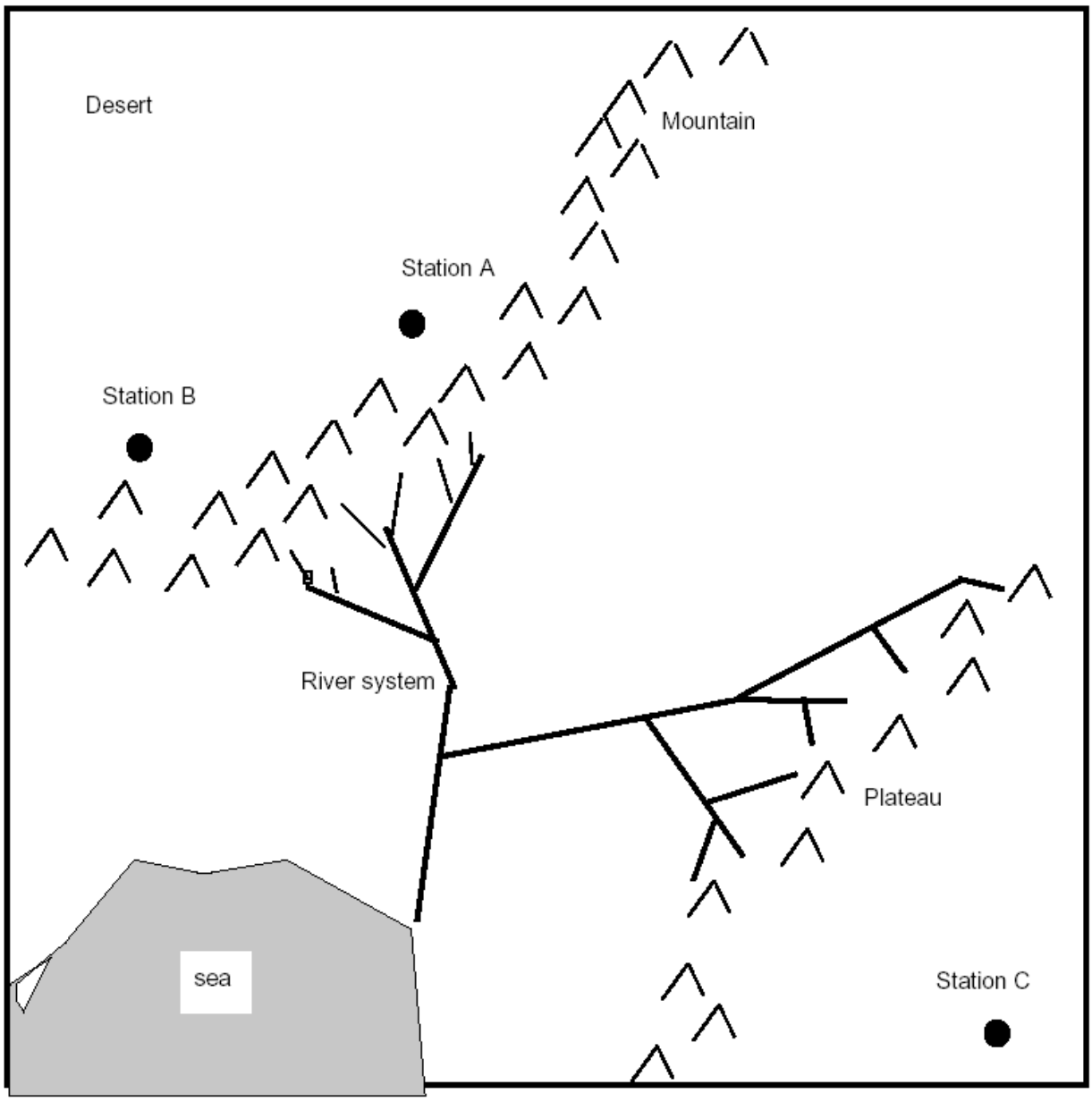
Seismograph Station Data

Station A:
P-wave arrival: 10:05 AM
S-wave arrival: 10:08 AM

Station B:
P-wave arrival: 10:10 AM
S-wave arrival: 10:14:30 AM

Station C:
P-wave arrival: 10:13 AM
S-wave arrival: 10:20 AM





Scale (kilometers)

0 500 1000 2000 3000 4000 5000 6000 7000