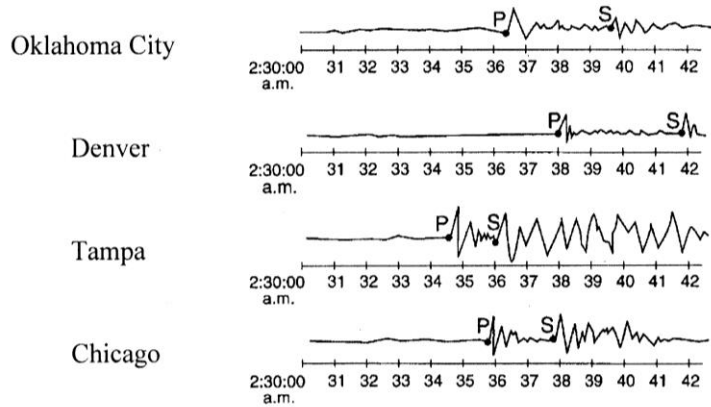
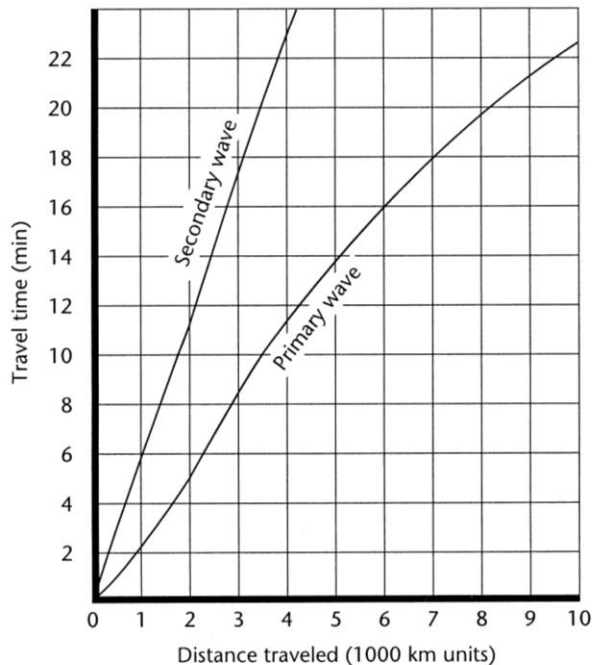


# Finding Epicenters

Fill in the data chart with the information from the seismograms. Times shown are hours and minutes. Seconds are not shown.



Station	'P' Wave Arrival	'S' Wave Arrival	Time Difference	Distance to Epicenter
Oklahoma City				
Denver				
Tampa				
Chicago				

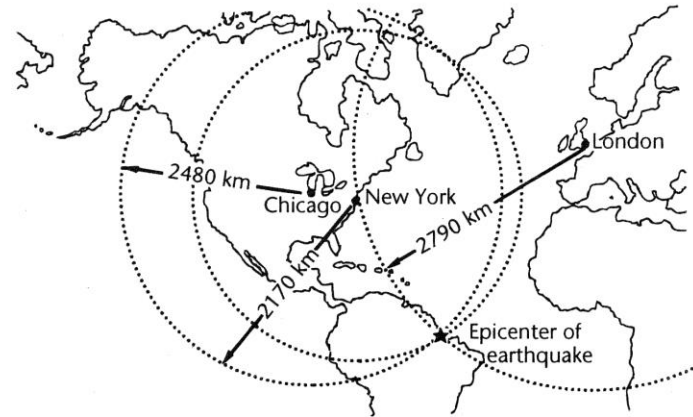


## Determining the Time of an Earthquake

Read the information and study the table giving travel times of seismic waves from an earthquake. Then study the map identifying the epicenter of the earthquake. Use these to answer the questions.

Seismologists use the distance from an epicenter plus the times of the arrival of primary, secondary, and surface waves to determine the time at which earthquakes begin.

Distance from epicenter (km)	Travel time					
	Primary waves		Secondary waves		Surface waves	
	min	sec	min	sec	min	sec
620	3	20	0	6	7	20
1240	5	56	10	48	14	16
1860	8	00	14	30	21	30
2480	9	50	17	50	27	50
3100	11	26	20	51	35	56
3720	12	43	23	27	41	43



- On what continent did the earthquake occur? \_\_\_\_\_
- How far was the earthquake from London? New York? Chicago? \_\_\_\_\_
- How long did it take the primary waves to reach Chicago? \_\_\_\_\_
- The primary waves reached Chicago at 9:00 A.M. When did the earthquake occur in Chicago time? What math operation did you use to determine the time of the earthquake? \_\_\_\_\_
- The earthquake epicenter was located two time zones east of Chicago. What time was it in the time zone containing the epicenter when the earthquake began? \_\_\_\_\_
- One seismograph station was 1860 kilometers from the earthquake's epicenter. What time was it at the seismograph station when the earthquake began if the secondary waves arrived at the station at 6:30 A.M.? At what time would the surface waves arrive at the station? \_\_\_\_\_