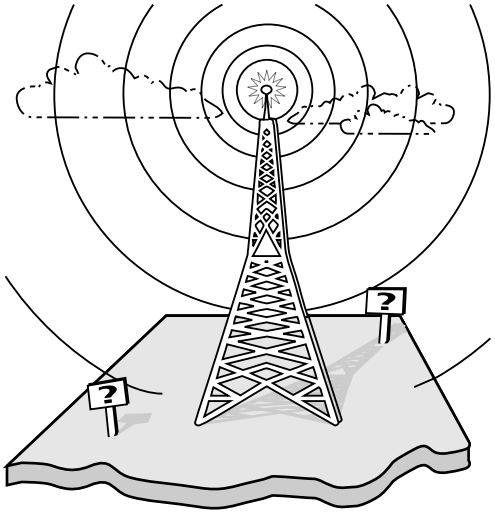
NAME _____ DATE _____

School-to-Career Activity

(Use with Lesson 13-5)

Broadcast Technician



Suppose you work as a broadcast technician at a medium-sized FM radio station in Indianapolis, Indiana. The director of advertising at the station has asked for your help. The owner of a car dealership has one sales lot in Muncie, Indiana, and another in Terre Haute, Indiana. The owner wants to know if the radio signal is strong enough to justify advertising both locations on your radio station. The director of advertising thinks the location should be advertised if the radio signal is strong enough to reach at least to the center of the city in which the sales lot is located.

You know that the range of the radio transmitter is 65 miles. You also know the exact latitude and longitude of the location of the radio station's transmitting tower. The director of advertising supplies you with the locations of Muncie and Terre Haute.

Location	Latitude (North)	Longitude (West)
Transmitting tower in Indianapolis	39.77°	86.16°
Center of Muncie	40.19°	85.39°
Center of Terre Haute	39.47°	87.41°

For this part of the world, one degree of latitude is approximately equal to 69 miles, and one degree of longitude is approximately equal to 53 miles. Use this information to decide whether each city is within range of the radio's transmitter. Write a brief memo to the director of advertising giving your recommendations. Be sure to explain your reasoning.

For Indianapolis/Muncie:
Difference in latitude = 0.42°, or 28.98 miles
Difference in longitude = 0.77°, or 40.81 miles
Distance between transmitting tower and center of Muncie: approx. 50.05 miles
For Indianapolis/Terre Haute:
Difference in latitude = 0.3°, or 20.7 miles
Difference in longitude = 1.25°, or 66.25 miles
Distance between transmitting tower and center of Terre Haute: approx. 69.41 miles
Because the range of the transmitter is 65 miles, the memo should recommend advertising the Muncie location but not the Terre Haute location.