Market Area Analysis

Market Area - the area over which a firm can underprice its competitors

Net Price = Price charged by the firm at the store plus travel costs of consumers

Assumptions for Music Store Example
1. Fixed store price - all music stores have the same production technology and pay the same input prices, so they all charge the same price
2. Travel Costs - each consumer buys one CD per shopping trip to the music store. The travel cost is $.50 per round trip mile
3. Region - the region is rectangular, 60 miles long and 20 miles wide

Market Area Variable Definitions
d - monthly per capita demand (number of CDs)
e - population density (people per square mile)
A - land area of the region (square miles)
q - output per music store (CDs sold per month)
Q - total regional demand for CDs

Market Area Equations
(1) $Q = d\ e\ A$ total sales in the region
(2) $N = Q/q$ equilibrium number of stores in the region
(3) $M = A/N$ market area per firm
Substitute (2) into (3)
(4) $M = A/Q/q = Aq/Q$
Substitute (1) into (4)
(5) $M = Aq/d\ e\ A = q/de$

Assume d = 4, e = 50, A = 300 q = 1,000
Q = (4)(50)(300) = 60,000 CDs per month
N = 60,000/1,000 = 60 stores
M = 1,000/(50)(4) = 5 square miles