Name: _____ Period: _____ Date: _____

Unit 7

Weber's Least Cost Theory

Human Geography

Alfred Weber (1868-1958) formulated a theory of industrial location in which an industry is located where it can minimize its costs, and therefore maximize its profits. Weber's least cost theory accounted for the location of a manufacturing plant in terms of the owner's desire to minimize THREE categories of cost:

1) Transportation: the site chosen must entail the lowest possible cost of A) moving raw materials to the factory, and B) finished products to the market. This, according to Weber, is the most important.	**2) Labor:** higher labor costs reduce profits, so a factory might do better farther from raw materials and markets if cheap labor is available (e.g. China – today)	**3) Agglomeration:** when a large number of enterprises cluster (agglomerate) in the same area (e.g. city), they can provide assistance to each other through shared talents, services, and facilities (e.g. manufacturing plants need office furniture)

Figures 1-3 show the weight-losing case, in which the weight of the final product is less than the weight of the raw material going into making the product. In Figure 1, the processing plant is located somewhere between the source and the market. The increase in transport cost to the left of the processing plant is the cost of transporting the raw material from its source. The rise in the transportation cost to the right of the processing plant is the cost of transporting the final product. Note the line on the left of the processing plant has a steeper slope than the one on the right.

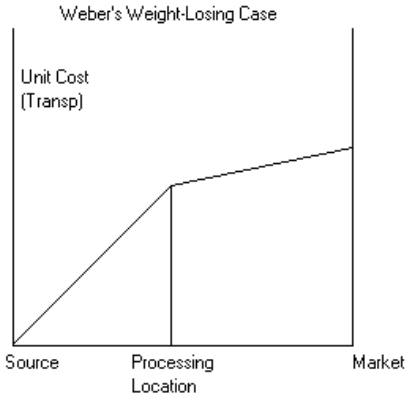


FIGURE 1

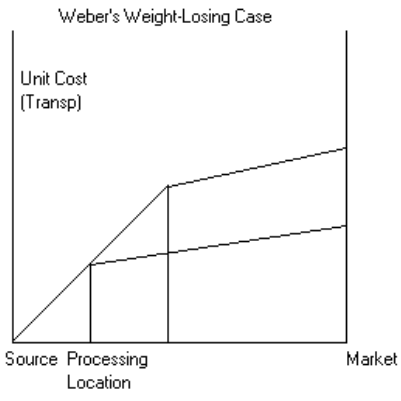


FIGURE 2

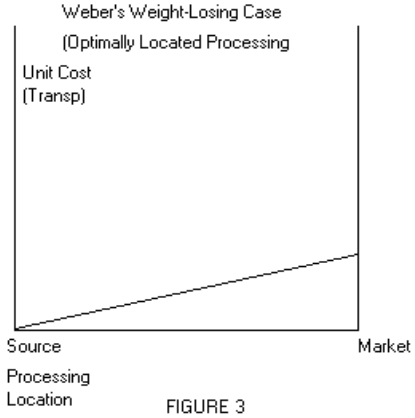


FIGURE 3

The weight gaining case is illustrated in Figures 4- 6, where the final product is heavier than the raw materials that require transport. Usually this is a case of some ubiquitous (available everywhere) raw material such as water being incorporated into the product. The optimal location of the processing plant in this case is at the market. Weber established that firms producing goods less bulky than the raw materials used in their production would settle near to the raw-material source. Firms producing heavier goods would settle near their market. The firm minimizes the weight it has to transport and, thus, its transport costs.

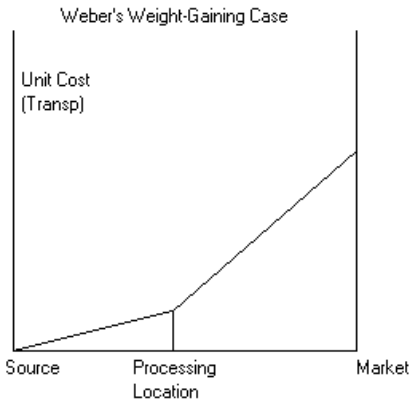


FIGURE 4

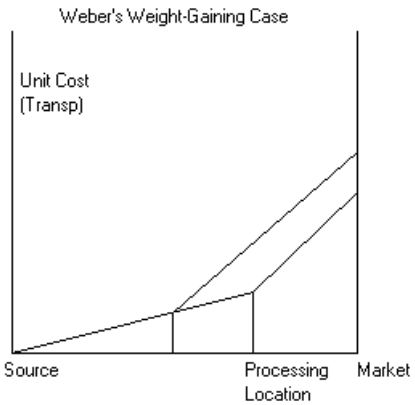


FIGURE 5

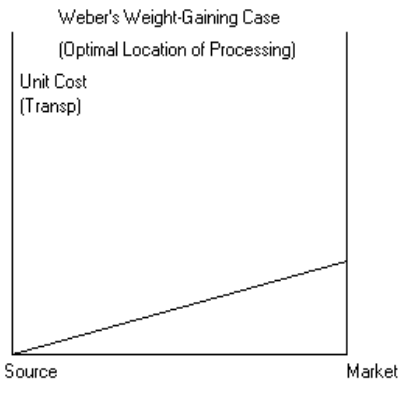


FIGURE 6

Industrial Location Assignment

Directions: answer the following questions. Type or write clearly on a separate sheet of paper.

1. List THREE variable costs that decision makers take into account when calculating efforts to maximize advantages.

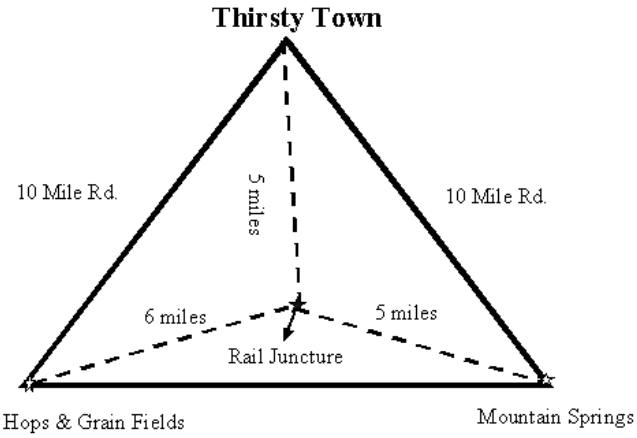
2. What does friction of distance refer to? How is the concept of distance decay related to this?

3. According to Alfred Weber's Least Cost Theory, what accounts for the location of manufacturing plants?

4. Now put Weber's theory to work in deciding where to locate a new brewery. Here's the scenario:

Material (per case)	Rail Transport Cost	Road Transport Cost
Hops & Grain	$.03/mile	$.05/mile
Spring Water	$.10/mile	$.15/mile
Bottled Beer	$.25/mile	$.30/mile

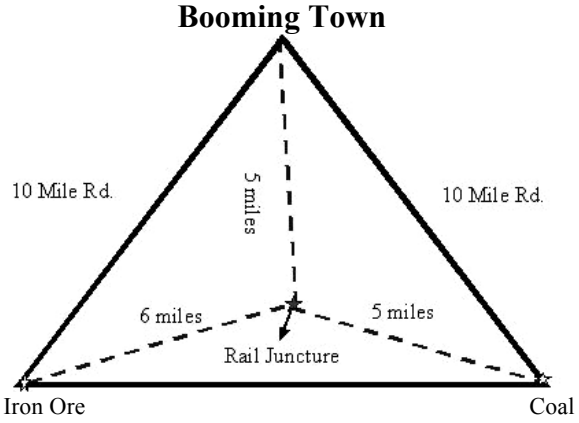
According to Weber, where will you locate the new brewery and why?



5. Now put Weber's theory to work in deciding where to locate a new steel factory for a growing town. Here's the scenario:

Material (per case)	Rail Transport Cost	Road Transport Cost
Iron Ore	$.75/mile	$.80/mile
Coal	$.35/mile	$.40/mile
Steel	$.20/mile	$.25/mile

According to Weber, where will you locate the new steel factory and why?



6. These scenarios only refer only to transportation costs. They do not adequately account for variations over time. For example, when relative labor costs decline, or when land rent goes down, an industry can sustain an increase in transportation costs – this is referred to as the ***substitution principle***. Discuss TWO other variables not mentioned by Weber that would affect the location of a factory.