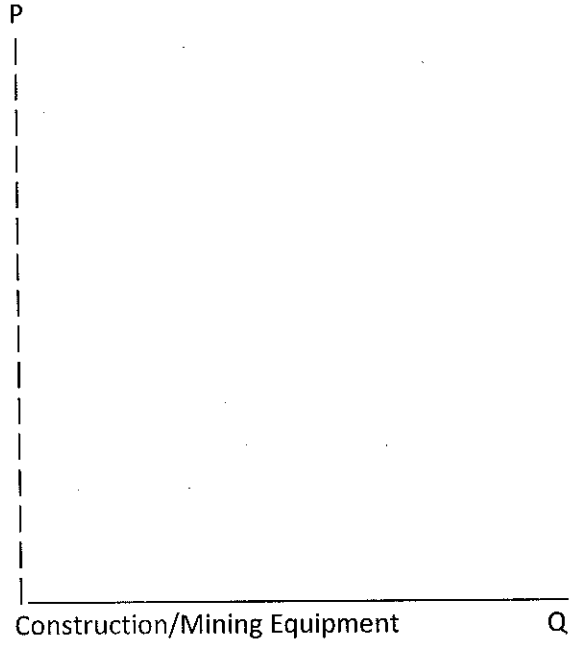
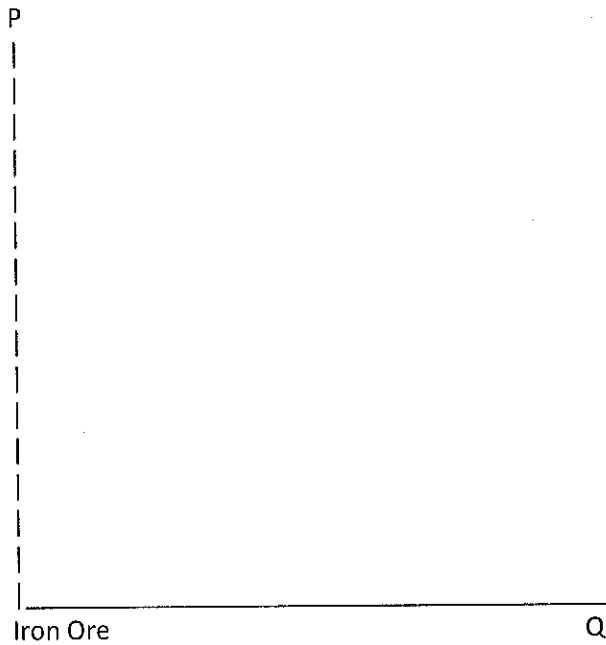


100 points total. Answer each question in the space provided.

1. (10 pts.) Caterpillar's CEO just announced his resignation, as both Caterpillar and other heavy construction equipment manufacturers like Komatsu have underperformed the market for the past five years. Many analysts place the blame on depressed world commodity markets for things like aluminum, copper, iron ore, etc., which has occurred as economies in North America, Europe, and Asia have slowed. Use supply and demand analysis to explain what is going on and why Caterpillar's CEO decided to step down. First analyze the market for a commodity like iron ore, which is used to make steel. Then analyze the market for construction/mining equipment, which is used in iron ore mines.



2. (5 pts.) Good weather and record corn and soybean harvests spell bad times for Midwestern farmers. Farm incomes derived from the sale of crops have dropped significantly from previous years when the size of the harvest was smaller. Explain how this could happen.
3. (10 pts.) Between 2007 and 2010, average household incomes fell from \$54,000 to \$51,000. Annual sales of high-end houseboats declined from 2,400 to 1,500. Compute income elasticity of demand for houseboats. What type of good are houseboats?

4. (10 pts.) As manager of a Lay's potato chip factory, you must decide whether to install a mechanical air dryer on the production line. Your engineers explain to you that they can reduce the time it takes to fry a potato chip and hence the company's natural gas bill by installing a drying rack and blowing air over the potato slices as they move through the production line. You must decide whether this is cost effective. Briefly explain the factors you would consider and how you would make such a decision.

5. (10 pts.) Why is the short-run average total cost curve always U-shaped? What is the economic significance of the bottom portion of the U?

6. (15 pts.) Your niece, who dropped out of college and currently delivers sandwiches for Jimmy John's (earning \$24,000 per year), approaches you for business advice. She has the opportunity to buy a craft brewery from a friend who wants to quit being the owner/manager, sell out, and go get an MBA so she can earn the big bucks. Annual sales revenues for the brewery are \$240,000, and annual accounting costs are:

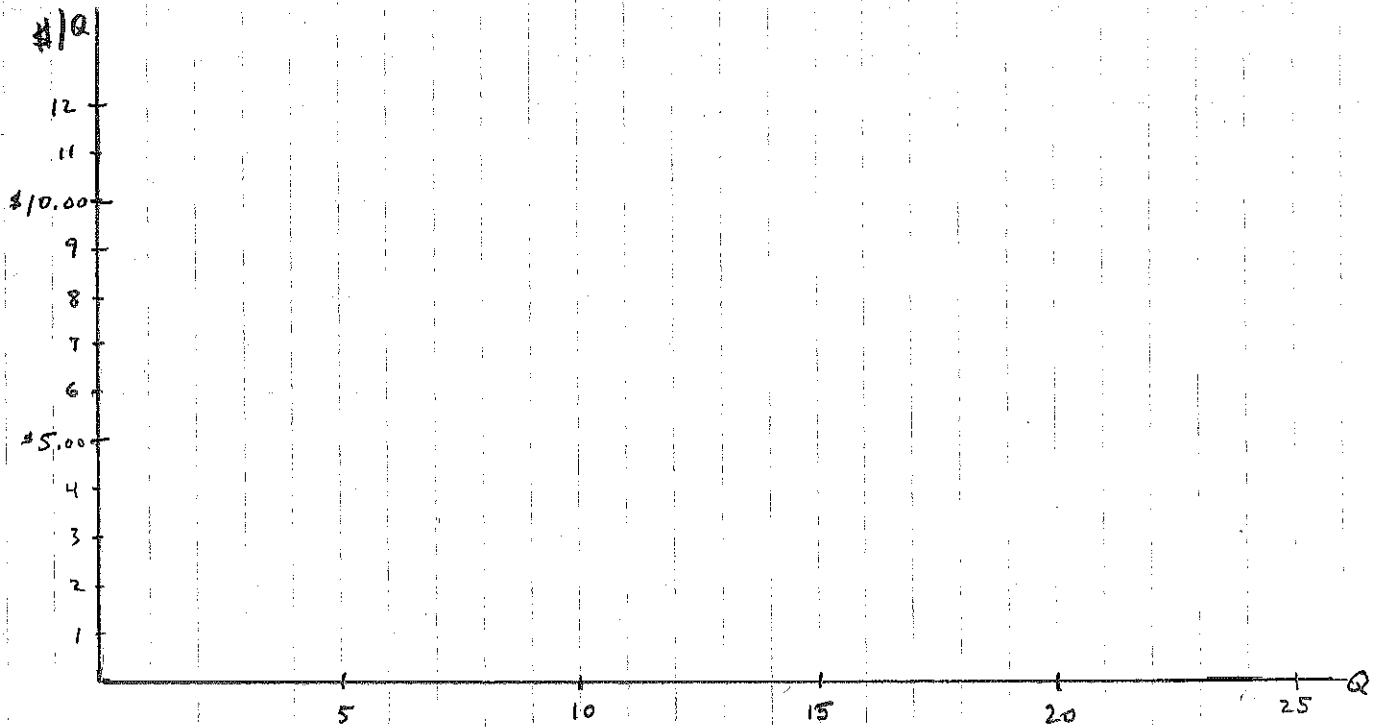
Ingredients (grains, hops, yeast, bottles, etc.)	\$50,000
Leased brewing and bottling equipment	\$45,000
Licenses, utilities, taxes	\$36,000
Hourly workers	\$60,000
Advertising	\$15,000

The sale of the brewery would include the building and land where the brewery is located, the brand name trademark and associated goodwill, and the customer list. The asking price is \$100,000, which your niece would take out of her investment account where it has been averaging a 7% return. What is your advice? Hint: This is not a one-word answer. You should help her calculate the economic profitability of this venture.

7. (15 pts.) A firm produces output (Q) using inputs labor (L) and capital (K). It can select from three different plant sizes corresponding to K=3, 6, and 9. When different amounts of L are combined with a fixed amount of K, output varies as follows:

K	3	3	3	6	6	6	9	9	9
L	4	6	12	6	8	17	9	12	21
Q	6	9	12	12	17	21	15	21	25

If the per unit price of labor is \$10 and the per unit price of capital is also \$10, draw the SRATC curves corresponding to K=3, 6, and 9. Carefully label each point. Also illustrate the LRAC curve for this firm and explain whether it experiences economies or diseconomies of scale.



8. (10 pts.) Describe the vertical chain of production in the aluminum industry. A chart/diagram might be helpful.

9. (5 pts.) Alltech and ABInbev both produce and sell beer. Alltech's annual production is two orders of magnitude smaller than ABInbev's. Why might the per can cost of producing Budweiser (ABInbev) be lower than the per can cost of producing Kentucky Ale (Alltech)?

10. (5 pts.) Write an algebraic expression that explains why Philadelphia Cream Cheese was given to Kraft Heinz and not Mondelez International when Kraft Foods broke into the two separate companies in 2011. Let X represent Philadelphia Cream Cheese, Y represent Kraft Heinz brands like Oscar Mayer, Velveeta, Kool-Aid, Jell-O, and Ore-Ida, and Z represent Mondelez brands like Cadbury, Oreos, Nabisco, Tang, and Ritz. Briefly explain the cost concept that you are representing.
11. (5 pts.) The University of Kentucky's legal department uses in-house attorneys who are UK employees for some of the University's legal needs, and relies on outside law firms for other legal needs. Malpractice lawsuits against the UK Hospital, which occur infrequently, are almost always outsourced. Does that seem efficient to you? Explain.