

# FOR PRACTICE ONLY

University of Alabama

Economics 110  
Principles of Microeconomics

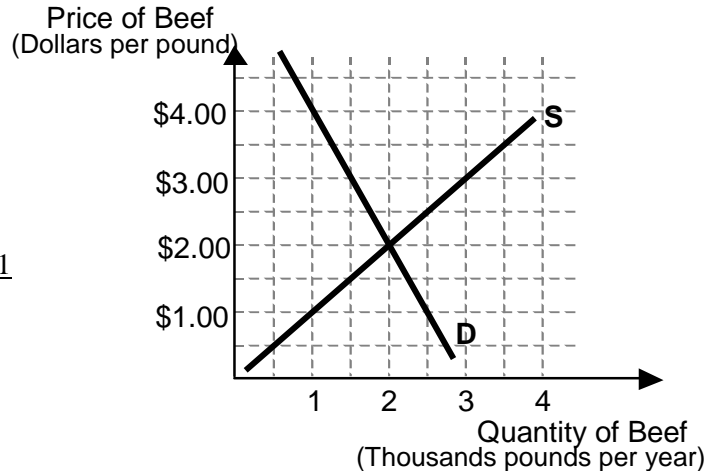
Spring 2009  
Professor Schlesinger

## Exam 1

**Answer all 5 questions below. Each question is worth 20 points.**

Answers must be written on the exam below. Scrap paper will be provided in class, but will not be collected with your answers. You should show how you obtain your answers.

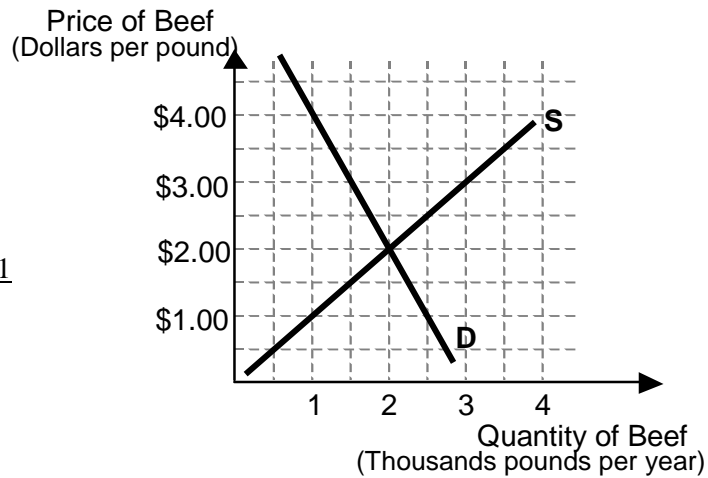
FIGURE 1



1. Use Figure 1 to answer the following questions:

- What is the equilibrium price of beef in this market?
- What is the elasticity of demand at a price of  $P = \$2.00$ ?
- Suppose that the government institutes a price ceiling on beef, so that beef cannot be sold for more than \$1.00 per pound. Will there be a shortage or surplus of beef in the market, and by how much?
- Suppose that the government institutes a price ceiling on beef, so that beef cannot be sold for more than \$3.00 per pound. Will there be a shortage or surplus of beef in the market, and by how much??
- Suppose that *Cattlemen's Quarterly* publishes an article linking beef consumption with a reduced risk of Alzheimer's disease. Will the demand curve or the supply curve change in the above diagram? Explain what will change and the effect on the equilibrium price.

FIGURE 1



2. Still using Figure 1, answer the following questions. Suppose the government imposes a tax of \$1.50 for every pound of beef sold. The tax is collected from the sellers of the beef.

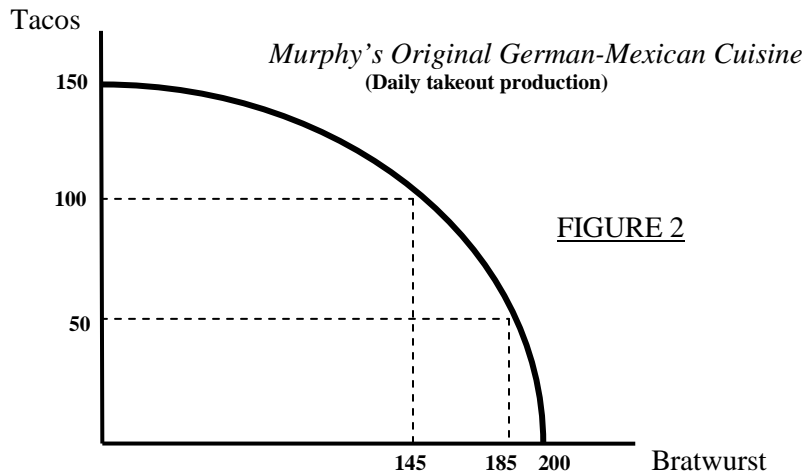
(a) Explain the effect of the tax on the demand curve and/or the supply curve in Figure 1.

(b) What is the new equilibrium quantity of beef in this market, after the imposition of the tax?

(c) What is the incidence of the \$1.50 tax on the buyer and on the seller?

(d) How much is the “excess burden” of the tax?

(e) How much total tax revenue will the government collect from the tax on beef?



3. Consider the production possibilities set in Figure 2 to answer the following questions.

(a) Is it possible and/or efficient for Murphy's to produce 150 bratwurst and 100 Tacos in a day? Explain.

(b) Is it possible and/or efficient for Murphy's to produce 100 bratwurst and 100 Tacos in a day? Explain.

(c) Due to "German week," Murphy's produced no tacos and 200 Bratwurst last week. If Murphy's produces 50 tacos this week, what is the opportunity cost in terms of bratwurst?

(d) Suppose that Murphy's has two locations. Each of the two locations has a production possibilities set as shown in Figure 2 above. A group of students has hired Murphy's for Oktoberfest to produce 150 Tacos and as many bratwurst as possible, using the resources from Murphy's two locations. Mr. Murphy says to specialize. He says to produce all 150 tacos in one location and then to produce 200 burritos at the second location. Mrs. Murphy says this would not be an efficient way to handle the Oktoberfest order. Who do you think is correct and why?

4. Andy and Brandi both work at Starbucks. Andy can make 60 cappuccinos in one hour. He can also make 30 white-chocolate mochas in one hour. Brandi also can make 60 cappuccinos in one hour. But Brandi can make 40 white-chocolate mochas in one hour.

(a) Who has an absolute advantage in making cappuccinos and who has a comparative advantage in making cappuccinos? Explain.

(b) Suppose that their manager at Starbucks wants to produce 30 white chocolate mochas in one hour. How many cappuccinos can also be produced in this hour? (Be sure to tell me how much time each person takes making cappuccinos and making white-chocolate mochas.)

5. The table below shows the marginal utility Waldo receives from each additional unit of two goods: waffles and orange juice. Waldo has no money, but has a gift certificate for \$12 at this restaurant. Suppose waffles are \$3.00 each and orange juice is \$1.00 per glass (including tax and tip).

Number of Waffles	Marginal utility	Glasses of orange juice	Marginal utility
0	--	0	--
1	10	1	5
2	8	2	4
3	6	3	3
4	4	4	2
5	2	5	1

(a) How many waffles and how much juice would you expect Waldo to order? Explain.

(b) Suppose that you know that waffles cost \$3.00 each, but that the price of juice has increased. You are not sure of the price for juice. You observe Waldo use his \$12 gift certificate to buy 4 waffles and no juice. Can juice cost \$3 glass? Explain why or why not.

(c) Suppose that waffles cost \$3.00 each and the price of juice is \$2 per glass. Any unused value on Waldo's \$12 coupon is lost. How many waffles and how many glasses of juice will Waldo order? Explain. (Think about your answer!)

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## Exam 2

**Answer all 5 questions below. Each question is worth 20 points.**

*Answers must be written on the exam below. Scrap paper will be provided in class, but will not be collected with your answers. You should show how you obtain your answers.*

1.(a) Suppose that workers can be hired for \$75 per day. All other inputs are fixed inputs that cost a total of \$100 per day. Workers can only be hired on a daily basis (not for partial days). This is a firm in a competitive market, with an output price of \$10 per unit sold. Complete the following table.

Variable input (Workers per day)	Total physical product (per day)	Marginal physical product	Marginal revenue product
0	0	-----	-----
1	20	20	200
2			150
3			100
4			100
5			50

(b) What is the profit-maximizing number of workers to hire? Explain your answer.

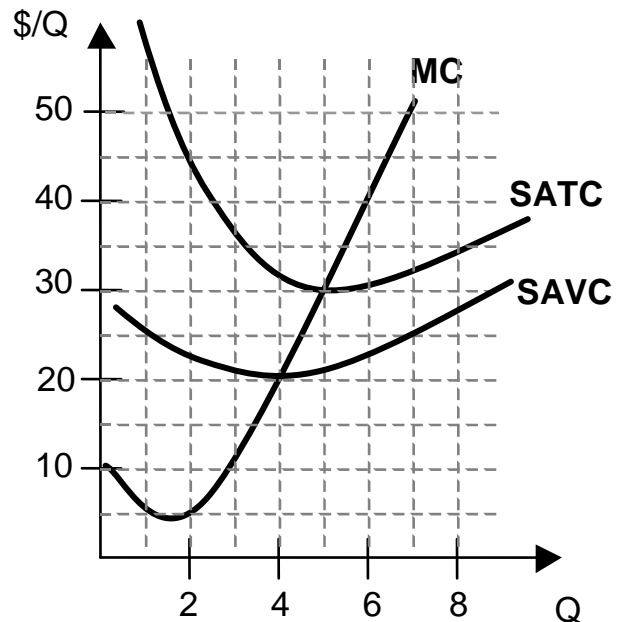
(c) What is the firm's total daily profit or loss? Explain your answer.

2. Consider the adjacent diagram showing some costs for a competitive firm in the short run. The firm has a fixed cost of \$35. For each price below, determine the firm's profit maximizing level of output and the firm's profit.

(a) Price = \$ 40

(b) Price = \$30

(c) Price = \$15



3. A publisher faces the following demand curve for its new mystery novel, “The Case of the Economics 110 Murders,” by a famous author.

<b>Price</b>	<b>Quantity Demanded</b>	<b>Total Revenue</b>	<b>Marginal Revenue</b>	
\$100	0			
\$90	100,000			
\$80	200,000			
\$70	300,000			
\$60	400,000			
\$50	500,000			
\$40	600,000			
\$30	700,000			
\$20	800,000			

The author is paid a flat fee of \$2 million for writing the novel, with no royalties. The cost of publishing each novel is \$20 per copy. Only batches of 100,000 novels are produced.

- (a) Complete the table above.
- (b) How many copies of this novel will be sold by a profit-maximizing publisher? Explain.
- (c) What is the publisher’s total profit if it publishes the amount you indicated in part (b)?

4. A monopoly is owned by two brothers, Adam and Bill. The monopolist faces the demand  $P(Q) = 100 - 2Q$ . The monopolist has a total cost of  $TC = 100 + 40Q$ .

- (a) Find the marginal revenue and marginal costs as functions of the output  $Q$ .
- (b) Find the profit-maximizing level of output  $Q^*$ .
- (c) What is the profit of this monopolist?

5. Suppose that the brothers in problem 4 have a disagreement. As a result, they split the firm into two, with Adam running Firm A and Bill running Firm B. The demand for their product is the same as before,  $P(Q) = 100 - 2Q$ , where we now have  $Q = Q_A + Q_B$ . The total cost for Firm A is  $TC_A = 60 + 40Q_A$  and for Firm B the total cost is  $TC_B = 50 + 40Q_B$ .

Suppose that Bill produces  $Q_B = 7.5$  units of output.

(a) Find the residual demand for Adam's firm, Firm A.

(b) What is Adam's best response to  $Q_B = 7.5$ ? That is, how much output would Firm A produce if it knew Firm B produced 7.5 units of output?

(c) If Adam produces the amount  $Q_A$  that you determined in part (b), what is Bill's best response?

(d) Using your answers above, determine whether or not we can have  $Q_B = 7.5$  in a Cournot equilibrium. Be sure to explain your answer.

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## Exam 3

**Answer all 5 questions below. Each question is worth 20 points.**

*Answers must be written on the exam below. Scrap paper will be provided in class, but will not be collected with your answers. You should show how you obtain your answers.*

1. Consider a duopoly market for a homogenous product, with two firms: Firm Column (**C**) and Firm Row (**R**). Both firms must label their product with price tags. For simplicity, assume that there are only two choices for the price: high or low. The following table gives the profits of each firm for each possible combination of prices:

		FIRM "COLUMN"	
		<i>High Price</i>	<i>Low Price</i>
FIRM "ROW"	<i>High Price</i>	<b>R: \$8 C: \$8</b>	<b>R: \$0 C: \$12</b>
	<i>Low Price</i>	<b>R: \$12 C: \$0</b>	<b>R: \$6 C: \$6</b>

(a) Suppose that the two firms decide to collude and agree to coordinate their prices. Which price will each firm decide to charge? Explain.

(b) Suppose that agreement in part (a) is not enforceable, but rather voluntary on the part of each firm. Explain why each firm would have incentive to renege on the agreement (i.e. to "cheat").

(c) The owner of Firm Row is considering buying Firm Column. He is considering offering a price of \$7 for ownership of Firm Column. Who would benefit from such a sale: Firm Row, Firm Column, both firms or neither firm? Explain.

2. National Defense is often given as an example of a pure public good. For each of the following goods or services, explain to what extent it exhibits the characteristics of a public good.

(a) National Defense

(b) The Tuscaloosa Police Department

(c) Fish in the Atlantic Ocean

(d) Google

(e) Cable Television

3. Thneeds are manufactured by two firms, A and B. The products are identical in both firms and both firms have the same marginal cost structure:  $MC_A = 1.5Q_A$  and  $MC_B = 1.5Q_B$ . The market demand for Thneeds is given by  $P = 600 - \frac{1}{2}Q$ , where  $Q = Q_A + Q_B$ .

(a) Suppose that each firm produces 100 units of Thneeds, i.e.  $Q_A = Q_B = 100$ . Will this be a Cournot equilibrium? Explain why it is or is not.

(b) Suppose that each firm produces 200 units of Thneeds, i.e.  $Q_A = Q_B = 200$ . Will this be a Cournot equilibrium? Explain why it is or is not.

4. There are two factories located on Lake Oskeewowow. Each factory is currently discharging 3000 gallons of the toxic substance *auburnium* into the lake every month. Firm A can reduce the level of toxic discharge at its factory at a cost of \$1/gallon for the first 2000 gallons. If it wishes to clean up more than 2000 gallons, it will cost Firm A \$3/gallon to clean-up each additional gallon. Firm B can clean-up the discharge at its factory at a cost of \$3/gallon. The EPA (i.e. the “government”) has decided that any discharge above a total of 4000 gallons of auburnium per month is too much of a health risk. [In all of your answers below, you should assume that the two firms do not change how much they produce. They only change their levels of pollution.]

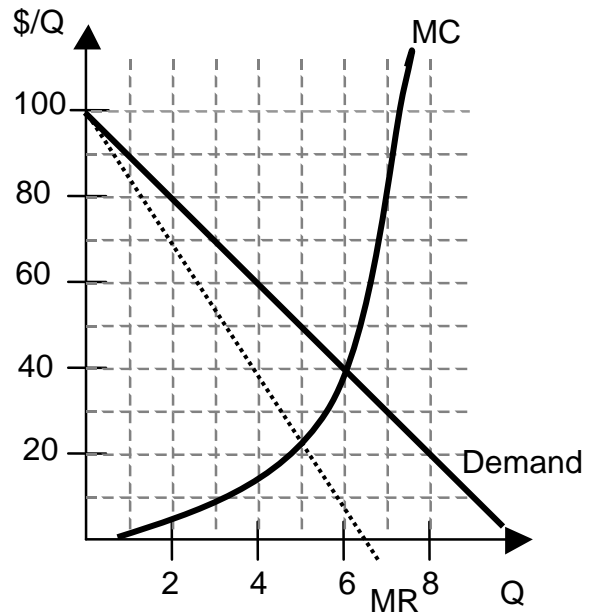
(a) Suppose that the EPA issues Firm A two auburnium permits, and also issues Firm B two auburnium permits. Each permit allows the firm to discharge 1000 gallons of auburnium per month into Lake Oskeewowow. These permits are not tradable and not transferable. What is the total cost of clean-up per month?

(b) If the EPA changes the rules and allows the permits to be traded, which firm will sell permits and which firm will buy them? How many permits will be bought and sold?

(c) What is the total monthly cost of removing auburnium from the lake after the permits have been traded?

(d) Suppose that instead of issuing permits, the EPA simply monitors the discharge and taxes each firm \$1.20 for every gallon of auburnium that is discharged into the lake. How much tax revenue will the EPA collect each month? Explain.

5. It is often said that competition is good for society, while monopoly power is bad (unless the monopolist has much lower costs due to economies of scale). For this reason, monopoly is sometimes considered a type of market failure (our textbook refers to this as “insufficient competition”). Let us suppose that the monopolist has no cost-saving advantages over a competitive market. The adjacent diagram is for the monopolist.



(a) What is the monopoly price and monopoly level of output; and how does this compare to the competitive output and price? Explain carefully.

(b) Use your answer to part (a) to argue whether consumers are better off or worse off under a monopoly than under competition.

(c) Suppose the government intervenes by setting a price ceiling of  $P = \$40$ . How much will the monopolist produce and why?

**Be sure your name is on the front page and that you answered all 5 questions.**