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ECON 101  
Principles of Microeconomics  
Professor Ron Cronovich

Exam 1

Monday October 6, 2008

Instructions:

1. Do not open this exam booklet until told you may begin.
2. Turn off your cell phones and any other electronic devices (except pacemakers).
3. This is a closed book, closed notes exam. You may use a calculator (graphing or financial calculators okay) but not a PDA, smart phone, cell phone, or any other device capable of storing notes or communicating with the outside world.
4. Answer all questions within the context of material covered in this course.
5. On the short-answer questions and problems, make sure you understand the question and think through your answer before you start writing. Only answer what is being asked.
6. On the short-answer questions and problems, write your answers in the spaces provided, but don't obligated to completely fill up all the provided space. Try hard to avoid using more than the allotted space.
7. Write legibly. If I can't read it, it's wrong.

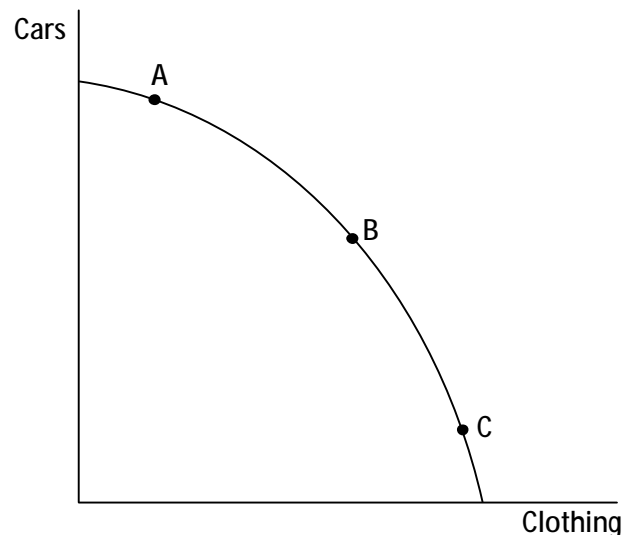
*GOOD LUCK!*

Part 1. Multiple Choice

Read each question and all its responses carefully. Circle the best choice.

1. The “opportunity cost” of an item is
  - a. the cost of the item minus the benefit of the item.
  - b. the dollar price of the item. (For example, the tuition that you pay to take classes at UNLV.)
  - c. the opportunity to buy the item at the lowest possible cost.
  - d. whatever you get when you obtain the item.
  - e. whatever must be given up to obtain the item.
  
2. Which of the following is the best example of the principle “Rational People Think at the Margin”?
  - a. A worker tries to convince her boss to give her a raise.
  - b. A 17-year-old high school junior is trying to decide whether to become a doctor or a construction worker.
  - c. Your 62-year-old grandfather compares the income he would earn if he works one more year before retiring to the enjoyment he would receive over the next year if he retires now.
  - d. A recent Carthage graduate needs to decide what brand of computer to buy for her new business.
  
3. Which of the following is a normative statement?
  - a. An increase in the price of gasoline will cause an increase in consumer demand for gasoline.
  - b. An increase in the price of gasoline will cause a decrease in consumer demand for gasoline.
  - c. A fall in interest rates would increase demand for new cars.
  - d. The government should reduce interest rates to increase demand for new cars.
  
4. Which of the following is NOT one of the “factors of production”?
  - a. labor
  - b. investment
  - c. capital
  - d. land

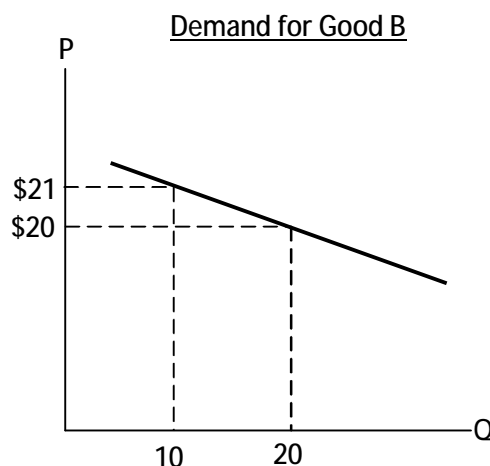
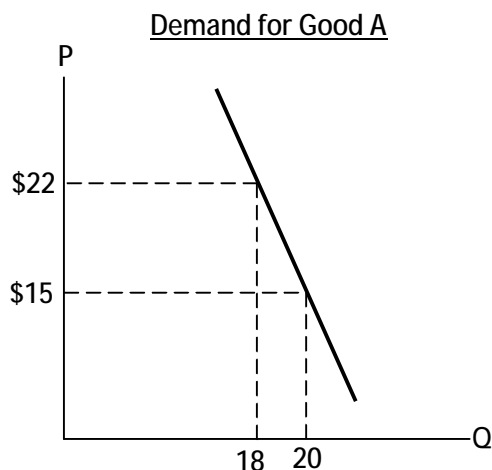
5. Refer to the diagram of the Production Possibilities Frontier. The opportunity cost of clothing is highest at which of the points A, B, or C?
  - a. A
  - b. B
  - c. C
  - d. It's the same at all three points.



6. In the circular-flow diagram, which one of the following groups owns the economy's factors of production?
  - a. households
  - b. business firms
  - c. the government
  - d. the international sector
  
7. Which of the following best describes the Law of Demand?
  - a. Other things equal, an increase in demand causes an increase in price.
  - b. Other things equal, an increase in income causes an increase in quantity demanded.
  - c. Other things equal, an increase in price causes an increase in quantity demanded.
  - d. Other things equal, an increase in price causes a decrease in quantity demanded.
  - e. all of the above
  
8. At the current price, the quantity of cell phones demanded is greater than quantity of cell phones supplied. This situation is called a
  - a. surplus, and causes the price of cell phones to rise.
  - b. shortage, and causes the price of cell phones to rise.
  - c. surplus, and causes the price of cell phones to fall.
  - d. shortage, and causes the price of cell phones to fall.
  
9. Which of the following would shift the supply curve for automobiles to the right?
  - a. Labor unions succeed in securing a large wage increase for auto workers.
  - b. Consumer incomes rise, causing higher demand for new automobiles.
  - c. Technological progress reduces the cost of producing automobiles.
  - d. Auto manufacturers expect that the price of autos will be higher in the near future, so they put some of their current production into storage and supply less today.
  
10. Which of the following would shift the pizza demand curve to the right?
  - a. A reduction in the price of pizza.
  - b. An increase in the number of pizza sellers.
  - c. An increase in pizza buyers' incomes.
  - d. A decrease in the cost of cheese.
  
11. Farmers use fertilizer to grow corn. Suppose the cost of the fertilizer increases. What happens to the equilibrium price and quantity of corn?
  - a. The price and quantity of corn both rise.
  - b. The price of corn falls and the quantity of corn rises.
  - c. The price of corn rises and the quantity of corn falls.
  - d. The price and quantity of corn both fall.

12. Suppose the following two events happen simultaneously:  
 EVENT 1: Consumers fear that gasoline will not be readily available in the future, so they rush to buy unusually large quantities of gasoline.  
 EVENT 2: Hurricane Katrina destroys half of the nation's oil and gasoline production facilities.  
 What happens to the equilibrium price and quantity of gasoline?
- The price of gas rises, and the quantity of gas falls.
  - The price and quantity of gas both increase.
  - The quantity rises, but the price could rise or fall.
  - The price rises, but the quantity could rise or fall.
13. In 2004, the price of a newspaper was \$1.00 per copy and 50,000 people bought newspapers. In 2005, the price of a newspaper was \$0.75 per copy and 40,000 people bought newspapers. Which of the following is the most likely explanation?
- The labor union of newspaper workers succeeded in negotiating higher wages for the workers in 2005.
  - The income of newspaper readers rose from 2004 to 2005.
  - A technological advance reduced the cost of producing newspapers in 2005.
  - In 2005, there were more and better sources of news available on the Internet for free, than in 2004.
14. Which of these has the highest price elasticity of demand?
- Microsoft Windows XP
  - Coconut fried shrimp
  - Clothing

For the following question, refer to these graphs:



15. Which is a true statement?
- The demand for Good A is perfectly elastic, and the demand for Good B is perfectly inelastic.
  - The demand for Good A is perfectly inelastic, and the demand for Good B is perfectly elastic.
  - The price elasticity of demand is lower for Good B than for Good A
  - The price elasticity of demand is higher for Good B than for Good A
  - None of the above are true statements.

16. Your parents own a gourmet restaurant, where the meals are superb (but expensive), the décor is first class, and the service is impeccable. It is the kind of restaurant that people go to for special occasions. Your parents decide to permanently lower the prices of all menu items by 10%. What is likely to happen to their total revenue?
- Revenue is likely to fall
  - Revenue is likely to rise
  - Revenue is likely to remain the same
17. The price of a good rises, and the quantity buyers demand falls by exactly 10%. If demand for the good is elastic, then how much must the price have risen?
- more than 10%
  - less than 10%
  - exactly 10%
18. "Welfare economics" is the study of
- welfare programs in the United States.
  - the well-being of less fortunate persons.
  - how the allocation of resources affects society's well-being.
  - the effects of income distribution on work effort.

Part 2. Problems, Applications, and Short-Answer Questions

1. The demand for prescription drugs is inelastic, while the demand for computers is elastic.
  - a. On the graphs below, draw and label the demand and supply curves for both goods. Label the horizontal and vertical axis of each graph. In each graph, label the equilibrium "A."

The Market for Prescription Drugs



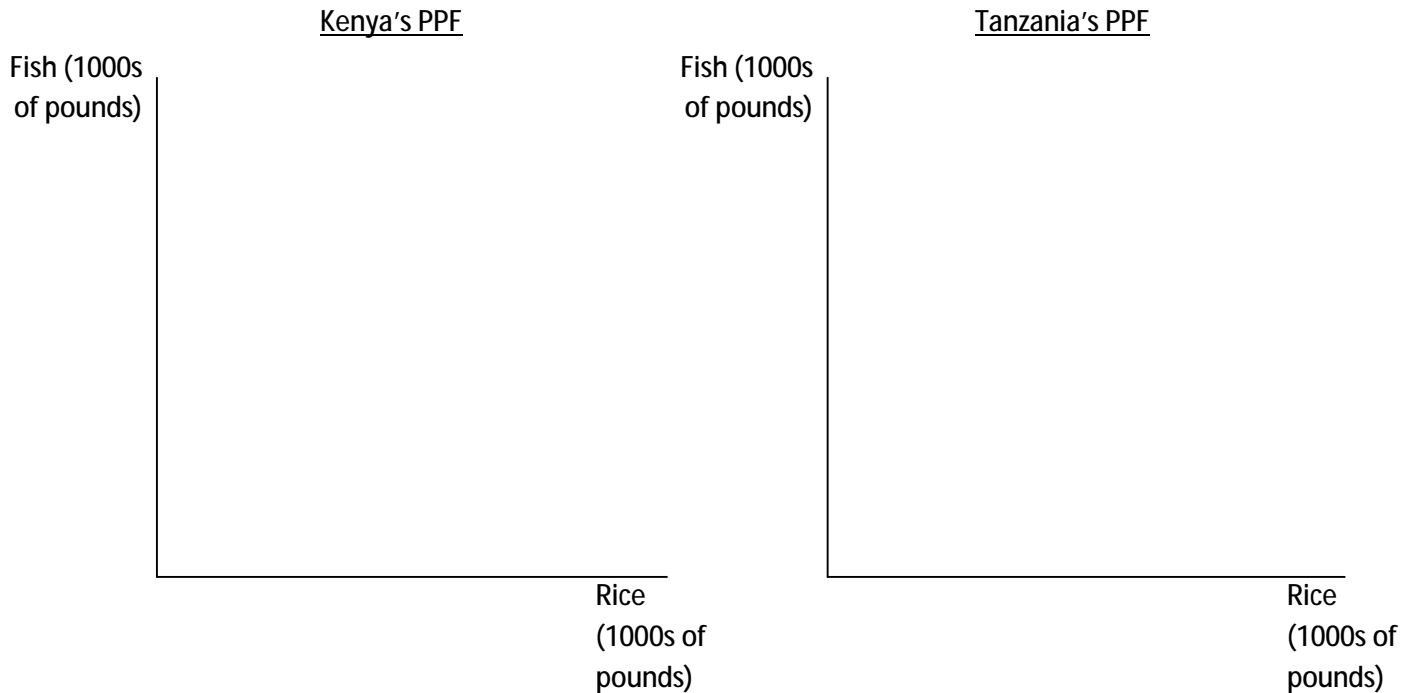
The Market for Computers



Suppose that technological advance doubles the supply of both products (that is, the quantity supplied at each price is twice what it was).

- b. Illustrate this change on your graphs.
- c. What happens to total consumer spending on prescription drugs? Briefly explain.
  
- d. What happens to total consumer spending on computers? Briefly explain.

2. Kenya has 800 workers, each of whom can produce either 20 pounds of rice or 40 pounds of fish. Tanzania has 1000 workers, each of whom can produce 60 pounds of rice or 30 pounds of fish.



- a. Draw each country's Production Possibilities Frontier in the space provided above. Label the intercepts of each PPF with the correct numerical values.
- b. What is the opportunity cost of rice in Kenya? (Provide your numerical answer and the units in which the opportunity cost of rice is measured, e.g. "10 dollars" or "6 shekels" or "12 pizzas.")
- c. What is the opportunity cost of rice in Tanzania? (Again, please don't forget to specify the units.)

e. Which country has the absolute advantage in producing fish? How did you determine the answer?

f. Which country has the comparative advantage in rice? How did you determine the answer?

g. If the two countries trade with each other, which country should export rice? Which country should export fish? Justify your answers.

3. What are the key characteristics of "perfectly competitive" markets?

4. Refer to the table, which shows the demand & supply schedules for motorcycles. In absence of any taxes, price floors, or price ceilings, the equilibrium is  $P = \$5,200$  and  $Q = 80,000$ . When answering the questions below, if a shortage or surplus occurs, indicate its size.

a. Describe the effects of a price floor at \$4600.

b. Describe the effects of a price ceiling at \$4600.

c. Describe the effects of a price floor at \$5600.

P	Q <sup>d</sup>	Q <sup>s</sup>
\$4000	83,600	77,600
4100	83,300	77,800
4200	83,000	78,000
4300	82,700	78,200
4400	82,400	78,400
4500	82,100	78,600
4600	81,800	78,800
4700	81,500	79,000
4800	81,200	79,200
4900	80,900	79,400
5000	80,600	79,600
5100	80,300	79,800
5200	80,000	80,000
5300	79,700	80,200
5400	79,400	80,400
5500	79,100	80,600
5600	78,800	80,800
5700	78,500	81,000
5800	78,200	81,200
5900	77,900	81,400
6000	77,600	81,600

Instead of imposing price floors or ceilings, suppose that government levies a tax on buyers equal to \$500 per motorcycle.

d. In the new equilibrium with the tax, what is the total price buyers pay for a motorcycle (including the tax)?

e. In the new equilibrium with the tax, what price do sellers receive for a motorcycle?

f. What is the new equilibrium quantity of motorcycles?

g. Describe the incidence of this tax.

5. If the price of the Wall Street Journal is \$1.00 per copy, then consumers will demand 50,000 copies. If the price rises to \$1.50 per copy, then consumers will demand 40,000 copies. Calculate the price elasticity of demand for the Wall Street Journal. Show your work.



## ANSWERS TO EXAM 1

### Part 1. Multiple Choice

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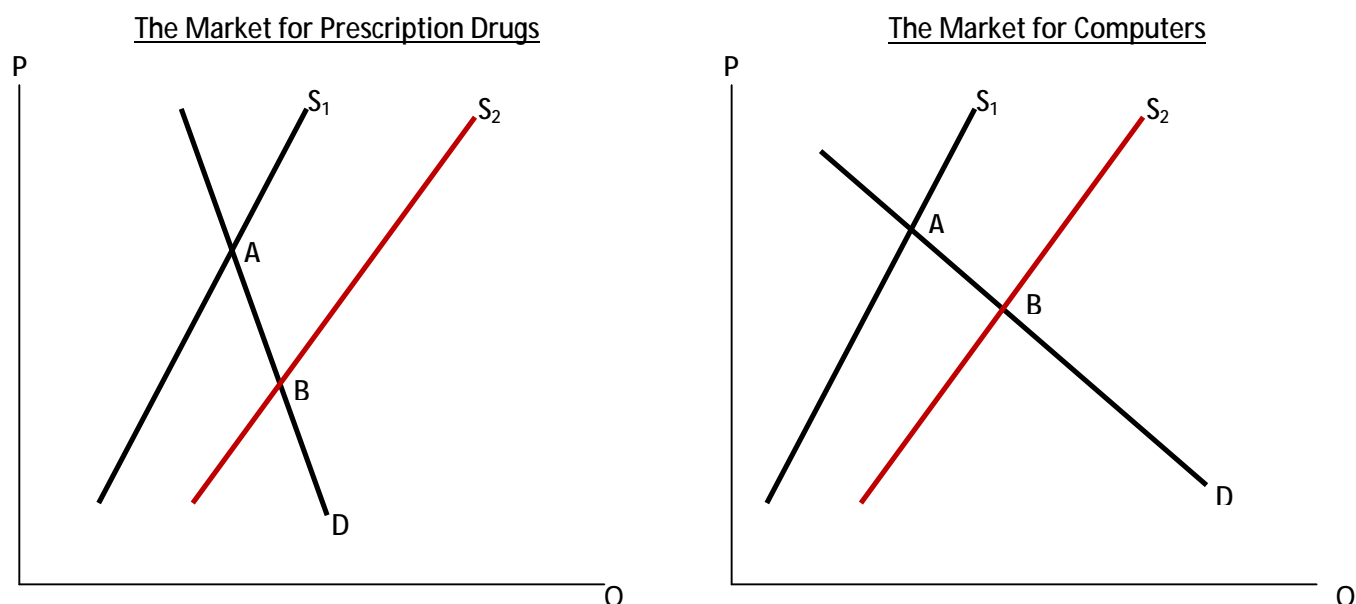
- 1 e. See p. 6.
- 2 c. The marginal benefit of retiring now instead of next year is the enjoyment value of a year's worth of leisure. The marginal cost of retiring now instead of next year is the income that your grandfather would earn if he works an extra year. Your grandfather is using marginal analysis to make the best decision. Remember: marginal changes are small changes to an existing plan; deciding between becoming a doctor (which involves roughly 12 years of schooling and training) and becoming a construction worker (which involves much less schooling, but some on the job training and experience) is not a marginal change. But deciding whether to retire at age 62 or 63 is a marginal change.
- 3 d. A normative statement is a statement about how the world should be. It is a subjective statement – a value judgment, or opinion. It cannot be confirmed or refuted with data. Statement d satisfies this definition (the word “should” should tip you off that it is subjective). The other statements are all positive statements – they describe the world, and can be confirmed or refuted with data. For example, when the price of gas goes up, we can look at data on consumer demand to confirm or refute the statements in a and b. When interest rates fall, we can see whether demand for new cars rises or falls in order to confirm or refute the statement in c. See pp.28-29 for more information on positive vs. normative statements, and some examples.
- 4 b. See class notes & the PowerPoint presentation/handout on Chapter 2.
- 5 c. Recall that the opportunity cost of the good measured on the horizontal axis equals the slope of the PPF. At point C, the PPF is steeper than at points A or B. So, the opportunity cost of clothing is higher at C than at A or B. See last paragraph on p.25 for more info on how the opportunity cost changes as you move down along a bow-shaped PPF.
- 6 a. See class notes and PowerPoint presentation/handout on Chapter 2, or pp.22-23.
- 7 d. See p.65.
- 8 b. See p.76 and Figure 9 for descriptions and illustrations of “shortage” and “surplus.”
- 9 c. Technological progress, or anything that reduces the cost of production, shifts the supply curve to the right. The events described in “a” and “d” would shift the supply curve to the left. The event described in “b” would shift the demand curve, not the supply curve. See pp.72-74.
- 10 c. Assuming pizza is a “normal” good, an increase in income causes an increase in the quantity of pizza demanded at each price, shifting the demand curve to the right. A reduction in the price of pizza would increase the quantity of pizza demanded, but this effect is captured by a movement along the demand curve, not a shift in the curve. An increase in the number of sellers or a decrease in the price of cheese would shift supply, not demand. See pp.67-69.

- 11 c An increase in the cost of fertilizer is an increase in the cost of inputs, which therefore shifts the supply curve to the left. As a result, P rises and Q falls. You can draw a supply-demand diagram to illustrate this, and your diagram should look just like Figure 11 on p.80.
- 12 d Event 1 shifts the D curve to the right, which, by itself, would cause P and Q to rise. Event 2 shifts the S curve to the left, which, by itself, would cause P to rise and Q to fall. If both events happen, P will definitely rise, but Q could rise or fall: the two events have opposing effects on Q, and the problem does not tell us which event has the bigger effect. See Figure 12 on p.80.
- 13 d From 2004 to 2005, the price of a newspaper falls and the quantity falls. This means that the demand curve for newspapers must have shifted to the left. The scenario in "a" shifts the supply curve to the left. The scenario in "b" shifts the demand curve to the right. The scenario in "c" shifts the supply curve to the right. The scenario described in "d" is the only scenario in which the newspaper demand curve shifts to the left, so "d" is the correct answer.
- 14 b There are few viable alternatives to Microsoft Windows XP, so its price elasticity of demand is likely to be very low. As discussed in class, "clothing" is a broadly defined good, and therefore is likely to have a low price elasticity of demand. Coconut fried shrimp is a product with many close substitutes, as enumerated by Forrest Gump's good friend Bubba: "Fried shrimp, boiled shrimp, baked shrimp, barbecued shrimp, lemon shrimp, garlic shrimp, ...." Lots of close substitutes = high elasticity. See p. 90.
- 15 d. You can quickly rule out "a" and "b", because neither demand curve is horizontal or vertical. To determine whether "c" or "d" are true statements, you can compute the elasticities, but there is a much easier way. Just remember the rule of thumb: the greater the price elasticity of demand, the flatter the demand curve. The demand curve for good B is flatter than the demand curve for Good A. Hence, demand for B is more elastic than demand for A, so "d" is a true statement and "c" is a false statement.
- 16 b When your parents reduce their prices, there will be two effects on revenue.  
(1) Each customer will have a lower total bill, because the price of a meal is lower; this will reduce your parents' revenue.  
(2) The lower prices will attract more customers – remember the law of demand: when the price of something falls, people demand a larger quantity of it. This effect will raise your parents' revenue.  
Chapter 5 teaches us that demand for luxury items like meals at fancy restaurants is elastic. This means that, when your parents cut their prices by 10%, the quantity of meals demanded is likely to increase by more than 10%, so effect (2) will be bigger than effect (1), and your parents' revenue will increase. For more information, please see "Total Revenue and the Price Elasticity of Demand" on pp.93-95 of your textbook.
- 17 b Demand is "elastic" when the price elasticity of demand is greater than 1, which implies that the percentage change in quantity demanded (given to be 10%) is greater than the percentage change in price.
- 18c See p.137.

ANSWERS TO EXAM 1

Part 2. Problems, Applications, and Short-Answer Questions

1. The demand for prescription drugs is inelastic, while the demand for computers is elastic.
- a. On the graphs below, draw and label the demand and supply curves for both goods. Label the horizontal and vertical axis of each graph. In each graph, label the equilibrium "A."



Suppose that technological advance doubles the supply of both products (that is, the quantity supplied at each price is twice what it was).

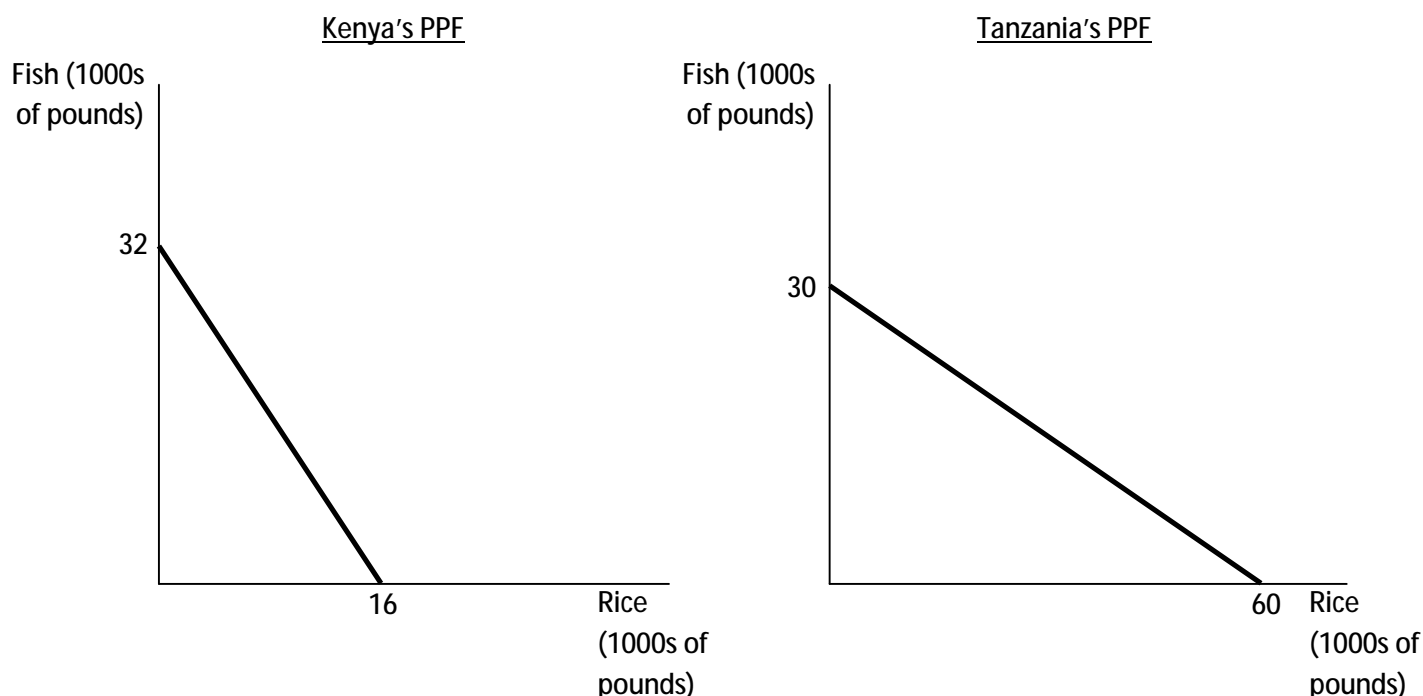
- b. Illustrate this change on your graphs. (Both S curves shift to the right)
- c. What happens to total consumer spending on prescription drugs? Briefly explain.

Spending =  $P \times Q$ . The increase in supply has two opposing effects on spending.  
 (1)  $P$  falls, people pay less for each prescription, which, by itself would reduce total spending.  
 (2)  $Q$  rises, people buy more prescriptions, which, by itself, would cause spending to rise.  
 Because demand for prescription drugs is inelastic,  $Q$  doesn't rise very much when  $P$  falls, so effect (1) is bigger than effect (2), and spending ends up falling. See Figure 3 on p.96.

- d. What happens to total consumer spending on computers? Briefly explain.

Spending =  $P \times Q$ . The increase in supply has two opposing effects on spending.  
 (1)  $P$  falls, people pay less for each computer, which, by itself would reduce total spending.  
 (2)  $Q$  rises, people buy more computers, which, by itself, would cause spending to rise.  
 Because demand for computers is elastic,  $Q$  rises a lot when  $P$  falls, so effect (2) is bigger than effect (1), and spending ends up rising. See Figure 3 on p.96.

2. Kenya has 800 workers, each of whom can produce either 20 pounds of rice or 40 pounds of fish. Tanzania has 1000 workers, each of whom can produce 60 pounds of rice or 30 pounds of fish.



- a. Draw each country's Production Possibilities Frontier in the space provided above. Label the intercepts of each PPF with the correct numerical values.

Kenya's PPF:

Horizontal intercept = 16,000 pounds of rice, the amount Kenya would produce if it used all 800 workers to produce rice.

Vertical intercept = 32,000 pounds of fish, the amount Kenya would produce if it used all 800 workers to produce fish.

Tanzania's PPF:

Horizontal intercept = 60,000 lbs rice, the amount Tanzania could produce if it used all 1000 workers to produce rice.

Vertical intercept = 30,000 lbs fish, the amount Tanzania could produce if it used all 1000 workers to produce fish.

- b. What is the opportunity cost of rice in Kenya? (Provide your numerical answer and the units in which the opportunity cost of rice is measured, e.g. "10 dollars" or "6 shekels" or "12 pizzas.")

2 pounds of fish

- c. What is the opportunity cost of rice in Tanzania? (Again, please don't forget to specify the units.)

1/2 pound of fish

- e. Which country has the absolute advantage in producing fish? How did you determine the answer?

Absolute advantage means being able to produce a unit of the good using fewer inputs than other producers. In Kenya, one worker can produce 40 pounds of fish, so it takes  $1/40$  of a worker to produce one pound of fish. In Tanzania, it takes  $1/30$  of a worker to produce one pound of fish. Kenya requires less labor to produce a pound of fish, so Kenya has the absolute advantage. (See p.52)

- f. Which country has the comparative advantage in rice? How did you determine the answer?

The country with the lowest opportunity cost of rice has a comparative advantage in rice. The opportunity cost of rice is lower in Tanzania, so Tanzania has a comparative advantage in rice production. (See pp.52-53)

- g. If the two countries trade with each other, which country should export rice? Which country should export fish? Justify your answers.

Tanzania should export rice because it has a comparative advantage in rice production. Kenya should export fish because it has a comparative advantage in catching fish. (See p.54)

3. What are the key characteristics of "perfectly competitive" markets?

- 1) The goods bought and sold are all exactly the same.
  - 2) buyers and sellers are so numerous that no single buyer or seller has any influence over the market price.
- (See p.64)

4. Refer to the table, which shows the demand & supply schedules for motorcycles. In absence of any taxes, price floors, or price ceilings, the equilibrium is  $P = \$5,200$  and  $Q = 80,000$ . When answering the questions below, if a shortage or surplus occurs, indicate its size.

P	$Q^d$	$Q^s$
\$4000	83,600	77,600
4100	83,300	77,800
4200	83,000	78,000
4300	82,700	78,200
4400	82,400	78,400
4500	82,100	78,600
4600	81,800	78,800
4700	81,500	79,000
4800	81,200	79,200
4900	80,900	79,400
5000	80,600	79,600
5100	80,300	79,800
5200	80,000	80,000
5300	79,700	80,200
5400	79,400	80,400
5500	79,100	80,600
5600	78,800	80,800
5700	78,500	81,000
5800	78,200	81,200
5900	77,900	81,400
6000	77,600	81,600

- a. Describe the effects of a price floor at \$4600.

No effects. The price floor is not binding because it is below the equilibrium price. (See Figure 4a, p.119, for a similar example)

- b. Describe the effects of a price ceiling at \$4600.

If  $P = \$4600$ ,  $Q^d = 81,800$ ,  $Q^s = 78,800$   
 shortage =  $81,800 - 78,800 = 3,000$ .

A shortage puts upward pressure on the price, but the price ceiling prohibits the price from rising. (See Figure 1b, p.115, for a similar example.)

- c. Describe the effects of a price floor at \$5600.

If  $P = \$5600$ ,  $Q^d = 78,800$ ,  $Q^s = 80,800$   
 surplus =  $2,000$ .

A surplus puts downward pressure on the price, but the price floor the price from falling. (See Figure 4b, p.119, for a similar example.)

Instead of imposing price floors or ceilings, suppose that government levies a tax on buyers equal to \$500 per motorcycle.

- d. In the new equilibrium with the tax, what is the total price buyers pay for a motorcycle (including the tax)?

\$5400

- e. In the new equilibrium with the tax, what price do sellers receive for a motorcycle?

\$4900

- f. What is the new equilibrium quantity of motorcycles?

79,400

- g. Describe the incidence of this tax.

The tax causes the price buyers pay to rise \$200, and the price sellers receive to fall by \$300, hence sellers bear 3/5 of the burden of this tax, while buyers bear 2/5 of the burden.

5. If the price of the Wall Street Journal is \$1.00 per copy, then consumers will demand 50,000 copies. If the price rises to \$1.50 per copy, then consumers will demand 40,000 copies. Calculate the price elasticity of demand for the Wall Street Journal. Show your work.

$$\text{percentage change in quantity} = (50,000 - 40,000)/45,000 = 0.2222 = 22.22\%$$

$$\text{percentage change in price} = (\$1.50 - \$1.00)/\$1.25 = 0.40 = 40.0\%$$

$$\text{price elasticity of demand} = 22.22/40.0 = \underline{0.56}$$

6. Calculating surplus

- a. Compute consumer surplus. Show your work.

$$1/2 \times \$100 \times 50 = \underline{\$2500}$$

- b. Compute producer surplus. Show your work.

$$1/2 \times \$200 \times 50 = \underline{\$5000}$$

- c. Compute total surplus. Show your work.

$$TS = CS + PS = \$2500 + \$5000 = \underline{\$7000}$$