

Principles of Microeconomics

Solutions to Sample Mid-Term Examination (Based on material in Chapters 1-6)

Part A: Multiple Choice Questions

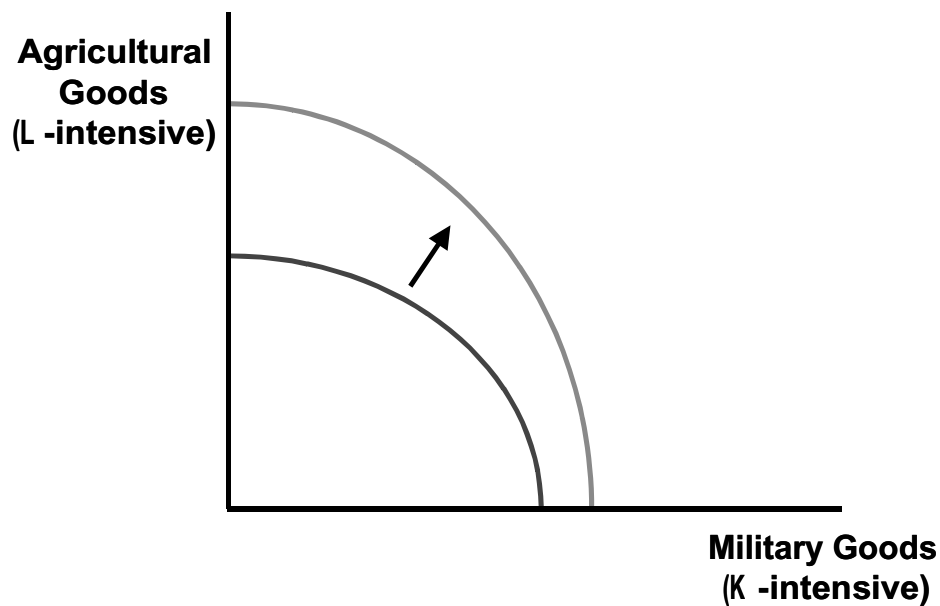
1. C
2. C
3. B - Since we don't know if Sophie and her brother agreed to the transaction, all we are certain of is that Sophie was willing to pay a maximum of \$5 to have her brother clean the house that evening. The maximum someone is willing to pay for something represents the opportunity cost of the activity to that person.
4. A - Conditional statements do not necessarily have to be true. The data will either confirm or refute the statement.
5. C - If he has no other trip to take within the year the unused ticket will be unredeemable (and thus represents a sunk cost) and should not be considered an opportunity cost. Thus, the opportunity cost is only the cost of the exchange fee. If he has another trip to take within the year, the opportunity cost of going to Acapulco would depend, in part, upon the price of the ticket to the new location.
6. B - The fee does not change with the number of long distance phone calls Mark makes and is, therefore, a fixed cost. If he decides to change his long distance carrier he will be reimbursed the amount of the switching fee. The switching is redeemable and, thus, is not a sunk cost.
7. C
8. C
9. C - By exploiting the lowest cost production first the opportunity cost of producing additional units of a good increases and, thus, the slope of PPC increases (i.e., it is bowed outward).
10. D
11. B - A change in the price of gasoline never cause a change in the *demand* for gasoline; only a change in the *quantity demanded*. However, since gasoline is a complement to SUVs, the higher price of gasoline will decrease demand for SUVs.

12. C - When both supply and demand shift simultaneously, one can predict either the change in the equilibrium price or the equilibrium quantity but not both. In this question the price change is positive but the quantity change could be positive, negative, or zero.
13. D - Excess supply = (quantity supplied – quantity demanded) = (700 – 300) = 400.
14. C- $TU(3^{\text{rd}} \text{ slice}) - TU(2^{\text{nd}} \text{ slice}) = 15 - 10 = 5$.
15. C- Since $(15/1.50) > (12/2)$ the allocation has too much toothpaste and not enough candy.
16. B
17. D
18. E
19. C
20. B

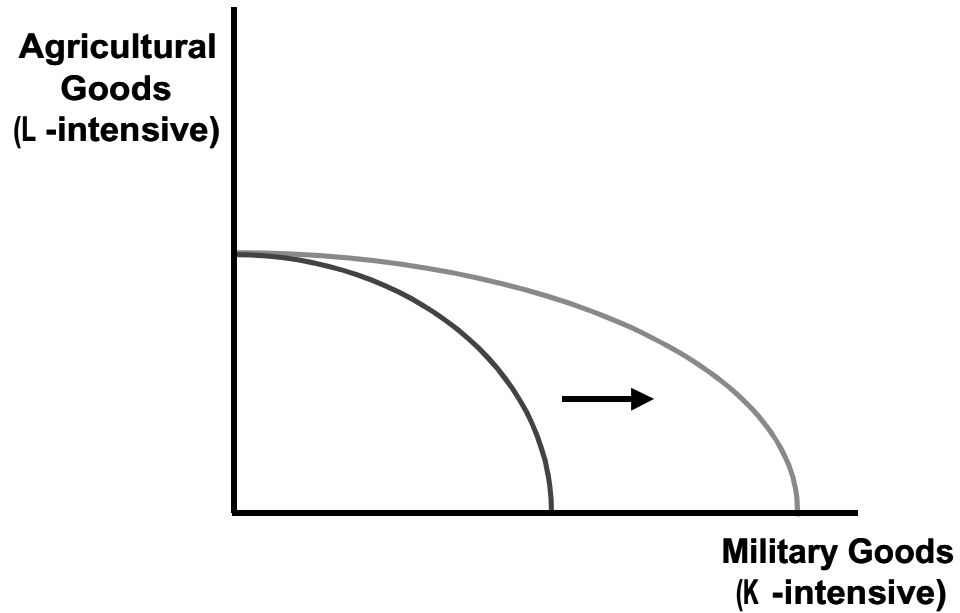
Part B: Short-Answer Questions (30 Marks)

B1. Production Possibility Boundaries

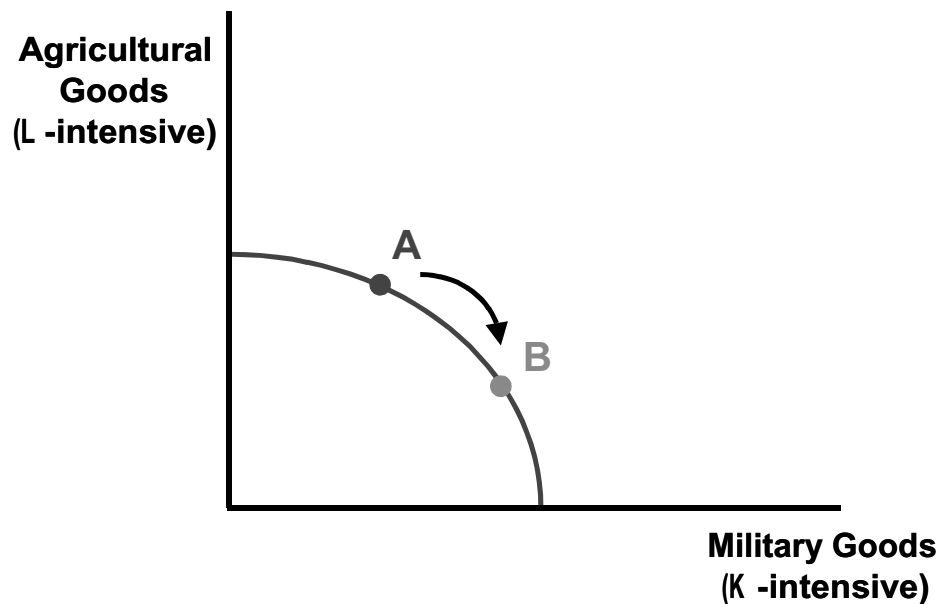
- a) the country observes large increases in immigration;



- b) there is a technological improvement in the production of military goods only;



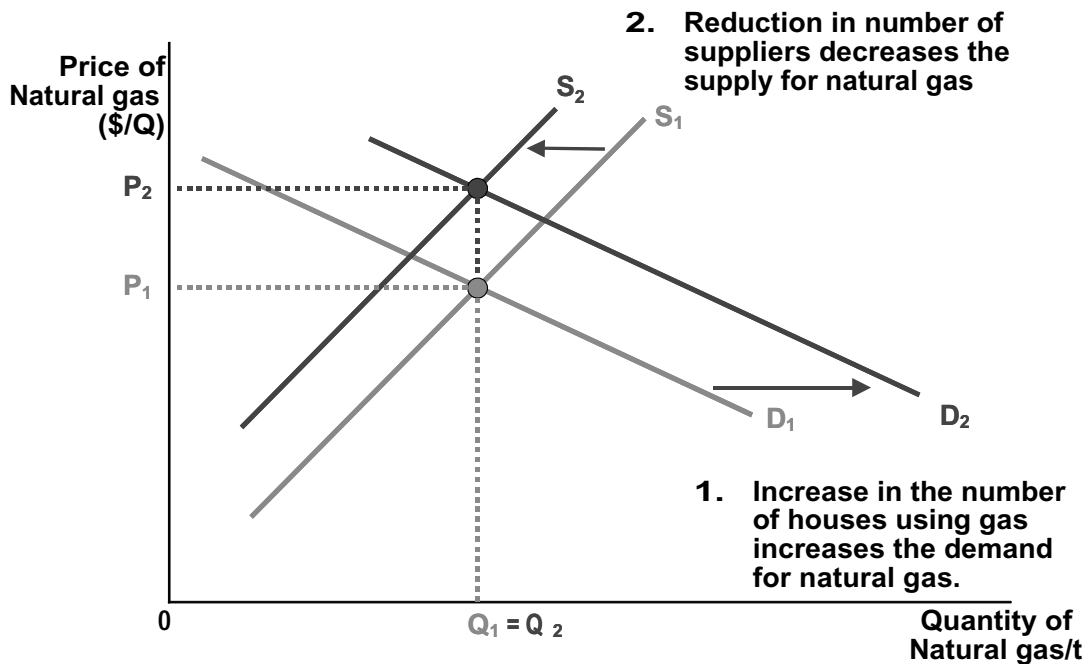
- c) a neighbouring country threatens to invade and the country responds by devoting more resources to military goods.



B2 Demand and Supply Analysis

a) Market for natural gas:

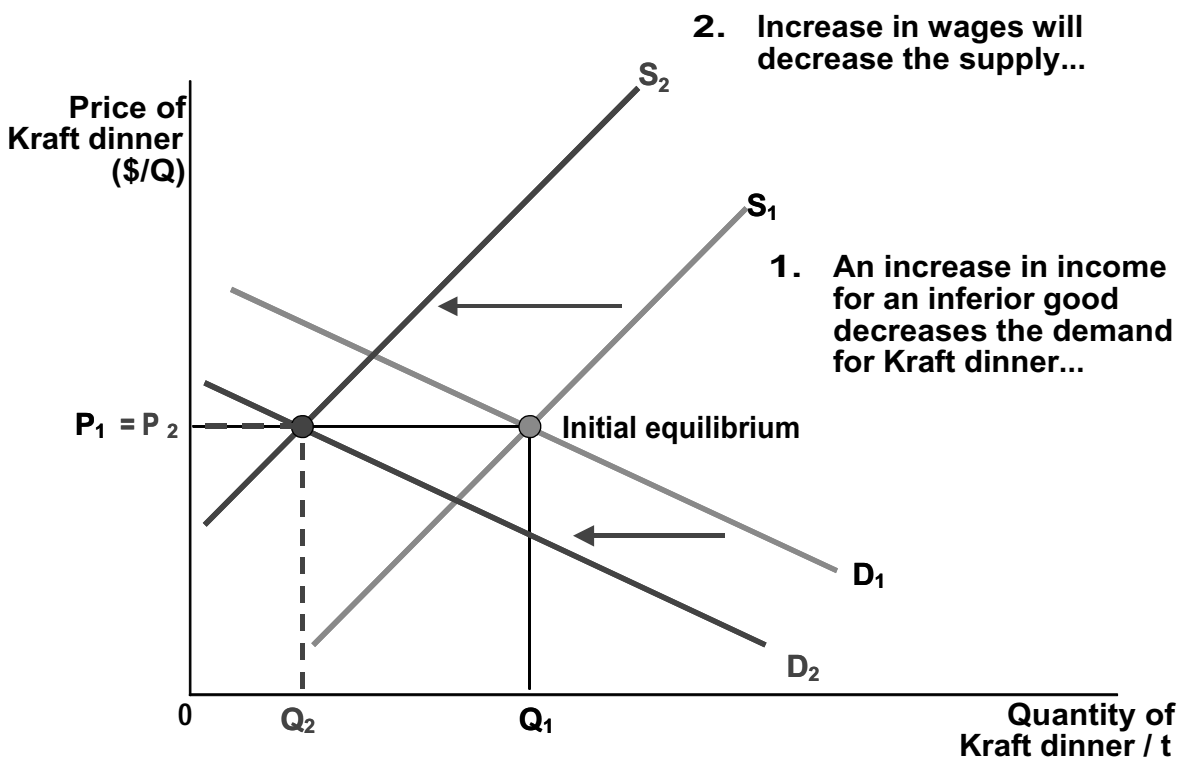
Over the past year, the number of houses in Calgary using natural gas for heating increases while the number of firms producing natural gas decreases.



Equilibrium price will definitely increase but the equilibrium quantity exchanged is indeterminate.

b) Market for Kraft dinner macaroni (an “**inferior**” good):

Over the past year, the average income in Calgary rose by 5% while the Kraft dinner union leaders managed to gain large wage increases for their workers.



Equilibrium quantity will definitely fall, however, the equilibrium price is indeterminate.

B3 Elasticity

In one month, a Pizza Hut restaurant sold 3,500 personal pizzas at \$3.50 per pizza. When this restaurant increased its price by 20%, its total revenue for the next month increased to \$13,440. As a result of this price increase, however, the monthly sales of pop decreased from 3,500 cans to 3,000 cans. Using the arc elasticity method,

- a) find the price elasticity of demand for this restaurant's pizza; and

In order to answer this question, we first need to derive our two points of reference (i.e., P_0/Q_0 and P_1/Q_1):

$$P_0 = \$3.50 \quad \text{and} \quad Q_0 = 3,500$$

We also know that P_1 is 20% more than P_0 , therefore

$$P_1 = P_0 (1.2) = \$3.50 (1.2) = \$4.20$$

Finally, we know that $P_1 \times Q_1 = TR_1$ or alternatively

$$Q_1 = \frac{TR_1}{P_1} = \frac{13,440}{4.2} = 3,200$$

Using the arc elasticity formula:

$$\begin{aligned} \eta &= \frac{\% \Delta Q^d}{\% \Delta P} = \frac{\frac{Q_1 - Q_0}{Q_{ave}}}{\frac{P_1 - P_0}{P_{ave}}} = \frac{\frac{Q_1 - Q_0}{Q_1 + Q_0}}{\frac{P_1 - P_0}{\frac{P_1 + P_0}{2}}} \\ &= \frac{\frac{3,200 - 3,500}{3,350}}{\frac{4.20 - 3.50}{3.85}} = \frac{-300}{0.70} \cdot \frac{3.85}{3.350} = -0.493 \end{aligned}$$

- b) find the cross-elasticity of demand for pop with respect to the price of pizzas. Comment on your result.

$$\begin{aligned} \eta_{XY} &= \frac{\% \Delta Q_X^d}{\% \Delta P_Y} = \frac{\frac{Q_1 - Q_0}{Q_{ave}}}{\frac{P_1 - P_0}{P_{ave}}} = \frac{\frac{Q_1 - Q_0}{Q_1 + Q_0}}{\frac{P_1 - P_0}{\frac{P_1 + P_0}{2}}} \\ &= \frac{\frac{3,000 - 3,500}{3,250}}{\frac{4.20 - 3.50}{3.85}} = \frac{-500}{0.70} \cdot \frac{3.85}{3.250} = -0.846 \end{aligned}$$

Since this value is negative, these two goods (pizza and pop) must be complements.

B4 Comparative versus Absolute Advantage

Consider a two good, two-country model where the productivity of labour is given as the following:

	<u>Argentina</u>	<u>Brazil</u>
<u>Output per worker</u>		
Wheat	3	2
Autos	1	2
<hr/>		
Total Labour Supply	12	12

- a) Illustrate the production possibility curve for each country.

See below

- b) Who has the absolute advantage in wheat? **Argentina** Autos? **Brazil**
- c) Who has the comparative advantage in wheat? **Argentina** Autos? **Brazil**
- d) What are the upper and lower limits of the possible exchange rate (expressed as # wheat / 1 automobile)? **Lower: 1W/1A Upper: 3W/1A**
- e) Select an exchange rate that would lead to mutually beneficial trade and illustrate this on each production possibility curve. **Say 2W/1A:**

