

ECON 1010 Principles of Macroeconomics

Solutions to Midterm Exam #1

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Your Name _____

Section 1: Multiple Choice (60 pts). Circle the correct answer; each is worth three points.

1. A high-school graduate who gets a college degree is adding to the economy's stock of:
 - A) labor.
 - B) capital.
 - C) human capital.
 - D) financial capital.

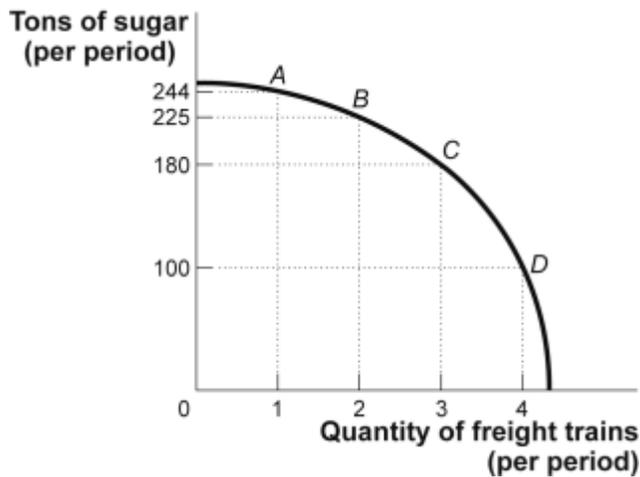
2. Zoe's grandparents are excited about finally paying off their mortgage, because, as they say, "Our cost of housing is now zero." Zoe should explain to them the economic principle of:
 - A) scarcity: resources are limited.
 - B) opportunity cost: by living in the house, they are giving up the opportunity to sell the house, buy a smaller one, and pocket the difference.
 - C) normative economics: how the economy should work.
 - D) equity: it is unfair that some people are still paying off their mortgage.

3. The simplest circular-flow model shows the interaction between households and firms. In this model:
 - A) only barter transactions take place.
 - B) households and firms interact in the market for goods and services, but firms are the only participants in the factor markets.
 - C) firms supply goods and services to households, which in turn supply factors of production to firms.
 - D) attention is focused on "real" flows of goods, services, and factors of production, but money flows between households and firms are ignored for simplicity.

4. A production possibility frontier illustrates the _____ facing an economy that _____ only two goods.
 - A) prices; sells
 - B) trade-offs; produces
 - C) trade-offs; sells
 - D) shortages; produces

5. If an economy is producing a level of output that is on its production possibility frontier, the economy has:
 - A) idle resources.
 - B) idle resources but is using resources efficiently.
 - C) no idle resources but is using resources inefficiently.
 - D) no idle resources and is using resources efficiently.

Figure: Sugar and Freight Trains



6. Examine the figure Sugar and Freight Trains. Suppose the economy is operating at point *B*. The opportunity cost of producing the third freight train would be:

- A) 6 tons of sugar.
- B) 19 tons of sugar.
- C) 45 tons of sugar.
- D) 80 tons of sugar.

7. In one hour, the United States can produce 25 tons of steel or 250 automobiles. In one hour, Japan can produce 30 tons of steel or 275 automobiles. This information implies that:

- A) Japan has a comparative advantage in the production of automobiles.
- B) the United States has an absolute advantage in the production of steel.
- C) Japan has a comparative advantage in the production of both goods.
- D) the United States has a comparative advantage in the production of automobiles.

8. Which example illustrates the law of demand?

- A) An increase in tuition encourages more students to enroll in college because the quality of education has risen.
- B) Consumers buy more personal computers because prices have fallen.
- C) Oil companies drill for new sources of oil because oil prices are higher.
- D) Fewer people play golf because incomes are lower.

9. A rightward shift of the demand curve shows that:

- A) something has happened to cause a lower quantity demanded at every given price.
- B) something has happened to cause a higher quantity demanded at every given price.
- C) the price of the product has increased.
- D) the price of the product has decreased.

10. If goods A and Z are complements, an increase in the price of good Z will:

- A) increase (i.e., shift) the demand for good A.
- B) decrease (i.e., shift) the demand for good A.
- C) decrease (i.e., shift) the demand for good Z.
- D) decrease (i.e., shift) the demand for both good A and good Z.

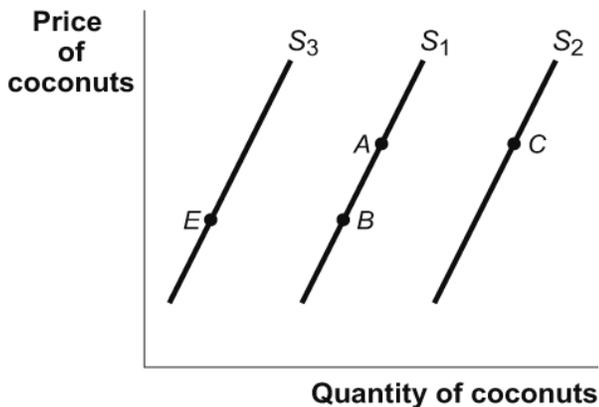
11. When the price of lamps increases, the:

- A) supply increases.
- B) quantity supplied increases.
- C) supply decreases.
- D) quantity supplied decreases.

12. Which statement is most likely to shift the supply of milk to the right?

- A) a tax on each gallon of milk produced
- B) an increase in household income and milk is a normal good
- C) a decrease in the price of feed given to dairy cows
- D) the bankruptcy of many small dairy farms

Figure: Supply of Coconuts



13. Examine the figure Supply of Coconuts. If the price of coconuts decreased, it would be represented in the figure as a movement from:

- A) A to B.
- B) B to A.
- C) C to A.
- D) E to B.

14. A decrease in supply, with no change in demand, will lead to a(n) _____ in equilibrium quantity and a(n) _____ in equilibrium price.

- A) increase; increase
- B) increase; decrease
- C) decrease; increase
- D) decrease; decrease

15. In the market for corn tortilla chips, what would cause a price increase?

- A) Doctors tell their patients that tortilla chips are unhealthy.
- B) There is a technological advancement in the tortilla chip production process.
- C) A fungus kills much of the corn crop in Nebraska.
- D) The price of salsa triples.

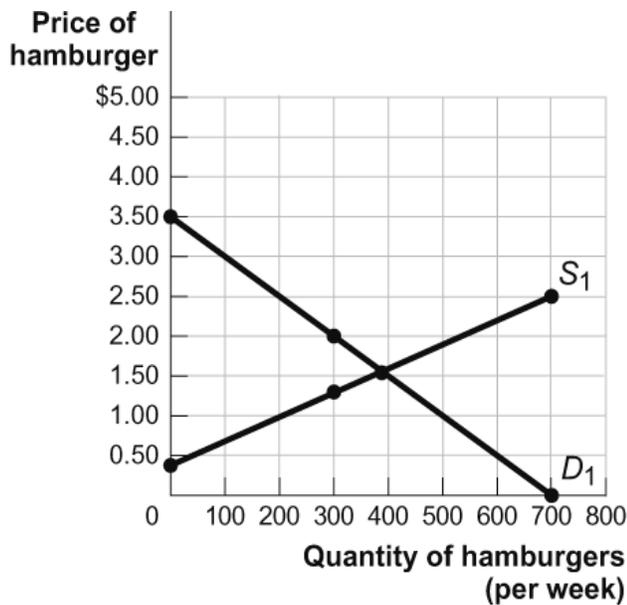
16. An increase in the price and an ambiguous change in quantity are most likely caused by:

- A) a shift to the left in demand and no shift in supply.
- B) a shift to the left in supply and no shift in demand.
- C) a shift to the right in supply and a shift to the left in demand.
- D) a shift to the left in supply and a shift to the right in demand.

17. If the demand for a good rises with income, the good is said to be a(n):

- A) inferior good.
- B) substitute good.
- C) normal good.
- D) positive good.

Figure: The Market for Hamburgers



18. Examine the figure The Market for Hamburgers. The equilibrium price is approximately ____ and the equilibrium quantity is approximately _____.

- A) \$2; 300
- B) \$1.50; 300
- C) \$1.50; 400
- D) \$1; 200

19. Examine the figure The Market for Hamburgers. If the government imposed a quantity restriction (quota) of 300 hamburgers per week, then the quota rent per hamburger is

- A) \$1.50.
- B) \$1.00.
- C) \$0.75.
- D) \$0.50.

20. Suppose the equilibrium rent for apartments in Boston is \$1,600. If the city of Boston regulates rents and forces each landlord to charge \$1,200, there will be:

- A) an increase of apartments rented in Boston.
- B) a surplus of new apartments in Boston.
- C) an increase in consumer well-being for Bostonians who can find apartments for \$1,200.
- D) an increase in consumer well-being for all renters in Boston.

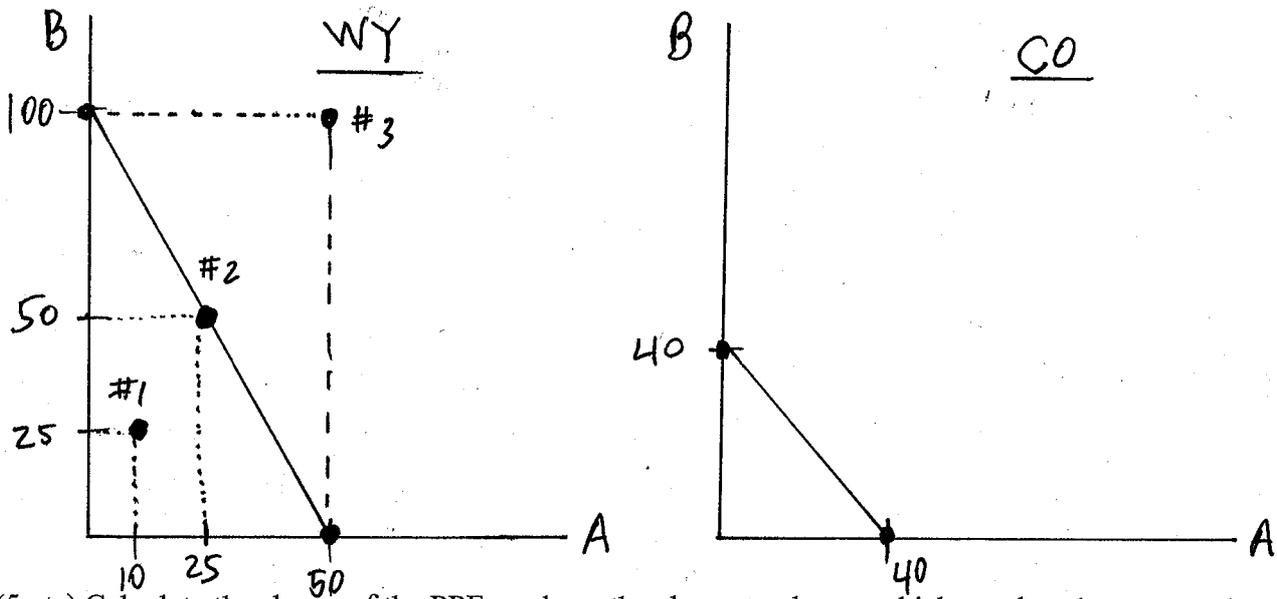
Section 2: Short Answer Questions (40 pts).

1. (25 pts) Wyoming and Colorado are two economies that produce Good A and Good B. The table below shows the maximum amount of each good that can be produced with current resources.

| | Quantity of Good A | Quantity of Good B |
|----------|--------------------|--------------------|
| Wyoming | 50 | 100 |
| Colorado | 40 | 40 |

- a) (5 pts) Using the table above, draw PPFs for the two economies assuming constant opportunity costs. Let the vertical axis measure the quantity of Good B and the horizontal axis measure the quantity of Good A. Clearly label everything, including the horizontal and vertical intercepts.

SOLUTION:



- b) (5 pts) Calculate the slopes of the PPFs and use the slopes to choose which good each economy has a comparative advantage in. Then explain your choice, making sure to mention the concept of “opportunity costs”. Finally, does either economy have an absolute advantage in the production of Good A and Good B? Explain.

SOLUTION:

- Slope of Wyoming PPF = -2
- Slope of Colorado PPF = -1

For each additional unit of Good A produced, Wyoming gives up 2 units of Good B. For each additional unit of Good A produced, Colorado gives up 1 units of Good B. Therefore, Colorado faces a smaller opportunity cost for producing Good A and has a comparative advantage in the production of Good A. Wyoming has a comparative advantage in the production of Good B.

Wyoming has an absolute advantage in the production of Good A and Good B because they can produce more of both goods than Colorado given current resources and technology.

- c) (5 pts) Choose three combinations of Good A and Good B which lead to inefficient, efficient, and infeasible production for Wyoming. Label the points #1, #2 and #3 on your graph in part (a), respectively. Make sure you clearly indicate the quantities of Good A and Good B for each of the three combinations.

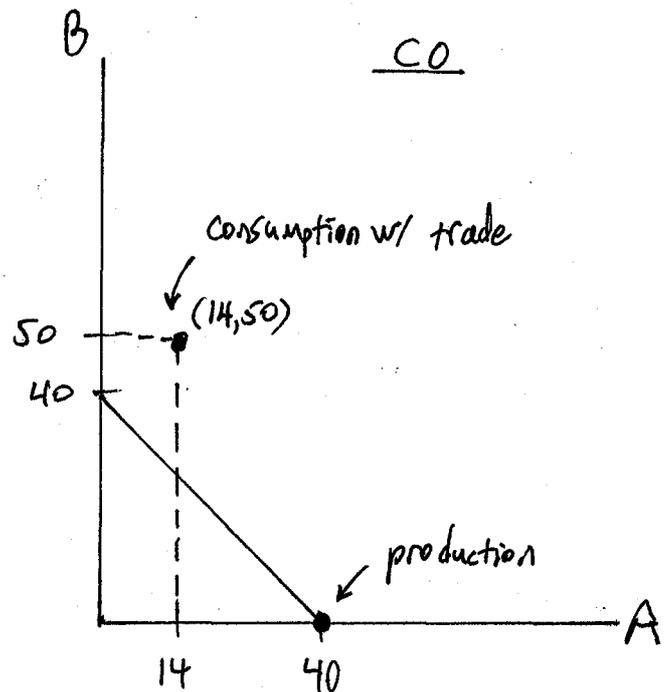
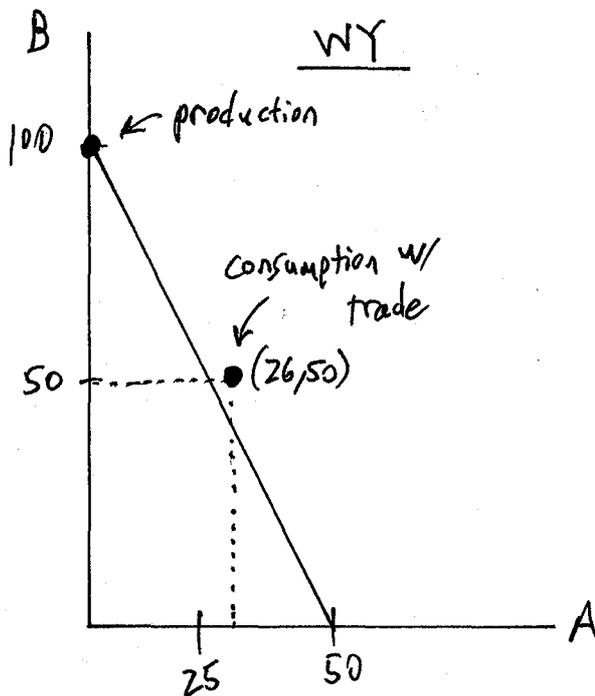
SOLUTION:

See the graph in part A.

- d) (10 pts) If each economy **fully specializes** in the good they have a comparative advantage in, determine a combination of output and trade for each economy that allows both to consume outside of their PPF and show it graphically. Redraw the graphs below.

SOLUTION:

Wyoming will specialize in Good B, producing 100 units. Colorado will specialize in Good A, producing 40. Assume Wyoming keeps 50 units of Good B and trades 50 units of Good B to Colorado. If Colorado keeps 14 units of Good A and trades 26 units of Good A to Wyoming, then both states will be consuming a combination outside their respective PPF.



2. (15 pts) Assume 2016 is the base year for the calculations below. The table lists the prices and quantities of a fictional macroeconomy.

| Year | Good A | | Good B | | Good C | |
|------|----------|-------|----------|-------|----------|-------|
| | Quantity | Price | Quantity | Price | Quantity | Price |
| 2016 | 10 | 8 | 5 | 5 | 8 | 5 |
| 2017 | 12 | 5 | 5 | 6 | 9 | 10 |
| 2018 | 13 | 10 | 6 | 6 | 10 | 10 |

- a) (5 pts) Calculate nominal GDP in each of the three years in the table.

SOLUTION:

$$2016: (10 \times \$8) + (5 \times \$5) + (8 \times \$5) = \$80 + \$25 + \$40 = \$145.$$

$$2017: (12 \times \$5) + (5 \times \$6) + (9 \times \$10) = \$60 + \$30 + \$90 = \$180.$$

$$2018: (13 \times \$10) + (6 \times \$6) + (10 \times \$10) = \$130 + \$36 + \$100 = \$266.$$

- b) (5 pts) Calculate real GDP in each of the three years. What is the growth rate of the economy in 2017 and 2018?

SOLUTION:

Using 2016 prices, real GDP is ...

$$2016: (10 \times \$8) + (5 \times \$5) + (8 \times \$5) = \$80 + \$25 + \$40 = \$145.$$

$$2017: (12 \times \$8) + (5 \times \$5) + (9 \times \$5) = \$96 + \$25 + \$45 = \$166.$$

$$2018: (13 \times \$8) + (6 \times \$5) + (10 \times \$5) = \$104 + \$30 + \$50 = \$184.$$

Growth rates in the economy are

$$2017: 100 \times \frac{\$166 - \$145}{\$145} = 14.5\%$$

$$2018: 100 \times \frac{\$184 - \$166}{\$166} = 10.8\%$$

- c) (5 pts) Recalculate 2018 nominal GDP for the home country assuming i) Good A is autos produced at home but exported to a foreign country, ii) Good B is insurance policies, and iii) Good C is corn produced in a foreign country but imported to the home country.

SOLUTION:

Good A counts in GDP because it is produced domestically. Good B counts because it is a service produced domestically. Good C does not count because it is produced in a foreign country.

$$2018: (13 \times \$10) + (6 \times \$6) = \$130 + \$36 = \$166.$$