

Assignment 1-Answer Key
(Maximum Points: 100)

Multiple-Choice Questions

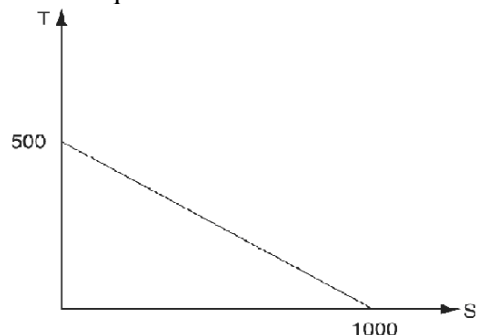
(Each question is worth 3 points. Explanation is **not** required)

1. The difference between a country's Gross National Product (GNP) and its Gross Domestic product (GDP) is that
 - (a) GNP refers to production within the nation while GDP refers to production by domestic factors no matter where they are located.
 - (b) GNP is always bigger than GDP.
 - (c) **GDP refers to production within the nation while GNP refers to production by domestic factors no matter where they are located.**
 - (d) Two of the above are true.

2. Which of the following is true?
 - (a) **Much of the trade of the European Union (EU) countries is with EU countries.**
 - (b) Industrialized countries tend to trade relatively little and largely with developing countries.
 - (c) Developing countries in Africa and South America tend to trade the most and largely with themselves.
 - (d) All of the above are true.

3. _____ analysis by economists refers to the attempt to answer questions such as what are the effects of a tax on production and consumption decisions.
 - (a) **Positive**
 - (b) Negative
 - (c) Normative
 - (d) Investigative

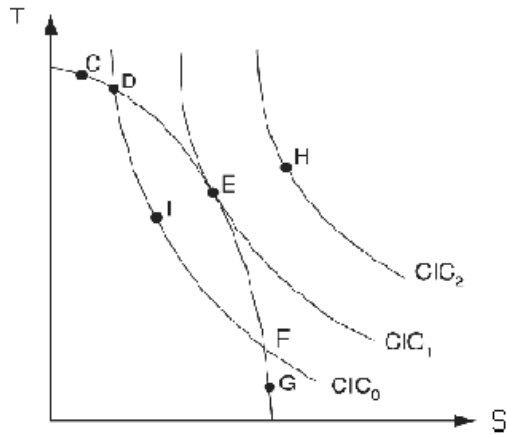
Answer questions 4-6 based on the following PPF.



4. The relative price of S (in terms of T), P_S/P_T , is
 - (a) 2.
 - (b) $\frac{1}{2}$.
 - (c) 500.
 - (d) 1000.

5. The relative price of T (in terms of S), P_T/P_S , is
- 2.**
 - $\frac{1}{2}$.
 - 500.
 - 1000.
6. If the relative price of T were to increase, then the price line would
- shift out in a parallel fashion.
 - shift in a parallel fashion.
 - become steeper.
 - become flatter.**
7. In autarky, when a community maximizes its standard of living, its consumption point is
- below the production possibility frontier.
 - on the production possibility frontier.**
 - above the production possibility frontier.
 - cannot tell without more information.

Answer questions 8-11 based on the following diagram



8. In autarky, the economy would be in general equilibrium at point
- I.
 - D.
 - E.**
 - F.
9. If tastes were to change so that S became more preferred relative to T, then, in autarky, production and consumption would move from their initial equilibrium to a point such as
- C.
 - D.
 - E.
 - F.**
10. Which of the following is true?
- The relative price of S is higher at G than at D.
 - The relative price of T is higher at C than at F.
 - A move from C to D would raise community satisfaction.
 - All of the above are true.**

11. In autarky equilibrium, the relative price is given by the slope of the production possibility frontier at point
- (a) D.
 - (b) E.**
 - (c) F.
 - (d) Can't answer without more information.
12. If the autarky price of S were lower in country A than in country B, then if trade were allowed
- (a) A would likely export S to B**
 - (b) A would likely import S from B
 - (c) Neither country would want to trade.
 - (d) None of the above.

Tools of Analysis of International Trade Models

13. (4) Using the following data, calculate the country's nominal and real GDP levels.

	P_S	S	P_T	T
a.	\$5	20	\$1	15
b.	\$10	20	\$2	15

Using $GDP = P_S \times S + P_T \times T$ to calculate nominal GDP, and $GDP/P_T = (P_S/P_T) \times S + T$ to calculate real GDP, we find:

	Nominal GDP	Real GDP
a.	\$115	115
b.	\$230	115

14. (2) Using your calculations from question 13, compare changes in nominal and real GDP between cases a. and b. Explain your result.

Real GDP is constant in cases a. and b. because real output is the same in the two cases—only the prices have changed. Since the prices doubled, we would expect nominal GDP to double as well.

15. (6) **Chapter 2, Question 11** Suppose that a small, tropical country produces mangoes for domestic consumption and possibly for export. The national demand and supply curves for mangoes in this country are given by the following:

$$P = 50 - M \quad (\text{national demand})$$

$$P = 25 + M \quad (\text{national supply})$$

where P denotes the relative price of mangoes and M denotes the quantity of mangoes (in metric tons).

- (a) Illustrate these relationships geometrically.
- (b) What is the autarky price and quantity exchanged?
- (c) Suppose that the world price of mangoes is 45. Will this small country export mangoes? If so, how many tons?

(a) Graph the demand and supply lines.

(b) To find the autarky prices and quantities, the demand and supply equations must be solved simultaneously. To find M , set the right hand sides equal to each other. So doing, yields $M = 12.5$. Using this result, insert it into either equation to find $P = 37.5$.

(c) Note that if the world price is 45 (>37.5), this country would be an exporter of mangoes. To find out how many it would export, calculate national demand and supply at $P=45$.

From demand equation: $45=50-M_d$. Hence, quantity demanded is $M_d=5$.

From demand equation: $45=25+M_s$. Hence, quantity supplied is $M_s=20$.

Thus, this country will export: $20-5=15$.

Classical Model of International Trade

16. Suppose that the United States and Mexico are the only countries in the world and that labor is the only productive input.

In Mexico, it requires 12 hours of labor to produce a television (X) and 8 hours of labor to produce a computer (Y). In the United States, it requires 6 hours of labor to produce a television (X) and 6 hours of labor to produce a computer (Y).

In other words, we have the following input requirement table:

	Hours of labor required to produce	
	television (X)	computer (Y)
Mexico	12	8
U.S.	6	6

a) (4) What country has absolute advantage in the production of X? Y? Explain.

The U.S. has absolute advantage in both goods because it requires fewer resources to produce the same amount of goods.

b) (6) Determine the autarky (pre-trade) relative prices ($\frac{P_X}{P_Y}$) i.e. the price of a television (X) in units of computer (Y) in each country?

In Mexico:
$$\frac{P_X}{P_Y} = \frac{\text{Wages}_{\text{Mexico}} \times \text{hours}_{\text{Mexico, X}}}{\text{Wages}_{\text{Mexico}} \times \text{hours}_{\text{Mexico, Y}}} = \frac{12}{8} = 1.5$$

i.e. the price of a television is 1.5 computers.

In the U.S.:
$$\frac{P_X}{P_Y} = \frac{W_{\text{US}} \times \text{hours}_{\text{US, X}}}{W_{\text{US}} \times \text{hours}_{\text{US, Y}}} = \frac{6}{6} = 1 \text{ i.e. the price of a television is 1 computer.}$$

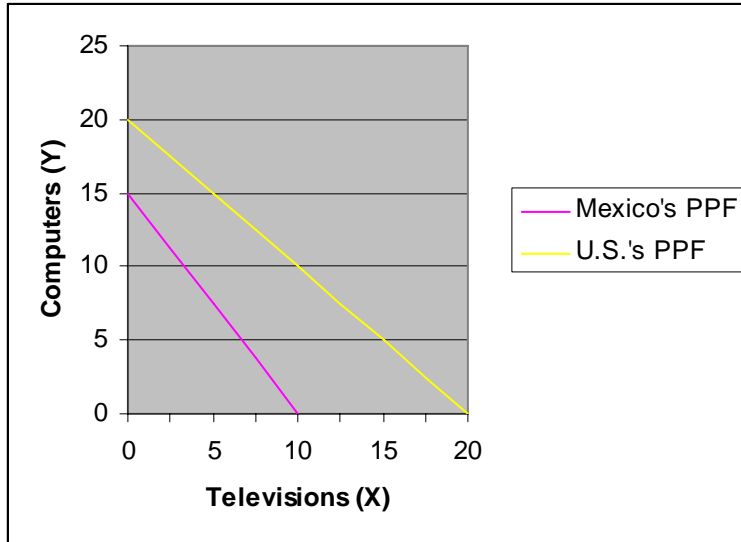
c) (8) Complete the following table.

	Units of labor required to produce		Opportunity cost of producing 1 unit of	
	television (X)	computer (Y)	X	Y
Mexico	12	8	12/8=1.5	8/12=2/3
U.S.	6	6	1	1

d) (8) What country has comparative advantage in X? in Y? Explain.

The U.S. has comparative advantage in X because the autarky (pretrade) relative price of X is lower in the U.S. or it can produce X with lower opportunity cost. Mexico has comparative advantage in Y because it can produce Y with lower opportunity cost.

e) (8) Suppose that each country has 120 hours of labor available. Draw the PPF for each country and determine its slope.

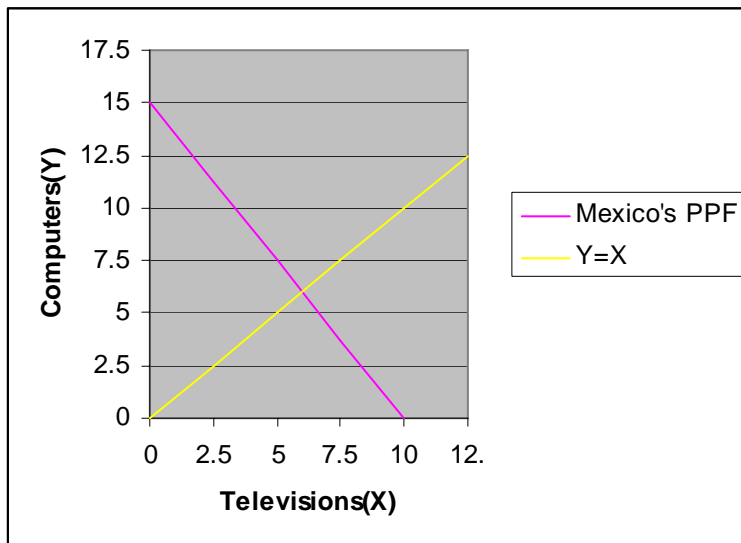


The slope of Mexico's PPF = -1.5. The slope of U.S.'s PPF = -1.

Notice that the absolute value of the slope of the PPF = opportunity cost of producing 1 unit of X.

f) (2) Under the assumption in e) and the assumption that each country would like to consume equal number of televisions and computers, how many televisions and computers will be produced and consumed per year in each country if there is no trade?

For Mexico,

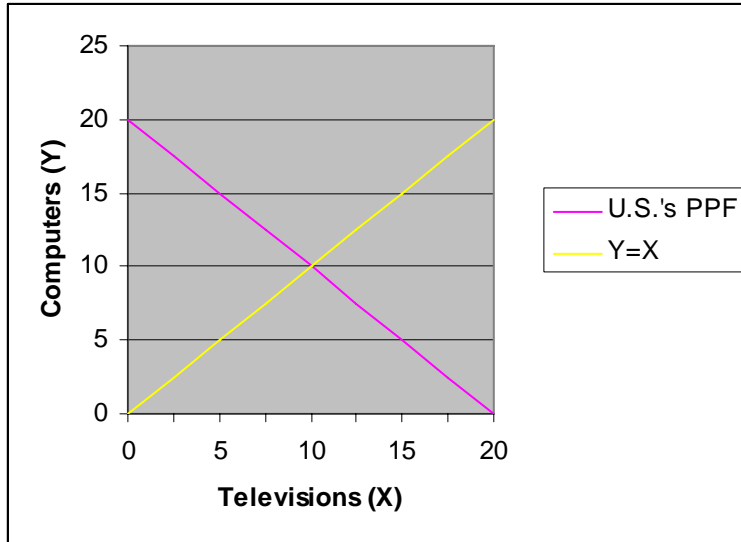


to find optimal consumption and production, solve

$$Y=15-1.5X \text{ and } Y=X \text{ gives } X=Y=6.$$

So, the consumption and production in Mexico is 6 televisions and 6 computers.

For the U.S.,



to find optimal consumption and production, solve

$$Y=20-X \text{ and } Y=X \text{ gives } X=Y=10.$$

So, the consumption and production in the U.S. is 10 televisions and 10 computers.

g) (8) If Mexico and the U.S. form a free trade area, in what range would the terms of trade (that is, the price of a television (X) in units of computer(Y) under free trade) have to fall? Why?

The terms of trade must lie between the two autarky relative prices in (b): $1 < \text{TOT (for x)} < 1.5$. I.e., the rate of exchange for a television must be between 1 computer and 1.5 computers. If one television can be exchanged for less than 1 computer, the U.S. will not engage in trade with Mexico. If one television can be exchanged for more than 1.5 computers, Mexico will not engage in trade with the U.S.

h) (8) Denote the wage rate in Mexico and the wage rate in the U.S. by W_M and W_{US} , respectively. Denote the exchange rate that translate units of Mexican peso into \$ by E . If balanced trade is to occur along the lines of comparative advantage, in what range would the relative wage rate, $\frac{W_{US}}{E * W_M}$, have to fall?

For the U.S. to export its comparative-advantage good X, it must be that

$$3 * W_{US} < E * 6 * W_M \text{ or } \frac{W_{US}}{E * W_M} < \frac{6}{3} \text{ or } \frac{W_{US}}{E * W_M} < 2$$

For Mexico to export its comparative-advantage good Y, it must be that

$$E * 4 * W_M < 3 * W_{US} \text{ or } \frac{4}{3} < \frac{W_{US}}{E * W_M}$$

Combining the two conditions, it must be the case that $\frac{4}{3} < \frac{W_{US}}{E * W_M} < 2$.