

Economics 102  
Summer 2015  
First Midterm with Answers  
Date July 1, 2015

Name \_\_\_\_\_

This exam consists of three parts: I) ten binary choice questions worth 2 points each; II) twenty multiple choice questions worth 3 points each; and III) two short answer problems worth 20 points total. All answers should be clearly and legibly recorded on the exam booklet: any answer that is not legible will be counted as a wrong answer. All answers should be presented in a neat, logical fashion in the short answer portion of the exam.

**Honor Code Statement:**

I, \_\_\_\_\_, understand that it is important for me to do my own work. It is also important that I not provide help, either intentionally or unintentionally, to my fellow students. Therefore I will keep my answers covered and I will not provide answers to my classmates or take answers from my classmates. I also acknowledge that on this exam I may not have access to a calculator or a cellphone.

\_\_\_\_\_(Signed)

I. Binary Choice Questions (out of a possible 20 points) \_\_\_\_\_  
II. Multiple Choice Points (out of a possible 60 points) \_\_\_\_\_  
III. Problems

1. Problem 1 (out of a possible 10 points) \_\_\_\_\_

2. Problem 2 (out of a possible 10 points) \_\_\_\_\_

TOTAL (out of a possible 100 points) \_\_\_\_\_

**I. Binary Choice Questions: (10 Questions worth 2 points each)**

1. The unemployment rate that is most often used to describe the state of unemployment in our economy provides a numerical percentage for the level of unemployment that is \_\_\_\_\_ than the actual rate of unemployment when there are significant numbers of discouraged workers and marginally attached workers in the economy.

a. larger

**b. smaller**

2. Consider the market for gadgets that is initially in equilibrium. Suppose that incomes increase at the same time that the price of labor used to produce gadgets increases. Assume that gadgets are an inferior good. Given this information, the equilibrium price will \_\_\_\_\_ and the equilibrium quantity will \_\_\_\_\_ relative to the initial equilibrium.

**a. be indeterminate; decrease**

b. decrease; be indeterminate

3. Suppose that a small, closed economy opens its market for bananas to trade and that its closed domestic price for bananas is lower than the world price for bananas. Given this information domestic consumers will \_\_\_\_\_ trade in this market.

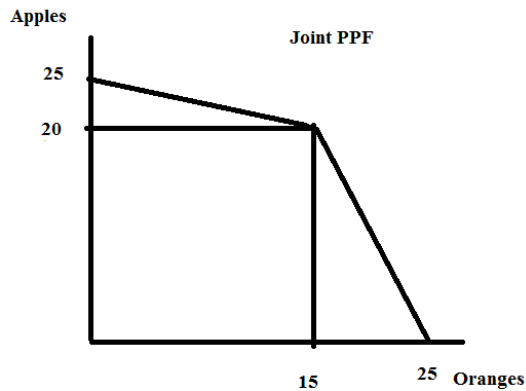
a. favor

**b. oppose**

4. During the Great Recession, the official unemployment rate rose to 10%. The increase in the unemployment rate during this period is most likely due to changes in the:

a. structural unemployment rate.  
b. cyclical unemployment rate.

5. Use the following graph to answer this question. The graph shows a joint PPF for Bob and Jane who both produce apples and oranges.



Suppose you are told that Jane has the comparative advantage in producing oranges. Given this information, what is Bob's opportunity cost of producing 1 apple?

a. Bob's opportunity cost of producing one apple is 2 oranges.  
b. Bob's opportunity cost of producing one apple is 1/2 orange.

6. Micah works for Ace Hardware and earns \$20,000 per year. Micah also runs a lawncare service that has profits of \$15,000 a year. Micah does not report his profits from the lawncare service to the Internal Revenue Service and therefore he pays no taxes on the income he generates from this business. Given this information Micah's contribution to GDP per year can be measured as:

a. \$35,000.  
b. \$20,000.

Use the following information to answer the **next two (2)** questions.

Barbara loves to shop and this week she bought a lovely table made in China for \$450, a new lamp produced in Taiwan for \$125, three bottles of French wine that cost a total of \$50, one pound of Wisconsin cheddar cheese that cost \$5, and some bread from the local bakery that cost \$7. Barbara lives in Madison, WI.

7. Given this information, Barbara's shopping this week resulted in import spending for the year changing by:

a. -\$625.

b. \$625.

8. Given this information, Barbara's shopping this week resulted in GDP changing this year by:

a. \$637.

b. \$12.

9. The IMF (International Monetary Fund) reports that U.S. 2014 GDP is \$17.4 trillion. Is this value a nominal or a real value?

a. Nominal

b. Real

10. This year Morland's government levies a \$10 million tax on businesses and then returns \$3 million of this tax to its citizens. The government also increases its debt by \$2 million and spends \$8 million on national defense and \$1 million on supporting the poor people who live in Morland. These poor people spend \$1 million on food. What is the total change in GDP this year associated with this information? (Hint: think hard about this one and concentrate on the value of goods and services being produced in this economy.)

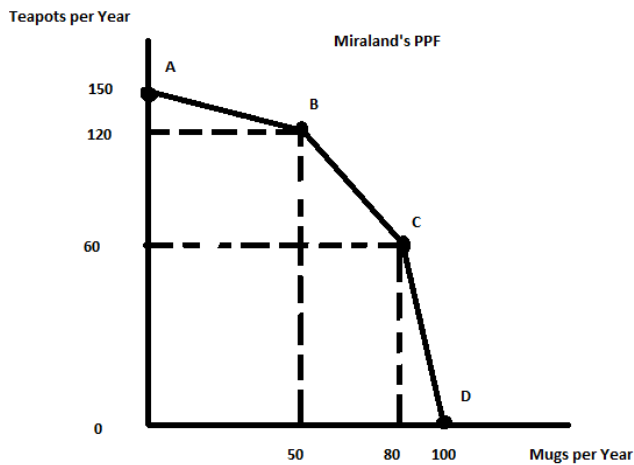
a. \$9 million

b. \$14 million

## II. Multiple Choice Questions: (20 Questions worth 3 points each)

Use the following information to answer the next **two (2)** questions.

The graph below illustrates the PPF for Miraland, a small economy that produces teapots and mugs. Between each designated point in this graph assume that the PPF for Miraland is linear: for example, between points A and B in this graph the PPF is linear, between points B and C in this graph the PPF is linear but may have a different slope than the slope between points A and B, etc.



11. If Miraland is currently producing at point C, what is the opportunity cost of producing one more teapot?

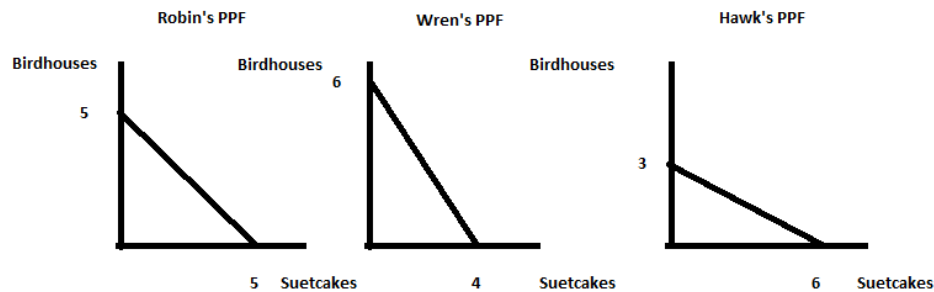
- a. 2 mugs
- b. 1/2 mug
- c. 3 mugs
- d. 1/3 mug

12. Given Miraland's PPF which of the following points (mugs, teapots) is **not** feasible for Miraland?

- a. (40, 124)
- b. (55, 105)
- c. (75, 75)
- d. (90, 30)

Use the following information to answer the next **three (3)** questions.

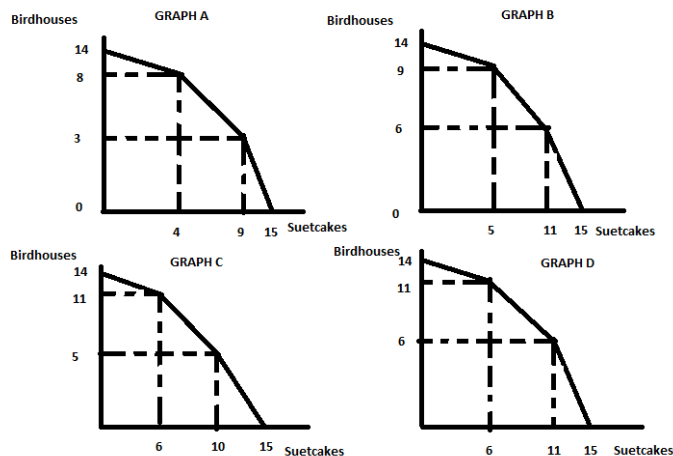
Below you are provided the three linear PPFs for Robin, Wren and Hawk who produce birdhouses and suetcakes.



13. Given the above PPFs, which of the following statements is true?

- a. If only one person is going to produce suetcakes, then Wren should be that person.
- b. If only one person is going to produce birdhouses, then Wren should be that person.**
- c. The second person to specialize in producing suetcakes should be Wren.
- d. Robin has a comparative advantage over Hawk in producing suetcakes.

14. Here are four possible graphs of the joint PPF for these three individuals. Which is the accurate graph? Note: none of these graphs are drawn to scale, but all labeled kink points are provided to you.



- a. Graph A
- b. Graph B
- c. Graph C
- d. Graph D**

15. Given the PPFs, we can conclude that the trading range of 2 birdhouses will be:

- a. any price greater than or equal to 4 suetcakes for Hawk.
- b. any price greater than or equal to  $4/3$  suetcakes for Wren.**
- c. any price less than or equal to  $4/3$  suetcakes for Wren.
- d. any price less than or equal to 2 suetcakes for Hawk.

**Work Sheet:**

16. Consider the market for hotel rooms in a metropolitan area. The demand and supply curve for hotel rooms is given by the following equations where  $P$  is the price per night and  $Q$  is the quantity of hotel rooms:

$$\text{Demand Curve: } P = 1000 - (8/5)Q$$

$$\text{Supply Curve: } P = (2/5)Q$$

Suppose that a new service (like AirBnB) allows people in this metropolitan area to offer empty bedrooms for rent in this market. You are told the impact of this new service is to change the number of available rooms by 100 units when the price is \$100 and by 200 units at the initial equilibrium price (before the advent of this service). You are also told that the new supply curve that includes this new service is linear. Given this information:

a. this new service will lead to an increase in both consumer and producer surplus in this market.

b. Hotel owners in this metropolitan region will welcome this additional supply since it will help the community provide more "hotel" rooms at an appealing price.

c. Visitors to the community will welcome this additional supply since it will increase the number of rooms available for rent and decrease the price of a night's lodging.

d. This service will disrupt this market place and should not be allowed because it keeps the market from performing well.

17. Economist Sarah and Economist Allen are having a discussion about the correct economic policy to pursue given today's economic issues. Sarah is utilizing a long run model of the economy and this model holds as a key assumption that the economy will produce at the full employment level of output. Allen is using a short-run model of the economy and this model holds that in the short-run it is possible for an economy to be either in a recession where output is below the full employment level of output or overheated (in an expansion) where output is above the full employment level of output. Given their models, Sarah advocates for an austerity program (like we are seeing in Europe) in order to make sure that inflationary tendencies in the economy are tamped down while Allen advocates a government stimulus to get discouraged workers back into the labor force and back to work. They clearly disagree! But, both Sarah and Allen agree that they will analyze data, as it becomes available, to decide which of their models is the appropriate model to use in understanding the current economic situation. Their argument is based upon \_\_\_\_\_ economics.

a. normative

b. positive

c. factual

d. abstract

18. Consider the market for tobacco products. Suppose that health studies report that tobacco smoking is not good for you at the same time that people's incomes fall. Assume that tobacco products are an inferior good. Given this information, relative to the initial equilibrium price and quantity, the equilibrium price will \_\_\_\_\_ and the equilibrium quantity will \_\_\_\_\_.

a. be indeterminate; be indeterminate

b. be indeterminate; increase

c. increase; be indeterminate

d. be indeterminate; decrease

e. decrease; be indeterminate

Use the information below about a small economy to answer the next **two** questions.

There are three corporations that produce in this economy. Green Corporation is a gadget production company that produces gadgets. In producing gadgets, Green Corporation uses iron produced by Ironworks Inc. and rubber produced by Bouncy Products. Both Ironworks Inc. and Bouncy Products sell all of their product to Green Corporation. The following table summarizes the transactions that go into the production of gadgets, iron and rubber during the year 2014.

	<b>Ironworks Inc.</b>	<b>Bouncy Products</b>	<b>Green Corporation</b>
<b>Wages</b>	\$200	\$800	\$400
<b>Rent</b>	\$400	\$200	\$100
<b>Interest</b>	\$100	\$100	\$100
<b>Intermediate Goods</b>	\$0	\$0	\$3000
<b>Total Revenues</b>	\$1000	\$2000	\$6,000

19. Given the above information, what is the contribution to GDP from these transactions for the year 2014?

a. \$9000

b. \$8000

c. \$6000

d. \$3000

20. Given the above information, what is the value of **total profits** earned in this economy?

a. \$3600

b. \$2400

c. \$1500

d. \$1000

21. Suppose there are five identical firms in the widget market and each firm's supply curve can be given by the following equation where  $P$  is the price per widget and  $Q$  is the quantity of widgets:

Individual Supply Curve:  $P = 2 + (1/2)Q$

Given this information, what is the equation for the market supply curve?

- a.  $P = 10 + (5/2)Q$
- b.  $P = 2 + (5/2)Q$
- c.  $P = 2 + 10Q$
- d.  $P = 2 + (1/10)Q$

22. Suppose there are six consumers in the market for flashlights that have identical demand curves. Each consumer's demand curve is given by the following equation where  $P$  is the price per flashlight and  $Q$  is the quantity of flashlights:

Individual Demand Curve:  $P = 15 - 3Q$

Given this information, what is the market demand curve equation?

- a.  $Q = 30 - 2P$
- b.  $P = 15 - 2Q$
- c.  $Q = 30 - (1/2)P$
- d.  $P = 75 - 3Q$

Use the following information to answer the next **three** questions.

Consider the market for bicycles in Millarville, a small closed economy. Currently the domestic demand and supply curves for bicycles are given by the following equations where Q is the quantity of bicycles and P is the price of bicycles:

$$\text{Domestic Demand: } Q = 250 - (1/2)P$$

$$\text{Domestic Supply: } Q = (1/4)P - 50$$

The current world price for bicycles is \$280.

23. Given the above information which of the following statements is true?

- a. Domestic consumers are in favor of opening this market to trade while domestic producers are against opening this market to trade.
- b. If this market opens to trade domestic consumer surplus will be smaller than it was when the market was closed to trade.
- c. If this market opens to trade this country will import 30 bicycles.
- d. If this market opens to trade there will be a deadweight loss.

24. Suppose this market opens to trade while at the same time Millarville implements an import quota of 30 bicycles. Given this information and holding everything else constant, which of the following statements is true?

- a. This policy will result in a reduction of the area of domestic producer surplus relative to the area of domestic producer surplus if trade is allowed and there is no import quota.
- b. This policy will help domestic consumers of bicycles.
- c. This policy will help domestic producers of bicycles.
- d. This policy will result in an increase in the area of domestic consumer surplus relative to the area of domestic consumer surplus if trade is allowed and there is no import quota.

25. Given the import quota described in the last question, the area of deadweight loss due to using the less efficient, domestic producers rather than the more efficient, foreign producers is equal to \_\_\_\_\_.

- a. \$1600
- b. \$800
- c. \$2400
- d. \$4800

Use the following information to answer the next **two** questions:

Smithville has a population of 30,000 people. Of those 30,000 people there are 5,000 children and teenagers who are less than sixteen years old; everyone else in this economy is at least 16 years old. There are also 1000 homemakers who are satisfied with being at home and are not actively seeking employment outside the home. There are 2000 full-time students (aged 18 or older) enrolled in college. There are 2000 people who are working part-time and are satisfied with this arrangement. There are an additional 1000 people who are working part-time, but who wish to be working full-time but have been unable to find a full-time job. There are 9000 people who are working full-time. 4000 people are currently not working, are available to work, and are applying to jobs every week. Of the adult population there are 1000 people who are currently in institutions. Finally in Smithville there are 3000 people who are retired and collecting their old age pensions and another 2000 people who are currently not working, are available to work, but who have given up the hunt for a job because they doubt they will be able to find work.

26. Given the above information, the official unemployment rate (based on the U-3 definition discussed in class) in Smithville is approximately:

- a. 25%
- b. 20%
- c. 33%
- d. 30%

27. Suppose that Smithville decides to include discouraged workers as unemployed workers when calculating the unemployment rate. If Smithville makes this change, the unemployment rate given the above information will \_\_\_\_\_ since both the numerator and the denominator of the ratio will increase by the same amount.

- a. not be impacted by this change
- b. increase
- c. decrease
- d. increase, decrease or stay the same

28. Some communities have recently installed "traffic light cameras" that allow law enforcement officials to capture images of cars going through red lights. When caught going through a red light the owner of the vehicle is sent a \$50 bill for the traffic violation. A **budding economist** hearing about this program reasons that:

a. this is a bad idea because it is just one more example of government intervention in our lives.

b. this creates a market for this type of traffic violations and that the price may need to be adjusted so that we get the socially optimal amount of traffic light violations.

c. running red lights creates a social cost and government is only trying to increase this social cost by imposing these fines.

d. this is a terrible idea since these cameras are expensive and may be prone to error.

29. The table below provides data on nominal GDP, real GDP, and the GDP deflator for an economy for the period 2012 through 2014 with the base year 1950.

Year	Nominal GDP	Real GDP	GDP deflator on a 100 point scale
2012	(a)	\$2000	50
2013	\$1500	(b)	75
2014	\$3000	\$2000	(c)

Given the above information, the percentage change in the price level as measured by the GDP deflator between 2013 and 2014 is:

a. 10%

b. 75%

c. 100%

d. 150%

30. In 2012 a tennis racquet cost \$200. If prices decrease by 4% in 2013 and prices fall by a further 2% in 2014, then what will be the price of a tennis racquet at the end of this time frame? (Round to the nearest cent.)

a. \$188.00

b. \$212.00

c. \$212.16

d. \$188.16

### **Part III: Short Answer Problems (two worth a total of 20 points)**

1. Consider the small economy of Piedmont. In the market for notebooks in this economy we find that the closed economy price of notebooks is greater than the world price of notebooks. Assume that the domestic demand and domestic supply curves for notebooks in Piedmont follow the Law of Demand and the Law of Supply respectively.

a. (3 points) Suppose that the market for notebooks in this economy is opened to trade. Provide a clear, concise analysis of the impact of the decision to open this market to trade from the perspective of domestic consumers.

**Answer:**

Since the world price of notebooks is less than the closed economy price of notebooks we know that domestic consumers will favor opening this market to trade since they will now be able to purchase notebooks at the lower world price. Domestic consumers will buy more notebooks, pay lower prices, and expand their area of consumer surplus. The additional demand for notebooks due to their lower cost will be met by importing notebooks.

b. (3 points) Suppose that the market for notebooks in this economy is opened to trade. Provide a clear, concise analysis of the impact of the decision to open this market to trade from the perspective of domestic producers.

**Answer:**

Since the world price of notebooks is less than the closed economy price of notebooks we know that domestic producers will be against opening this market to trade since they will now sell fewer notebooks at the lower world price. Domestic producers will sell fewer notebooks, receive lower prices, and find their producer surplus is diminished when this market opens to trade.

c. (2 points) Suppose that the market for notebooks in this economy is opened to trade, but simultaneously the government implements a tariff on notebooks that increases the price of the notebooks above the world price but beneath the closed economy price. Explain why the government might implement this policy.

**Answer:**

The government might implement this policy because it wants to balance the effects of the open market: opening this market benefits domestic consumers but hurts domestic producers. By implementing a tariff the government can reduce the negative impact on domestic producers. The government might also reason that this tariff allows them to collect revenue from the government and the government might try to reason with their citizens that this tariff is being paid by the importers: this would not be true since we can see that domestic consumers effectively pay the tariff through the reduction in their consumer surplus that occurs because of the tariff.

d. (2 points) Suppose that the market for notebooks in this economy is opened to trade, but simultaneously the government implements a tariff on notebooks that increases the price of the notebooks above the world price but beneath the closed economy price. From our classroom discussion we know that this creates deadweight loss. In your own words explain why there is deadweight loss when a tariff is implemented.

Answer:

There are two sources of deadweight loss from the implementation of the tariff. The first deadweight loss reflects the tariff pushing domestic consumers away from the level of consumption of notebooks they would have if there were no tariff. Fewer notebooks are sold because of the tariff and this causes a loss in consumer surplus. The second deadweight loss arises because the tariff shifts production from the lower-cost, more efficient foreign producer to the higher-cost, less efficient domestic producer.

2. (Worth a total of 10 points) Suppose you are given the following information about production in Urbia where only watches and bracelets are produced:

	Price in 2013	Quantity in 2013	Price in 2014	Quantity in 2014
Watches	\$1	90 watches	\$4.00 per watch	100 watches
Bracelets	A =	90 bracelets	\$1.00 per bracelet	200 bracelets

You are also provided the following information about Urbia:

Year	Nominal GDP	Real GDP with Base Year 2014	GDP deflator
2013	B =	C =	E =
2014	\$600	D =	1

You are also told that the rate of inflation between 2013 and 2014 using the GDP deflator as the price index is equal to 25%.

Use this provided information to calculate the missing values for A, B, C, D, E, and F. Explain your work and clearly show how you found your answers. THERE WILL BE NO CREDIT GIVEN FOR ANY NUMERIC ANSWER PROVIDED WITHOUT SUPPORTING EXPLANATION. Record your final answers in the following blanks, but show your work below this recording place.

(2 points): A = \_\_\_\_\_  
 (2 points): B = \_\_\_\_\_  
 (2 points): C = \_\_\_\_\_  
 (2 points): D = \_\_\_\_\_  
 (2 points): E = \_\_\_\_\_

Answer:

(2 points): A = \_\_\_\_\_\$3 per bracelet\_\_\_\_\_  
 (2 points): B = \_\_\_\_\_\$360\_\_\_\_\_

(2 points): C = \_\_\_\_\_\$450\_\_\_\_\_

(1 point): D = \_\_\_\_\_\$600\_\_\_\_\_

(1 point): E = \_\_\_\_\_0.8\_\_\_\_\_

Start with D: Since 2014 is the Base Year, this tells us that nominal GDP in 2014 is equal to real GDP in 2014. Since we know that the value of nominal GDP in 2014 is \$600, we therefore know that the value of real GDP in 2014 is also \$600

Go to E: We are told that the rate of inflation between 2013 and 2014 using the GDP deflator as our price index is 25%. Use this to calculate the value of F: thus,

Rate of inflation =  $[(\text{GDP deflator in 2014} - \text{GDP deflator in 2013}) / (\text{GDP deflator in 2013})] * (100\%) = [(1 - x) / x] * 100\%$  where x is the GDP deflator in 2013

$$25\% = [(1 - x) / x] * 100\%$$

$$(25\% / 100\%) = (1 - x) / x$$

$$1/4 = (1 - x) / x$$

$$x = 4 - 4x$$

$$5x = 4$$

$$x = 4/5 = .8$$

So, the value of E is 0.8.

Go to C: Real GDP in 2013 using 2014 as the base year can be calculated as:

Real GDP in 2013 = (Price of Watches in 2014)(Quantity of Watches in 2013) + (Price of Bracelets in 2014)(Quantity of Bracelets in 2013)

Real GDP in 2013 = (\$4 per watch)(90 watches) + (\$1 per bracelet)(90 bracelets) = \$450

The value for C is \$450.

Now for A and B: we can write Nominal GDP in 2013 as follows:

Nominal GDP in 2013 = (Price of Watches in 2013)(Quantity of Watches in 2013) + (Price of Bracelets in 2013)(Quantity of Bracelets in 2013)

B = (\$1 per watch)(90 watches) + (A)(90 bracelets)

We also know that:

Real GDP in 2013 =  $[(\text{Nominal GDP in 2013}) / (\text{Price Index})](\text{scale factor})$

$450 = [(B) / 0.8](1)$  since we are using the GDP deflator as our price index and the scale for the GDP deflator is 1

So, we have two equations:

i)  $B = (\$1 \text{ per watch})(90 \text{ watches}) + (A)(90 \text{ bracelets})$

ii)  $450 = [(B) / 0.8](1)$

Use equation ii) to solve for B:  $B = 450(0.8) = 360$

So, Nominal GDP in 2013 is equal to \$360: this is the value of B.

Now, use equation i) to solve for the value of A:

$$\$360 = \$90 + 90A$$

$$\$270 = 90A$$

$$A = \$3 \text{ per bracelet}$$