Economics 102   Name _____

Summer 2017
First Midterm with Answers
Date Thursday, June 8, 2017

This exam consists of three parts: I) five binary choice questions worth 2 points each; II) twenty multiple choice questions worth 3 points each; and III) three short answer problems **worth** 30 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 10 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)   _____

        3. Problem 3 (out of a possible 10 points)   _____

TOTAL (out of a possible 100 points)   _____

I. Binary Choice Questions: (5 Questions worth 2 points each)

1. In recent years there has been discussion about the accuracy of U-3 and U-6 as measures of unemployment in the U.S. Complete the following statement: "During the recent financial crisis, _____ understated the level of unemployment in the economy and a more accurate statement about the severity of the labor market situation was provided by _____.
a. U-3; U-6
b. U-6; U-3

2. Consider the market for gadgets that is initially in equilibrium. Suppose that the President places an executive order that reduces the number of immigrants, and therefore consumers, in the economy. At the same time, this executive order reduces the number of people available to work in the economy at every wage rate. Given this information, the equilibrium price in the market for gadgets will _____ and the equilibrium quantity in the market for gadgets will _____ relative to the initial equilibrium in this market.
a. increase; be indeterminate
b. be indeterminate; decrease

3. Suppose that a small, open economy decides to close its market for bananas to trade and that its closed domestic price for bananas is greater than the world price for bananas. Given this information, domestic production of bananas _____ relative to the initial level of domestic production.
a. increases
b. decreases

4. Amy's company produces 500 widgets in 2015 and sells 400 of these widgets for $20 each. In 2016 Amy's company produces 700 widgets and sells 800 widgets for $20 each. The impact of these transactions on GDP in 2015 is _____ , consumption spending in 2016 is _____, and the impact on investment spending in 2016 is _____.
a. $8,000; $16,000; $2000
b. $10,000; $16,000; -$2000

5. Use the following graph to answer this question. The graph shows a joint PPF for Sarah and Robert who both produce apples and oranges.
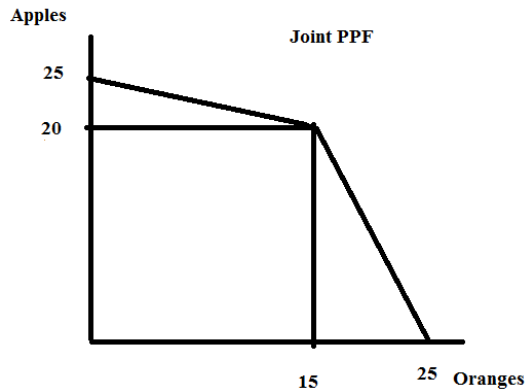
Suppose you are told that Robert's opportunity cost of producing an apple is 3 oranges. Given this information, what is the equation for Sarah's PPF in *X-intercept* form?
a. Oranges = 20 - 2(Apples)
b. Oranges = 10 - (1/2)(Apples)

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

The graph below illustrates the PPF for Arcadia, a small economy that produces teapots and mugs. Between each designated point in this graph assume that the PPF for Arcadia 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.
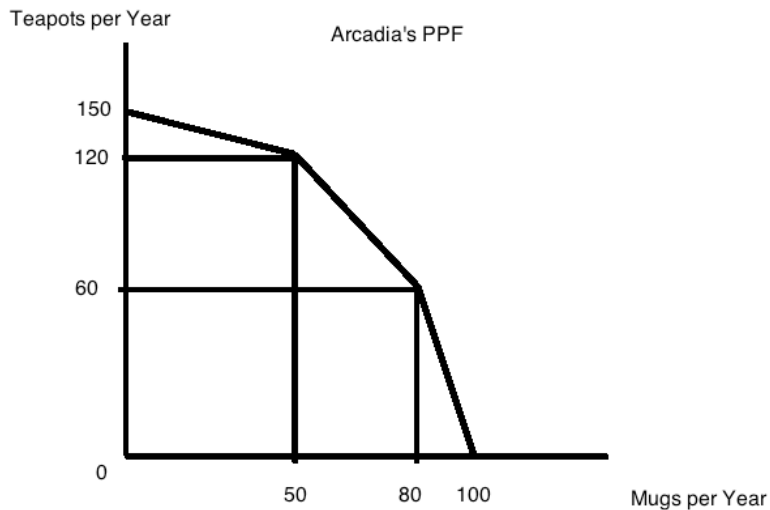
6. If Arcadia is currently producing 86 mugs a year, what is the maximum amount of teapots that Arcadia can produce given its mug production? Suppose Arcadia decides to increase its mug production to 90 mugs a year. Given this decision, what is the opportunity cost of this increase in mug production?
a. 42 teapots; 12 teapots
b. 42 teapots; 30 teapots
c. 4.67 teapots; 12 teapots
d. 4.67 teapots; 30 teapots

7. Given Arcadia's PPF which of the following points (mugs, teapots) is **not** feasible for Arcadia?
a. (49,120)
b. (82, 56)
c. (25, 135)
d. (95, 15)

8. Suppose only three people live in Arcadia: Joe, Ben, and Sue. You also know that the opportunity cost of producing mugs for Ben is greater than Joe's opportunity cost for producing mugs. And, you are told that Sue has the comparative advantage over both Joe and Ben in producing teapots. Given this information and holding everything else constant, which of the following statements is true?

      I. If this economy produces 70 mugs and 80 teapots, then Sue will produce 60 teapots, Joe will produce 50 mugs, and Ben will produce 20 teapots and 20 mugs.

      II. The equation for Sue's PPF is: $T = 60 - 3M$. (Where M is mugs and T is teapots.)

      III. The equation for Joe's PPF is: $T = 60 - 2M$

      IV. The maximum number of teapots Ben can produce is 60.

a. Statements I, II, III and IV are all true statements.

b. Statements I is a true statement.

c. Statements I, II, and III are true statements.

d. Statements I, II and IV are true statements.

Use the following information to answer the next **three** questions.
Below you are provided the three linear PPFs for Oscar, Jay and Charlie who produce chew toys and dog treats.
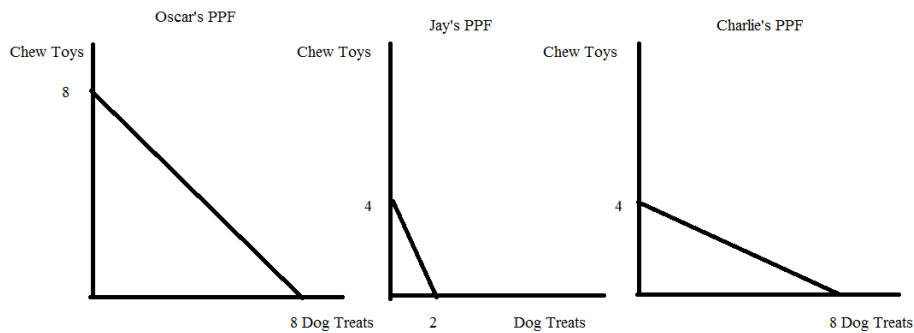
9. Given the above PPFs, which of the following statements is **false**?
a. If only one person is going to produce chew toys, then Jay should be that person.
b. If twelve dog treats are produced. they should be produced by Oscar and Charlie.
c. The second person to specialize in producing chew toys should be Charlie.
d. Oscar has a comparative advantage over Jay in producing dog treats.

10. 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.
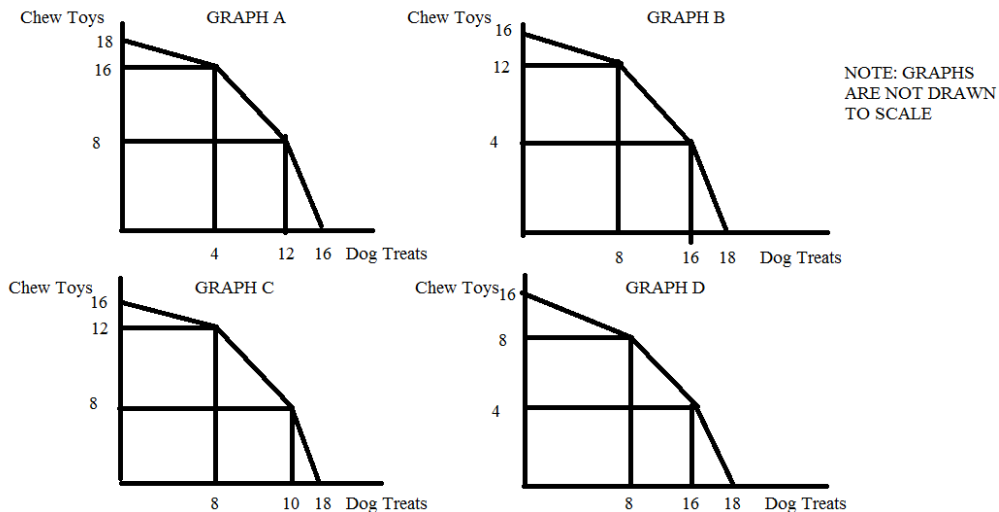
a. Graph A
b. Graph B
c. Graph C
d. Graph D

11. Given the PPFs, we can conclude that the trading range of 2 chew toys will be:
a. any price greater than or equal to 4 dog treats if Charlie is buying chew toys.
b. any price greater than or equal to 2 dog treats if Jay is selling chew toys.
c. any price less than or equal to 4 dog treats if Oscar if he is buying chew toys.
d. any price less than or equal to 2 dog treats for Oscar if he is buying chew toys.

12. In 2010 Economist Sarah and Economist Allen are having a discussion about the correct economic policy to pursue given the economic issues their economy is currently facing. 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 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! Their argument is based upon _____ economics since over time they will be able to collect data and see whether countries that pursued austerity fared better than countries that pursued stimulus during this particular economic period of time.
a. normative
b. positive
c. factual
d. abstract

13. Consider the market for tobacco products that is initially in equilibrium. 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
c. decrease; be indeterminate

Use the information below to answer the next **two** questions.

Green Corporation is a gadget production company that produces gadgets. In producing gadgets, Greenland uses iron produced by Ironworks Inc. and rubber produced by Bouncy Products. Both Ironworks Inc. and Bouncy Products sell all of their product to Greenland. The following table summarizes the transactions that go into the production of gadgets, iron and rubber during the year 2012.

	Ironworks Inc.	Bouncy Products	Greenland Corporation
Wages	$200	$800	$400
Rent	$400	$200	$100
Interest	$100	$100	$100
Intermediate Goods	$0	$0	$3000
Total Revenues	$1000	$2000	$6,000

14. Given the above information, what is the contribution to GDP from this transaction for the year 2012?
a. $9000
b. $8000
c. $6000
d. $3000

15. Given the above information, what is the value of profits earned by Greenland?
a. $3600
b. $3000
c. $1500
d. $1000

16. 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. $P = 2 + (1/10)Q$

17. 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:

Domestic Demand: $Q = 250 - (1/2)P$
Domestic Supply: $Q = (1/4)P - 50$

The current world price for bicycles is $280.

18. 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.

19. 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 relative to the outcome if the market simply opened to trade.
c. This policy will help domestic producers of bicycles relative to the outcome if the market simply opened to trade.
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.

20. 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.

20. Given the above information, the unemployment rate in Smithville is approximately
a. 25%
b. 20%
c. 33%
d. 30%

21. 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

22. 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 is an attempt to create 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. that running red lights creates a social cost and government is only trying to increase this social cost by imposing these fines.

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

23. Marley is studying Calculus this summer and is spending time today analyzing his grades. He knows that he has four quizzes in the class and each quiz is worth 2.5% of his final grade on a 100 point scale (assume that this is the scale used to calculate his grade). He also knows that he has five homeworks and each homework is worth 2% of his grade. There are also two midterms each worth 25% of his final grade; and a final exam worth the remaining 30%. Here are his scores and the available points per assignment thus far:

Quiz #1	10 out of 10 points
Quiz #2	8 out of 10 points
Quiz #3	5 out of 10 points (that was a hard quiz!)
Quiz #4	8 out of 10 points
Homework #1	8 out of 10 points
Homework #2	10 out of 10 points
Homework #3	6 out of 10 points
Homework #4	6 out of 10 points
Homework #5	5 out of 10 points
Midterm 1	60 out of 75 points
Midterm 2	40 out of 50 points
Final	? out of 100 points

Marley estimates that he needs 80 out of 100 points from all assignments to get a B. What score will Marley need to make on the final exam? Note: you are going to need to rescale these numbers! Marley's final exam score needs to be **at least**:

a. above an 80.

b. above a 92.

c. above an 88.

d. above an 84.

24. In 2013 a tennis racquet cost $200. If there is deflation of 4% in 2014 (that is, prices fall by 4%) and there is deflation of 2% in 2015, 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

25. Consider the market for bicycles in a metropolitan area. The demand and supply curve for bicycles are given by the following equations where P is the price per bicycle and Q is the quantity of bicycles:

Demand Curve: P = 500 - (8/5)Q
Supply Curve: P = 100 + (2/5)Q

Suppose that a new firm enters this market for bicycles. You are told the impact of this new service is to increase the number of available bicycles by 0 bicycles when the price is $100 and by 100 bicycles at the initial equilibrium price (before the entry of this new firm). 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 a decrease in consumer surplus relative to its initial level in this market.
b. The bicycle firms in this metropolitan region will welcome this additional supply since it will help the community provide more bicycles at an appealing price.
c. Bicyclists in the community will welcome this additional supply since it will increase the number of bicycles available without changing the price of bicycles.
d. The entry of this firm will be beneficial to consumers of the bicycles since they will get more bicycles, greater consumer surplus, and lower prices.

Part III: Short Answer Problems (three worth a total of 30 points)

1. (Worth a total of 10 points) Suppose Marty and Palmer each have 60 hours a week that they can devote to producing watches and/or bracelets. Suppose that you know that Marty and Palmer both have linear production possibility frontiers (PPFs) and that they can produce fractional amounts of both goods. Marty can produce a watch in 3 hours and a bracelet in 4 hours. Palmer takes 5 hours to produce a watch and 2 hours to produce a bracelet. (Hint: measure watches on the vertical axis and bracelets on the horizontal axis.)

a. (1 point) Given the above information, who has the comparative advantage in the production of bracelets? _____

Answer:
Palmer

b. (1 point) Given the above information, who has the comparative advantage in the production of watches? _____

Answer:
Marty

c. (1 point) Given the above information, who has the absolute advantage in the production of bracelets? _____

Answer:
Palmer

d. (1 point) Given the above information, who has the absolute advantage in the production of watches? _____

Answer:
Marty

e. (2 points) Fill in the missing values as well as units of measurement in the table below.

	Marty	Palmer
Opportunity Cost of Producing 2 Watches		
Opportunity Cost of Producing 4 Bracelets		

Answer:

	Marty	Palmer
Opportunity Cost of Producing 2 Watches	1.5 bracelets	5 Bracelets

|		
Opportunity Cost of Producing 4 Bracelets	16/3 Watches	8/5 Watches

f. (2 points) In the space below draw a graph that represents Marty and Palmer's joint PPF for the week given the information you have been provided. Make sure your graph is completely and clearly labeled. Measure Watches (W) on the vertical axis and Bracelets (B) on the horizontal axis. Identify the coordinates of any kink points in your graph.

Answer:
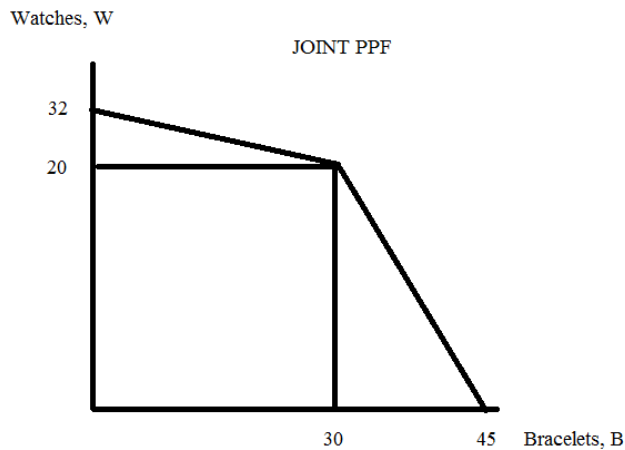
g. (2 points) Provide a number line like the one in class to depict the range of trading prices for 10 bracelets in terms of watches. Provide arrows and labeling to indicate Palmer's perspective as well as Marty's perspective. Make sure you label the units of measurement on the trading range price you provide.

Answer:
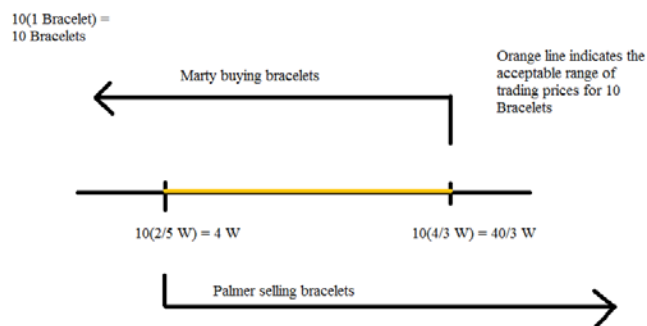
2. (Worth a total of 10 points) Suppose the small, closed economy of Piedmont's market for notebooks can be described by the following domestic demand and domestic supply equations where P is the price of a notebook and Q is the number of notebooks:

Domestic Demand: Q = 200 – (1/4)P
Domestic Supply: Q = P – 200

a. (1 point) If this market is closed to trade, what will be the value of consumer surplus (CS) and producer surplus in this market? Show your work.

Answer:
To find CS and PS we will first need to find the equilibrium set demand equal to supply:
200 – (1/4)Pe = Pe - 200
400 = (5/4)Pe
Pe = $320
Qe = 200 – (1/4)Pe using the demand curve
Qe = 200 – (1/4)(320) = 120 notebooks
Or, Qe = Pe - 200 using the supply curve
Qe = 320 - 200 = 120 notebooks
CS = (1/2)(800 – 320)(120) = (480)(60) = $28,800
PS = (1/2)(320 – 200)(120) = (120)(60) = $7200

b. (2 points) Suppose that you are told that the world price of a notebook is $400. If Piedmont opens this market to trade, what will be the change in total surplus relative to this market being closed to trade? Show your work.

Answer:
TS with the closed economy = CS + PS = $28,800 + $7200 = $36,000.
If the world price is $400, then the quantity demanded at this price is 100 notebooks and the quantity supplied at this price is 200 notebooks. There is an excess supply of 100 notebooks and Piedmont will export the surplus of 100 notebooks.

CS with an open economy in this market = (1/2)(800 – 400)(100) = (200)(100) = $20,000
PS with an open economy in this market = (1/2)(400 – 200)(200) = (200)(100) = $20,000
TS with an open economy in this market = $40,000

TS increases by $4000 when this market opens to trade with the world price of $00 per notebook relative to the TS when this market is closed to trade.

c. (1 point) Suppose that you are told that the world price of a notebook is $280. If Piedmont opens this market to trade, what will happen to consumer surplus relative to consumer surplus when this market was closed to trade? Be specific in your answer (that is, provide a numeric value) and show how you found your answer.

Answer:
CS when the market is closed to trade = $28,800

CS when the market opens to trade and the world price is $280. At $280, the quantity demanded is equal to 130 units. So CS when the market is open to trade = (1/2)(800 – 280)(130) = (1/2)(520)(130) = (260)(130) = $33,800

CS increases when this market opens to trade by $33,800 - $28,800 = $5,000.

d. (2 points) Suppose the world price of a notebook is $280. If Piedmont opens the market to trade and at the same time implements an import quota of 30 notebooks, what will be the value of license holder revenue? Show your work.

Answer:
If an import quota of 30 notebooks is implemented in this market when it opens and the world price is $280 per notebook we can solve for the new equilibrium price with the import quota and the new equilibrium quantity of the good consumed with the import quota in at least two different ways.

Method One: Write a new supply curve that includes this import quota:
Initial Supply Curve: Q = P - 200
In slope-intercept form this supply curve is: P = 200 + Q and with the import quota we know that the new supply curve will have the same slope but will be shifted horizontally over by 30 units at every price equal to or greater than the world price. Thus, the point (Q, P) = (0 + 30, 200) = (30, 200) sits on this new supply curve. So, let's use this new point to find the y-intercept for the new supply curve and then we will be able to write an equation for the new supply curve. Thus,
y = mx + b
P = Q + b
200 = 30 + b
b = 170
New supply curve that includes the import quota: P = Q + 170.
Use this supply curve and the demand curve to solve for the new equilibruim:
800 – 4Q = Q + 170
5Q = 630
Q = 126 notebooks
If Q is 126 notebooks, we know that the domestic producers are supplying 96 of these notebooks while the import quota is providing the additional 30 notebooks.
P = 800 – 4Q = 800 – 4(126) = $296 per notebook
License Holder Revenue = ($P_{import\ quota}$ – P_{world})(Import Quota) = (296 – 280)(30) = (16)(30) = $480

Method Two:
With the import quota we can think about the following relationship at the equilibrium price and quantity with this import quota:
(Quantity Supplied Domestically with the import quota) + (Import Quota) = Quantity Demanded Domestically with the import quota)
(P - 200) + (30) = (200 – (1/4)P)

(5/4)P = 370
P = $296 per notebook
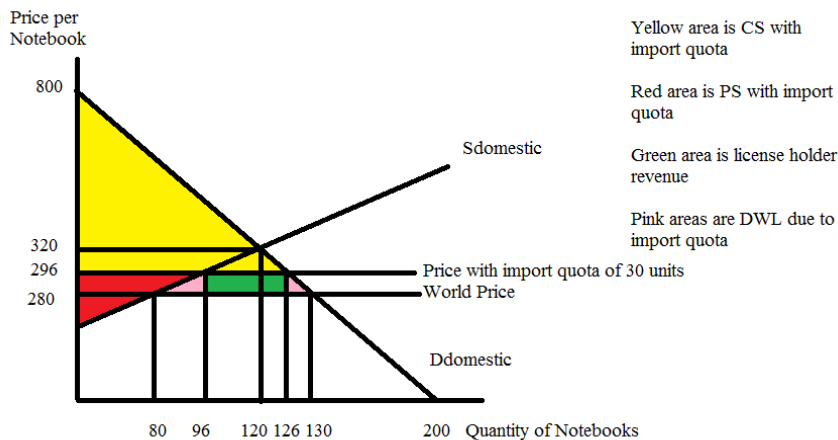Q demanded domestically = 200 – (1/4)(296) = 126 notebooks
Q supplied domestically = 296 - 200 = 96 notebooks
Quantity of notebooks supplied through import quota = 30 notebooks

License Holder Revenue = (Price with the quota - World Price)(Number of imports with the import quota) = ($296 per notebook - $280 per notebook)(30 notebooks) = $480

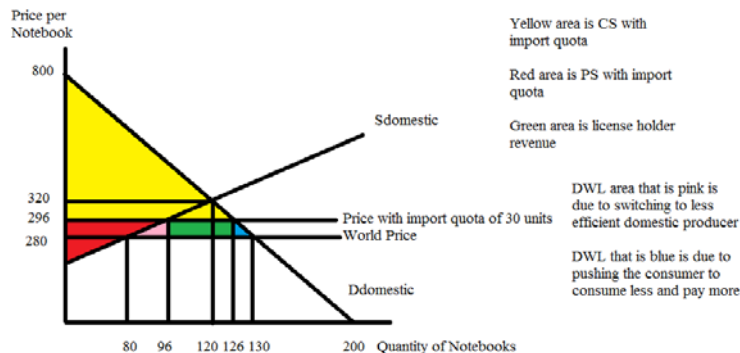Here's an image to illustrate what we have:

e. (2 points) Suppose that the import quota described in (d) has been implemented. What is the value of the deadweight loss experienced by consumers who no longer are consuming their optimal amount of the good? Show your work.

Answer:
The DWL experienced by consumers = (1/2)($296 per notebook - $280 per notebook)(130 notebooks - 126 notebooks) = (1/2)(16)(4) = $32.00
Here's the figure showing this area:

f. (2 points) Suppose that the import quota described in (d) has been implemented. What is the value of the deadweight loss due to using less efficient domestic producers to produce more of the notebooks that are consumed in Piedmont? Show your work.

Answer:
The DWL due to using less efficient domestic producers = (1/2)($296 per notebook - $280 per notebook)(96 notebooks - 80 notebooks) = (1/2)(16)(16) = $128
Look at the figure in (e) to see this area.

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

	Price in 2013	Quantity in 2013	Price in 2014	Quantity in 2014
Watches	$2	40 watches	$4 per watch	60 watches
Bracelets	$3	50 bracelets	$4 per bracelet	A =

You are also provided the following information about Jamestown:

Year	Nominal GDP	Real GDP with Base Year 2013	GDP deflator
2013	B =	C =	E =
2014	$480	D =	160

Use this provided information to calculate the missing values for A, B, C, D, and E. 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 = _____60 bracelets_____
(2 points): B = _____$230_____
(2 points): C = ____$230____
(1 point): D = ____$300_____
(1 point): E = _____100_____

Start with B: nominal GDP in 2013 is ($2 per watch)(40 watches) + ($3 per bracelet)(50 bracelets) = $230

Go to C: Since 2013 is the Base Year, this tells us that nominal GDP in 2013 is equal to real GDP in 2013. Since we know that the value of nominal GDP in 2013 is $230, we therefore know that the value of real GDP in 2013 is also $230.

Go to E: We know that the GDP deflator for 2014 is 160 suggesting that we are on a 100 point scale. So, the GDP deflator for the base year is equal to the scale factor: thus, the GDP deflator for 2013 is 100.

Go to A: nominal GDP for 2014 is given to us as $480. So, $480 = ($4 per watch)(60 watches) + ($4 per bracelet)(x bracelets) where the value of x is the answer for A. Thus, $480 = 240 + 4x$ and solving for x we get x = 60 bracelets. So, A = 60 bracelets.

Go to D: real GDP in 2014 is the sum of the product of the prices of each from the base year times the quantity of each good from 2014: real GDP in 2014 with base year 2013 = (2)(60) + (3)(60) = $300.