Economics 101	Name ANNOTATED KEY
Spring 2017	TA Name _____
April 11, 2017	Discussion Section # _____
Second Midterm	Student ID # _____

Version 1

DO NOT BEGIN WORKING UNTIL THE INSTRUCTOR TELLS YOU TO DO SO
READ THESE INSTRUCTIONS FIRST.

You have 75 minutes to complete the exam, **including filling in your scantron**. The exam consists of **12 binary choice questions worth 3 points each** and **20 multiple choice questions worth 5 points each for a total of 136 points**. If you accurately fill out your scantron and your exam booklet you will get one administrative point for a total of 137 points on this exam. Please accurately and completely provide your **name**, **ID number**, **discussion section number, version number, and TA name** on the scantron sheet and the exam booklet. Answer all questions on the scantron sheet with a #2 pencil. There are 20 printed pages in this exam, including this cover sheet. **DO NOT PULL THE EXAM APART OR REMOVE THE STAPLE**.

WARNING: NO COMMUNICATION OR CALCULATING DEVICES, OR FORMULA SHEETS ARE ALLOWED. NO CONSULTATION AND CONVERSATION WITH OTHERS ARE ALLOWED WHILE YOU ARE TAKING THE EXAM OR IN THE EXAM ROOM. ACADEMIC MISCONDUCT IS A SERIOUS OFFENSE AND PUNISHABLE TO THE FULLEST EXTENT. PICK THE BEST ANSWER FOR EACH QUESTION.

How to fill in the scantron sheet and other information:

1. Print your last name, first name, and middle initial in the spaces marked "Last Name," "First Name," and "MI." Fill in the corresponding bubbles below.
2. Print your student ID number in the space marked "Identification Number." Fill in the bubbles.
3. Write **the number of the discussion section you've been attending under "Special Codes" spaces ABC**, and fill in the bubbles. At the bottom of this page you will find the discussion numbers.
4. Write the **version number** of your exam booklet under "Special Codes" space D, and fill in the bubble. The version number is at the top of this page.

- **If there is an error on the exam or you do not understand something, make a note on your exam booklet and the issue will be addressed AFTER the examination is complete. No questions regarding the exam can be addressed while the exam is being administered.**
- **When you are finished, please get up quietly and bring your scantron sheet and this exam booklet to the place indicated by the instructors.**

Pedro Guinsburg	Samantha Schreiber	Annie Lee	Saiah Lee
301 Th 4:35 PM Soc Sci 6322	**303** Th 4:35 PM Soc Sci 6101	**302** Fr 2:25 PM Soc Sci 6102	**304** Fr 2:25 PM Soc Sci 6240
305 Fr 11:00 AM Van Hise 395	**307** Fr 9:55 AM Van Hise 583	**308** Fr 9:55 AM Van Hise 595	**310** Fr 12:05 AM Van Hise 391
306 Fr 8:50 AM Sterling 1407	**311** Fr 8:50 AM Ingraham 120	**309** Fr 11:00 AM Van Hise 383	
312 Th 3:30 PM Soc Sci 6224			

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EXAM CONTINUES ON NEXT PAGE

I, _____, agree to neither give nor receive any help on this exam from others. I understand that the use of a calculator or communication device on this exam is academic misconduct. I also understand that providing answers to questions on this exam to other students is academic misconduct, as is taking or receiving answers to questions on this exam from other students. Thus, I will cover my answers and not expose my answers to other students. It is important to me to be a person of integrity and that means ALL ANSWERS on this exam are my answers. Any violation of these guidelines will result in a penalty of <u>at least</u> receiving a zero on this exam.

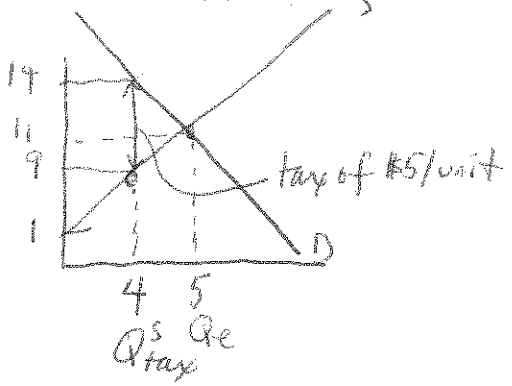
Signed _____

<u>I. Binary Choice Questions (12 questions worth 3 points each)</u>

Not hard. Simple work

1) The market for oranges is in equilibrium at a price of $11 per unit of oranges and a quantity of 5 units. You know that the market demand curve is linear and downward sloping and that the equation for the market supply curve is Q = (1/2)P – (1/2). Given this information and holding everything else constant, the government implements an excise tax of $5 per unit of oranges, leading to a new equilibrium price of $14 per unit of oranges and a new equilibrium quantity of 4 units. What is the deadweight loss from the implementation of this excise tax?

a. $20
b. $2.50



$S: Q = \frac{1}{2}P - \frac{1}{2}$

$\frac{1}{2}P = Q + \frac{1}{2}$

$\boxed{P = 2Q + 1}$

If $P = 9$ then $Q^S_{tax} = \frac{1}{2}(9) - \frac{1}{2}$

$Q^S_{tax} = \frac{8}{2} = 4$

$DWL = \frac{1}{2}(\text{tax/unit})(Qe - Q^S_{tax})$

$DWL = \frac{1}{2}(5)(5-4) = \$2.50$

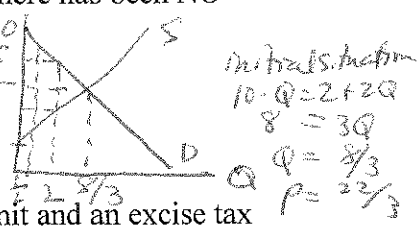
tax of $2: D: $P = 10 - Q$; S^T: $P = 4 + 2Q$; $10 - Q = 4 + 2Q$, $6 = 3Q$, $2 = Q_e^T$, $P_e^T = 10 - 2 = 8$, $P_{net} = 6$

tax of $6.50: D: $P = 10 - Q$; S^T: $P = 8.50 + 2Q$; $10 - Q = 8.50 + 2Q$, $1.50 = 3Q$, $\frac{1}{2} = Q_e^T$, $P^T = 9.50$, $P_{net} = 3.00$

tax rev $= (6.50)(\frac{1}{2}) = 3.25$

2) Consider the market described by the following equations where there has been NO government intervention in the market:

Market Demand Curve: $P^D = 10 - Q^D$
Market Supply Curve: $P^S = 2 + 2*Q^S$



initial eq: $10 - Q = 2 + 2Q$, $8 = 3Q$, $Q = 8/3$, $P = 22/3$

tax rev $= (2)(2) = 4$

total revenue for producer $= 6 \times 2 = 12$

HARD IF YOU DO ALL THE WORK - BUT YOU CAN QUICKLY ELIMINATE ANSWER (B)!

Consider two excise taxes on producers: an excise tax of $2 per unit and an excise tax of $6.50.

a. Relative to the situation with the excise tax of $2 per unit: the excise tax of $6.50 per unit will result in a decrease in the quantity consumed in the market of 1.5 units; government tax revenue will decrease from $4 to $3.25; and the price consumers pay will increase by $1.50.
b. If an excise tax of $2 per unit is implemented in this market, the total revenue for the producer will be of $4 and the price consumers pay will be $7 per unit of the good.

[see work] $7 per unit

Definitional! Easy

3) If the US has an absolute advantage in the production of all goods and services, is it possible for the US to gain from trade with another country?

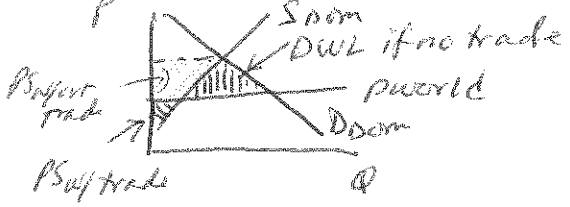
a. Yes
b. No

Yes provided that the O.C. of producing the goods is different for the two countries

Not too hard

4) Consider the market for pasta noodles in a small economy that is currently closed to international trade. The world price is below the domestic market price. If this economy opens up the market for pasta noodles to international trade, the value of producer surplus will _____ and there _____ be a deadweight loss after opening the market to trade.

a. Decrease; will not
b. Increase; will



EASY: DEFINITION

5) The price elasticity of demand represents:

a. The responsiveness of quantity demanded to changes in the price of a different good.
b. The responsiveness of quantity demanded to changes in price of the good.

$$\epsilon_D = \frac{\% \Delta Q_1^D}{\% \Delta P_A}$$

As Income ↑, Q^D Haircuts ↑: Haircuts are normal goods
As Price shampoo ↑, Q^D Haircut ↓: Shampoo & Haircuts are Complements

DEFINITIONS

6) Hoyun loves haircuts, but he is a poor graduate student. He notes that if his income were to increase by 10%, he would increase the quantity of haircuts he consumes by 20%. And, if his price of fine shampoo increased by 10%, he would decrease his demand for haircuts by 5%. From information we can conclude that for Hoyun:

a. Haircuts are a normal good and haircuts and fine shampoo are complements. ✓ ✓
b. Haircuts are an inferior good and haircuts and fine shampoo are substitutes. ✗ ✗

$E_{xy} = \frac{\%\Delta Q_{volleyball}}{\%\Delta P_{soccer}} = -1.5$

SOME WORK HERE: A BIT CHALLENGING

7) Felix is renting space to play soccer and volleyball. Suppose Felix knows that the price for a soccer space is $10 while the price for a volleyball space is $20. He knows that his cross-price elasticity of demand of volleyball space to the price of soccer space is 1.5. When Felix actually gets to the rental booth, he finds that the price for a soccer space has decreased to $8. Given this information and holding everything else constant, which of the following statements is true?

$\frac{\%\Delta Q_{volleyball}}{-20\%} = 1.5$

$\%\Delta Q_{volleyball} = 30\%$

if volleyball = 60
then 30% ↓ = 60 − 18 = 42

a. If Felix planned on buying 60 volleyball spaces, he will now want to buy 42 volleyball spaces.
b. If Felix planned on buying 60 volleyball spaces, he will now want to buy 40 volleyball spaces.

Use the following information to answer the next <u>two (2)</u> questions.

You are provided the following information:

Year	Nominal Price of Apples	Real Price of Apples with base year 2000
2000	$1	$1
2015	$5	x = 3

SIMPLE APPLICATION OF %Δ FORMULA

8) Suppose that you are told that the real price of apples increases by 200% from 2000 to 2015. From this information you conclude that the value of x in the above table is:

a. $2
b. $3

$\%\Delta P_{apples} = \left(\frac{x-1}{1}\right)(100\%)$

$200\% = (x-1)(100\%)$

$2 = x - 1$

$x = 3$

NOT HARD!

9) The percentage change in the nominal price of apples between 2000 and 2015 is ____ greater than the percentage change in the real price of apples between 2000 and 2015.

a. 2 times
b. 4 times

$\%\Delta$ in Nominal Price of Apples $= \frac{5-1}{1}(100\%) = 400\%$

$\%\Delta$ in Real Price of Apples $= \frac{3-1}{1}(100\%) = 200\%$

$(200\%)(\underline{x\,2}) = 400\%$

DEFINITION EASY

10) In the base year, the real prices of goods are always equal to their nominal prices.

a. True
b. False

SOME WORK: NOT HARD

11) Adriana has $100 in income in Month 1 to spend on two goods, good X and good Y. The price of good X is $9 per unit and the price of good Y is $2 per unit. In Month 2, she receives a 20% increase in income. After receiving her salary for Month 2, Adriana is in a robbery that reduces her income for the month by 25%. True or False: Given this information and holding everything else constant, Adriana can consume 4 units of good X and 28 units of good Y in Month 2 with the income she has left after the robbery.

$P_X = 9$, $P_Y = 2$, $I = 100$ } Month 1

Month 2: $I' = 120$; after robbery $I'' = 90$

4 units X cost 36

28 units Y cost 56

92 total cost

She cannot afford this.

a. True
b. False

DEFINITION

12) Darwin enjoys consuming biology books and parchment paper. In fact, when he reads a biology book, he uses exactly 3 scrolls of parchment paper to take notes, and similarly, when he uses a scroll of parchment paper, he always consumes 1/3 of a biology book. For Darwin, biology books and parchment paper are ____.

a. Perfect complements.
b. Perfect substitutes.

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II. Multiple Choice Questions (20 questions worth 5 points each)

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

Consider the market for gasoline. The supply and demand curves, measured in gallons (Q), are represented by the following equations:

Supply Curve for Gasoline: Q = 4P
Demand Curve for Gasoline: Q = 200 – P

$S^T: P = 10 + \frac{1}{4}Q$

$10 + \frac{1}{4}Qe^T = 200 - Qe^T$

$\frac{5}{4}Qe^T = 190$

$Qe^T = 190(\frac{4}{5})$

$Qe^T = 38(4)$

$Qe^T = 152$

$DWL = \frac{1}{2}(160 - 152)(10)$

$DWL = \frac{1}{2}(8)(10)$

$DWL = \$40$

NOT TOO BAD

13) Suppose the government implements an excise tax of $10 per gallon of gasoline in this market. What is the deadweight loss arising from the implementation of this excise tax?

a. $30
b. $40
c. $50
d. $60

$S: P = \frac{1}{4}Q$

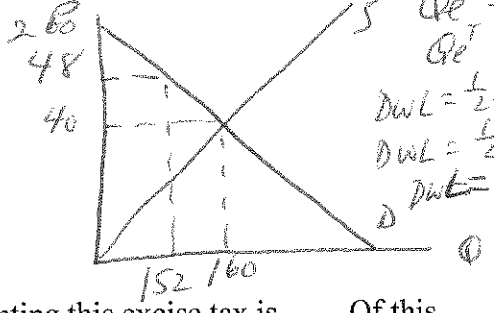
$D: P = 200 - Q$

$\frac{1}{4}Q = 200 - Q$

$\frac{5}{4}Q = 200$

$Q = 200(\frac{4}{5}) = 160$

$P = 40$



PREDICTABLE

14) The tax revenue to the government after implementing this excise tax is ___. Of this tax revenue, ____ is the consumer tax incidence.

a. $980; $304
b. $1,520; $304
c. $1,500; $1,216
d. $1,520; $1,216

Tax Revenue $= (10)(152) = 1520$

$CTI = (45 - 40)(152) = 8(152)$

$CTI = 1216$

JUST MATH!

15) The government wants to understand how the implementation of this excise tax impacts the consumer surplus in the market. What is the net change in consumer surplus (that is, what is the difference between the CS without the tax minus the CS with the tax) after the implementation of this excise tax?

a. $1,248
b. $900
c. $848
d. $4,800

$CS = \frac{1}{2}(200 - 40)(160)$

$= \frac{1}{2}(160)(160)$

$= (80)(160) = 12800$

$CS_{tax} = \frac{1}{2}(200 - 48)(152)$

$= \frac{1}{2}(152)(152)$

$= (76)(152)$

$= 11552$

$\Delta in CS = 12,800 - 11,552$

$= 1248$

152
76
912
1064
11552

12800
11552
1248

Use the following information to answer the next <u>three (3)</u> questions.

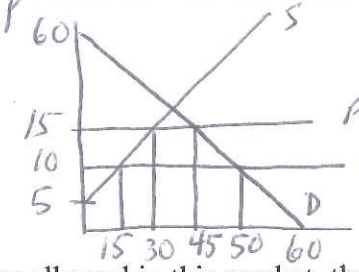
Consider the avocado market in the United States:

Domestic Supply Curve for Avocados: Q = 3P – 15 $S: P = \frac{1}{3}Q + 5$
Domestic Demand Curve for Avocados: Q = 60 – P $D: P = 60 - Q$
The world price for Avocados: Pw = $10 per pound of Avocados

NOT HARD: PREDICTABLE

16) Suppose the government opens this market to trade while simultaneously imposing a tariff of $5 per pound of avocados. Given this information and holding everything else constant, what would the tariff revenue be from this policy?

a. $25
b. $50
c. $100
d. $75



if $P_W = 10 \Rightarrow Q^S_{Dom} = 15$
$Q^D_{Dom} = 50$
if $P_{tariff} = 15 \Rightarrow Q^S_{Dom} = 30$
$Q^D_{Dom} = 45$
Tariff Revenue $= 5(45-30)$
$= \$75$

NOT TOO HARD

17) If free trade were allowed in this market, the domestic producer surplus (PS) and the domestic consumer surplus (CS) would be equal to:

a. PS = $37.50, CS = $1,250
b. PS = $37.50, CS = $625
c. PS = $100, CS = $1,250
d. PS = $10, CS = $750

$PS_{open} = \frac{1}{2}(10-5)(15) = \frac{1}{2}(5)(15) = \$37.50$
$CS_{open} = \frac{1}{2}(60-10)(50) = \frac{1}{2}(50)(50) = \$1250$

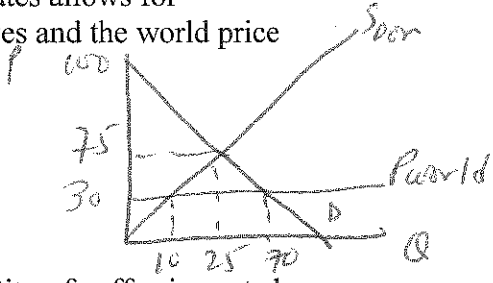
EASY

18) Suppose the government opens this market to trade while simultaneously imposing an effective tariff. Which of the following is a true statement about how the tariff affects consumer and producer surplus relative to these areas with free trade?

a. Consumer surplus increases with the tariff; producer surplus decreases with the tariff.
b. Consumer surplus increases with the tariff; producer surplus increases with the tariff.
c. Consumer surplus decreases with the tariff; producer surplus increases with the tariff.
d. Consumer surplus decreases with the tariff; producer surplus decreases with the tariff.

Use the following information to answer the next <u>three (3)</u> questions.

Assume that initially the market for coffee in the Independent States allows for international competition. The domestic supply and demand curves and the world price are specified below:



Domestic Supply Curve for Coffee: P = 3Q
Domestic Demand Curve for Coffee: P = 100 – Q
The world price of coffee: Pw = $30

EASY: STRAIGHT FORWARD

19) If the government continued allowing for free trade the quantity of coffee imported and the price of coffee in this market would then be, respectively:

a. Quantity of imports = 75 units of coffee and P = $25 per unit of coffee
b. Quantity of imports = 60 units of coffee and P = $30 per unit of coffee
c. Quantity of imports = 60 units of coffee and P = $25 per unit of coffee
d. Quantity of imports = 75 units of coffee and P = $30 per unit of coffee

$3Q = 100 - Q$
$4Q = 100$
$Q = 25$
At $Pw = 30$
$Q^1_{dom} = 10$
$Q^2_{dom} = 70$
Imports $= 70 - 10 = 60$

NOT BAD

20) The gains from having an open economy in this industry are equal to:

a. $1575
b. $1200
c. $1350
d. $1100

gains from open economy $= \frac{1}{2}(75-30)(70-10)$
$= \frac{1}{2}(45)60$
$= 45(30) = 1350$

SOME THOUGHT HERE

21) Assume that a union of importers (you could think of them as lobbyists) – a group of well-established entrepreneurs in this country – wish to lobby for an import quota on coffee imports. Given this information and holding everything else constant, identify the true statement below:

a. In the case of an import quota of 20 units the lobbyists would be willing to contribute to the party of the president of this country as much as $1,200 in order to encourage implementation of this policy. FALSE
b. If the lobbyists and the party of the president share equally the gains from the implementation of this new import quota of 20 units, the party of the president would receive $300 extra in political contributions. TRUE
c. The lobbyists would be willing to pay at most $300 to get the legislators to implement an import quota of 20 units. No - $600
d. The lobbyists would not want to give any contributions to the party to get an import quota for coffee implemented. FALSE

if Import Quota = 20
$Q^1_{dom} + 20 = Q^D_{dom}$
$\frac{1}{3}P + 20 = 100 - P$
$\frac{4}{3}P = 80$
$P = 80(3/4) = 60$
$Q^1_{dom} = 20$
$Q^D_{dom} = 40$

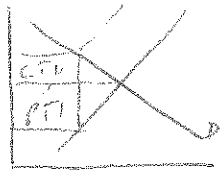
License Holder Rev if Import Quota = 20
License Holder Rev $= (60-30)(20) = \$600$

Some thought

22) Suppose an excise tax on good A is imposed and the consumer tax incidence is less than the producer tax incidence from this excise tax. From this information you can conclude that the demand curve is ↑ than the supply curve. Generally, in the long-run, the absolute value of the price elasticity of demand for good A will be ↑.

a. more elastic; higher
b. more elastic; lower
c. more inelastic; higher
d. less inelastic; lower

more elastic

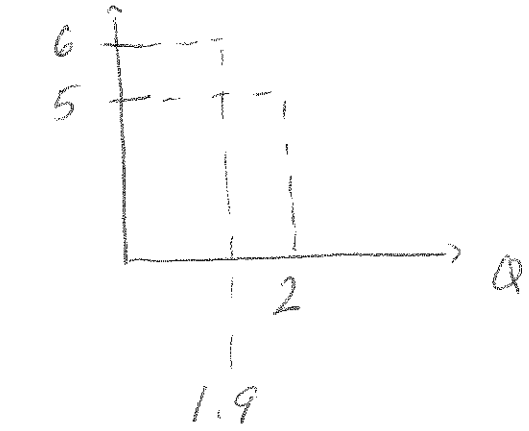


higher ⇒ more elastic

Some thought necessary here

23) Edgar is an economic consultant, currently contracted to help a cigarette company maximize their total revenue. Edgar has collected the following historical information: (1) at a price of $5, market demand was 2 million packs of cigarettes, and (2) when the price of cigarettes rose 20% to $6, quantity demanded decreased by 5%. The company is currently charging a price of $7 per pack. Given this information, and assuming a linear demand curve, what should Edgar suggest the company do to maximize their total revenue?

a. The company should lower the price of a pack of cigarettes by $2.00. No
b. The company should lower the price of a pack of cigarettes by $5.50. No
c. The company should increase the price of a pack of cigarettes by $2.00.
d. The company should increase the price of a pack of cigarettes by $5.50.



5% of 2m
2,000,000
× .05
100,000 packs

Write an equation for demand curve:

(Q, P) = (2, 5) and (1.9, 6)

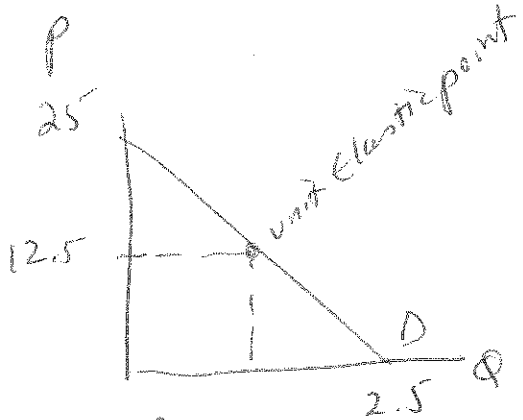
$\text{slope} = \frac{\Delta Y}{\Delta X} = \frac{-1}{.1} = -10$

$P = -10Q + b$

$5 = -10(2) + b$

$25 = b$

$P = 25 - 10Q$



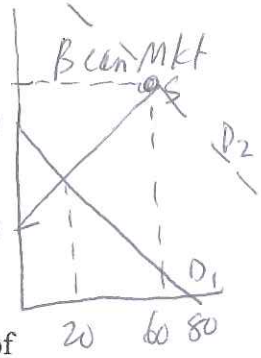
If $P_{now} = \$7$, then raise P to $12.50 ⇒ an ↑ of $5.50

$P = b + (-\frac{1}{2})Q$
$50 = b + (-\frac{1}{2})(60)$
$80 = b$
$D_2: P = 80 - \frac{1}{2}Q$

← New Demand curve for Beans has point $(Q,P) = (60, 50)$

DEFINITELY HARD!!

24) [Hint: this is one of the hardest problems on the exam. You will need to start by finding the equilibrium in both markets. Then you will need to do figure out the new supply curve for rice and the new equilibrium in that market. From there you will need to find the percentage change in the price of rice using the midpoint method.....this is a long problem!!] The following equations describe the initial markets for rice and beans:



Market for Rice Crops
Market Supply Curve: P = 2Q + 20
Market Demand Curve: P = 40 - 2Q

Market for Beans
Market Supply Curve: P = 0.5Q + 20
Market Demand Curve: P = 40 - 0.5Q

Bean Mkt
$\frac{1}{2}Q + 20 = 40 - \frac{1}{2}Q$
$Q_1 = 20$

$100\% = \left[\frac{Q_2 - Q_1}{\frac{Q_2 + Q_1}{2}}\right] 100\%$

A recent innovation in the farming method for rice crops has increased the supply of rice crops. This innovation has resulted in the quantity supplied of rice increasing by 10 units at every price. Given this new supply curve, the cross-price elasticity of demand between the quantity demanded of beans the price of rice is - 2.5. (The mid-point method was used to calculate the cross-price elasticity of demand.) Given this information and holding everything else constant, how many statements in the box below are correct? Assume that any shifts that occur in either market are parallel shifts.

$1 = \frac{Q_2 - 20}{\frac{Q_2 + 20}{2}}$

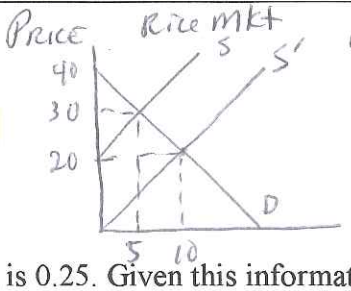
$\frac{Q_2 + 20}{2} = Q_2 - 20$

$Q_2 + 20 = 2Q_2 - 40$
$60 = Q_2$

$D'_{Beans}: P = \frac{1}{2}Q + b$
$Q_2 = 60$
When $Q_2 = 60$
P from supply curve is $P = \frac{1}{2}(60) + (20)$
$P = 50$

- Beans and rice crops are complements. – since $E_{xy} = -2.5 \Rightarrow$ beans and rice are complements
- The new equilibrium quantity of rice is 15. ✗ no $Q_{Rice} = 10$
- The new equilibrium quantity of beans is 60. ✓ [see to the left]
- The y-intercept of the new demand curve for beans is 80. ✓ [see to left, upper right hand corner]

a. One statement is correct.
b. Two statements are correct.
c. Three statements are correct.
d. Four statements are correct.



Initial Equilibrium:
$20 + 2Q = 40 - 2Q$
$4Q = 20$
$Q = 5, P = 30$
New supply curve: $P = 2Q + b$
contains $(Q,P) = (10, 20)$
$P = 2Q + b$
$20 = 2(10) + b$
$b = 0$
$S': P = 2Q$

New Equilibrium:
$40 - 2Q = 2Q$
$40 = 4Q$
$10 = Q'$
$20 = P'$

25) The income elasticity of good A is 0.25. Given this information only, how many statements below are true?

Sam: The income elasticity of demand is less than one, so its demand is price-inelastic. $E_I \neq E_D \Rightarrow$ GIBBERISH
Pedro: It is an inferior good since the income elasticity of demand is less than one. Good is normal good
Annie: The Law of Demand tells us that we should expect income elasticity values to be positive. NONSENSE

#25 TAKES CONFIDENCE

$\%\Delta \text{Price}_{Rice} = \left[\frac{30 - 20}{\frac{30 + 20}{2}}\right] 100\%$

$\%\Delta \text{Price}_{Rice} = \frac{-10}{25}(100\%)$
$= -40\%$

$\therefore \%\Delta Q^D_{Beans} = 100\%$
since $-2.5 = \frac{\%\Delta Q^D_{Beans}}{-40\%}$

a. None of the above statements are true.
b. One statement is true.
c. Two statements are true.
d. Three statements are true.

$E_I = .25 = \frac{\%\Delta Q^D_A}{\%\Delta \text{Income}} \Rightarrow$ as Inc ↑, Q^D_A ↑ $\Rightarrow$ good is normal

Use the following information to answer the next <u>three (3)</u> questions.

An economy produces cheese curds and milk only. The quantities and price per unit quantity of these goods produced and consumed in three years is given in the table below. All output produced is consumed. For purposes of computing the CPI, the market basket is defined as 2 units of cheese curds, and 10 units of milk.

	Cheese curds		Milk	
Year	Quantity	Price	Quantity	Price
2000	2	\$5	10	\$1
2005	5	\$2	5	\$2
2010	1	\$10	4	\$4

PREDICTABLE

26) Assume that the base year is 2000. What is the CPI for year 2005 measured on a 100 point scale?

a. 250
b. 120
c. 150
d. 100

Year	Cost of Market Basket
2000	$10+10=20$
2005	$4+20=24$
2010	$20+40=60$

Year	CPI BY=2000
2000	$\frac{20}{20}(100)=100$
2005	$\frac{24}{20}(100)=120$
2010	$\frac{60}{20}(100)=300$

NOT HARD: JUST RESCALING

27) Assume that the base year is changed from 2000 to 2005. What is the value of the CPI for 2010 on a 100 point scale?

a. 100
b. 300
c. 250
d. 180

Year	CPI BY=2005
2000	$\frac{100}{120}(100)=$
2005	$\frac{120}{120}(100)=100$
2010	$\frac{300}{120}(100)=\frac{30}{12}(100)=\frac{10}{4}(100)=250$
2015	600

SOME WORK!

28) Suppose we know that CPI for 2015 is 600 but we are not fully informed of the base year. (we only know that the base year is either 2000 or 2005) In addition, we are given additional information that the real price of milk in 2010 is \$1.60.

(1) What is the base year with which the CPI of 2015 is calculated?
(2) What is the inflation rate between 2010 and 2015?

a. (1) 2000; (2) 100%
b. (1) 2005; (2) 100%
c. (1) 2000; (2) 150%
d. (1) 2005; (2) 150%

real price of milk in 2010 $= \frac{\text{nom}}{\text{CPI}}(100)$

If BY = 2000 $\Rightarrow$

$1.60 \stackrel{?}{=} \frac{4}{300}(100)$

$1.60 \neq 1.33$ BY IS NOT 2000! STOP HERE!

Don't need to do this, BUT...

If BY = 2005 $\Rightarrow$

real price $= \frac{4}{250}(100)$

real price $= \frac{4(4)}{10} = \frac{16}{10} = 1.6$ ✓

Inflation Rate $= \frac{600-250}{250}(100\%)$

$= \frac{350}{250}(100\%)$

$= \frac{35}{10}(4\%)$

$= 140\%$

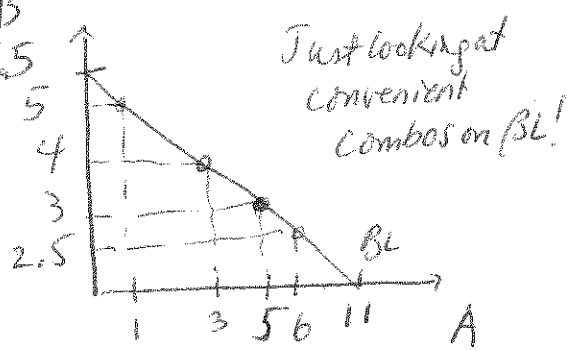
NOT THAT BAD!

29) Chelsea earns an income of $22 and spends it on two goods, liters of apple cider (good A) and books (good B). The price of apple cider is $2 per liter and the price of a book is $4. Her marginal utility for consuming apple cider (A) and books (B) are listed in the table below:

Q_A	1	2	3	4	5	6
MU_A	6	5	4	3	2	1
Q_B	1	2	3	4	5	6
MU_B	14	12	10	8	6	4

Given this information, which of the following bundles of apple cider (A) and books (B) is optimal for Chelsea?

a. 11 liters of apple cider, 0 books not in table
b. 5 liters of apple cider, 3 books on BL ⇒ $\frac{2}{2} \neq \frac{12}{4}$ X
c. 3 liters of apple cider, 4 books $\frac{4}{2} = \frac{8}{4}$ ✓ on BL
d. 1 liter of apple cider, 5 books $\frac{6}{2} \neq \frac{6}{4}$ on BL



Just looking at convenient combos on BL!

Income = 22

$P_{apple\ cider} = P_A = \$2$

$P_{books} = P_B = \$4$

$\frac{MU_A}{P_A} = \frac{MU_B}{P_B}$ for optimal bundle

$I = P_A A + P_B B$

plus $22 = 2A + 4B$

So $\frac{MU_A}{2} = \frac{MU_B}{4}$

Look at answers:

answer (a) not in table ⇒ will not be the answer

answers (b), (c) & (d) are all on the BL

So compare $\frac{MU_A}{P_A}$ to $\frac{MU_B}{P_B}$

to see which combination gives $\frac{MU_A}{P_A} = \frac{MU_B}{P_B}$

Use the following information to answer the next <u>three (3)</u> questions.

Charles can purchase two goods; light bulbs (good x) and tissues (good y). His monthly income is $100, the price of a box of light bulbs is $5 and the price of a box of tissues is $2. Assume Charles has "bowl-shaped" indifference curves, where his utility is represented by U=X*Y, and his marginal utility is as follows:

$MU_X = Y$
$MU_Y = X$

$I = 100$
$P_X = P_{lightbulbs} = 5$
$P_Y = P_{tissues} = 2$

MEDIUM DIFFICULTY

30) Given the information above, what bundle of light bulbs and tissues does Charles choose to consume to maximize his utility?

a. He consumes 8 boxes of light bulbs and 30 boxes of tissues. X
b. He consumes 10 boxes of light bulbs and 25 boxes of tissues.
c. He consumes 12 boxes of light bulbs and 20 boxes of tissues. X
d. He consumes 20 boxes of light bulbs and 10 boxes of tissues. X

$I = P_X X + P_Y Y$
$100 = 5X + 2Y$

$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y}$

$\frac{Y}{5} = \frac{X}{2} \Rightarrow 2Y = 5X$

$Y = \frac{5}{2}X$

HARD: LOT TO DO HERE

31) Suppose the price of light bulbs (good x) increases to $20 per box. The substitution effect reduces Charles' consumption by <u>5</u> of light bulbs, and the income effect reduces Charles' consumption by <u>2.5</u> of light bulbs.

a. 5 boxes; 2.5 boxes
b. 10 boxes; 5 boxes
c. 2.5 boxes; 5 boxes
d. 5 boxes; 10 boxes

$100 = 5X + 2\left[\frac{5}{2}\right]X$
$100 = 10X$
pt A $\Rightarrow X = 10;\ Y = \frac{5}{2}(10) = 25$
$U = XY$ at A
$U = 10(25) = 250$

If you could get the last question, this one is not hard

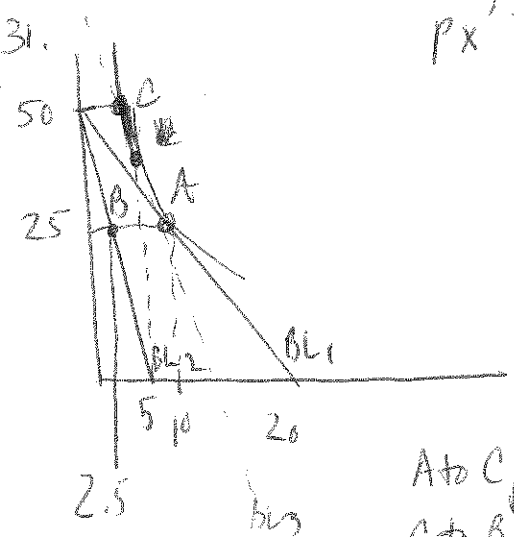
32) After the price change in light bulbs (good x), how much would Charles' income have to change to return to his initial level of utility?

How much does bundle C cost?
$P_X'(5) + P_Y(50) = 20(5) + 2(50) = \$200$

a. Charles' income needs to fall by $20 to return to his initial level of utility.
b. Charles' income needs to rise by $50 to return to his initial level of utility.
c. Charles' income needs to rise by $100 to return to his initial level of utility.
d. Charles' income needs to rise by $200 to return to his initial level of utility.

Min income = 200 − 100 = 100!

31.



$P_X' = \$20$

$\frac{MU_X}{P_X'} = \frac{MU_Y}{P_Y}$

$\frac{Y}{20} = \frac{X}{2}$

$2Y = 20X$

$Y = 10X$

$I = P_X'X + P_Y Y$
$100 = 20X + 2Y$
$100 = 20X + 2(10X)$
$100 = 40X$
$X = 2.5$
$Y = 25$
} Bundle B

Comb3: $U = XY$
$250 = XY \Rightarrow Y = 10X$
$250 = X(10X)$
$25 = X^2$
$5 = X \Rightarrow Y = 50$

A to C $\Rightarrow$ sub effect $\Rightarrow$ 10 to 5
B to C $\Rightarrow$ inc effect $\Rightarrow$ 5 to 2.5