Economics 101
Fall 2018
Second Midterm
Tuesday, November 27, 2018

Name *ANNOTATED KEY*
Discussion Section _____
TA Name _____
Student ID _____

VERSION 1

The exam consists of three parts: (1) 9 Binary Choice Questions worth 2 points each (18 points total); (2) 20 Multiple Choice Questions worth 4 points each (80 points total); and (3) Administrative Points worth 2 points that are awarded to you for correctly filling out the required information on your scantron and your exam booklet. Please accurately and completely provide your name, student ID number, section number and exam version number on the provided scantron as well as on the exam booklet. Answer all questions on the scantron sheet with a #2 pencil. You have 75 minutes to complete this exam, including filling in your information and answers.

NO CELL PHONES, CALCULATORS, OR FORMULA SHEETS ARE ALLOWED FOR THIS EXAM.

PICK THE BEST ANSWER FOR EACH QUESTION. DURING THE EXAM NO QUESTIONS MAY BE ANSWERED: IF YOU THINK THERE IS AN ERROR ON THE EXAM, SELECT THE BEST ANSWER FOR THAT QUESTION, MAKE A NOTE OF YOUR ISSUE ON THE EXAM AND LET THE PROCTOR KNOW OF THE ISSUE WHEN YOU SUBMIT YOUR EXAM AND SCANTRON FOR COLLECTION.

How to fill in the scantron sheet and other information:

1. *Print your last (family) name and first (given) name*, in the spaces marked "Last Name," and "First Name." 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're officially registered for under "Special Codes" spaces ABC* and fill in the bubbles. The section number can be found in the table below.
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.
   Example: If you are registered for section 345 and it says "Version 2" at the top of this page, your "Special Codes" should read 3452.

Erika Frost	Soojeong Jung	Jonathon McClure	Yiyou Zhang	Xinrong Zhu
330 F 8:50-9:40 Van Vleck B113	**332** R 3:30-4:20 Van Vleck B235	**336** F 11:00-11:50 Sterling 2425	**338** F 9:55-10:45 Van Hise 475	**344** F 8:50-9:40 Van Hise 499
331 F 9:55-10:45 Van Hise 383	**345** R 4:35-5:25 Soc Sci 6314	**341** F 12:05-12:55 Van Hise 367	**335** 11:00-11:50 Sterling 3425	**342** F 9:55-10:45 Van Hise 487
	339 F 12:05-12:55 Van Hise 379	**334** F 1:20-2:10 Ingraham 122	**346** F 1:20-2:10 Soc Sci 6322	**343** F 11:00-11:50 Van Vleck B337
	333 F 1:20-2:10 Ingraham 224		**340** F 2:25-3:15 Ingraham 120	**337** F 2:25-3:15 Sterling 1407

I, _____, agree to neither give nor receive any help on this exam from other students. Furthermore, I understand that use of a calculator on this exam is an academic misconduct violation. I also understand that failure to cover my answers is academic misconduct: it is important that I maintain the integrity of my work and that I do not make it available to other students.

Signed _____

Part I. Binary Choice Questions (9 questions each worth 2 points = 18 points)

A BIT OF A CHALLENGE

1. Consider the market for apples, where the magnitude of the slope of the demand curve is 5 times smaller than the magnitude of the slope of the supply curve. When the government imposes an excise tax on producers, which of the following statements is true?

   Ex: Slope of Demand = -1
   Slope of Supply = 5

   a. The consumer tax incidence is bigger than the producer tax incidence.
   b. *(circled)* The producer tax incidence is bigger than the consumer tax incidence.

   PTI > CTI
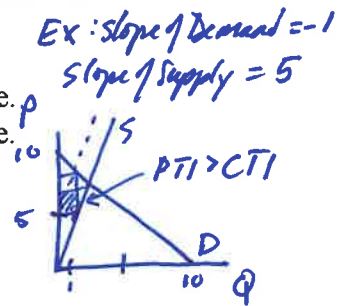
SOME WORK

2. In the year 2000, the real and nominal prices of a new bicycle are equal. Suppose that in this economy there is deflation in the next period. Assuming that year 2000 is the base year and that the nominal price of a bicycle after this deflation does not change from its original level in 2000, which of the following statements is true?

   a. *(circled)* Real Price of a bicycle in the next period > Nominal Price of a bicycle in the next period
   b. Nominal Price of a bicycle in the next period > Real Price of a bicycle in the next period

YEAR	NOM	REAL	CPI
2000	100	100	100
GOING TO NEXT PERIOD 2001	100	125	80

   DEFLATION

   ← HINT: I MADE UP #'S THAT "FIT" THE DATA

   $REAL_{2001} = \frac{NOM_{2001}}{CPI_{2001}} [scale] = \frac{100}{80} = 125$

   1.25
   80)1000
     80
     200
     160
     400

EASY

3. Consider the yogurt market in a small economy. When the economy is closed to trade, the domestic equilibrium price is $0.50 per ounce of yogurt. If the world price for yogurt is $1 per ounce of yogurt, who will benefit from opening this small economy's yogurt market to international trade?

   a. *(circled)* Domestic producers
   b. Domestic consumers

   S_{Dom}
   P_{world}
   1.00
   .50
   $PS_{W/ TRADE} > PS_{CLOSED}$
   D_{Dom}

3
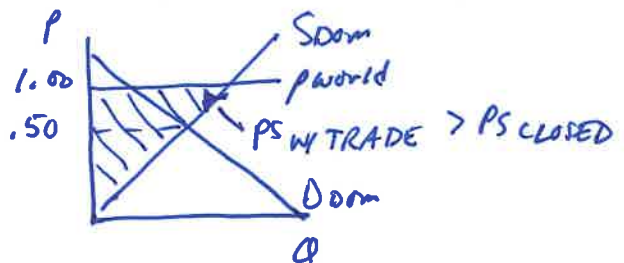
4. When Jennie's monthly income is $100, she spends 10% of her income on coffee and when her income increases to $200, she reduces her spending on coffee to 6% of her income. Given this information and holding everything else constant, Jennie's income elasticity of demand for coffee is _____ (Use the standard percentage change formula when you calculate this income elasticity), and coffee is a/an _____ good for Jennie. For this problem assume that the price of coffee as well as the prices of all other goods stay constant.

a. -0.4; inferior
b. 0.2; normal ✓

Handwritten annotations:

EASY → ONCE YOU GET THIS CONCLUSION YOU CAN STOP

⇒ Inc = 100 ⇒ $10 spent on coffee
Inc' = 200 ⇒ $12 spent on coffee

↑ HER ↓ QUANTITY OF COFFEE SINCE PRICE OF COFFEE DID NOT Δ ⇒ COFFEE IS NORMAL

$$\epsilon_I = \frac{\% \Delta Q^D_{COFFEE}}{\% \Delta INCOME}$$

$$\epsilon_I = \frac{20\%}{100\%} = .2$$

IF $P_{COFFEE} = \$1 \Rightarrow Q^D = 5$ UNITS, IF INC = 100
$\Rightarrow Q^{D'} = 6$ UNITS, IF INC = 200
SIMPLE $\% \Delta Q^D = 20\%$

---

5. For this question assume that the food truck market in Madison is perfectly competitive. After graduating with a business degree from the University of Wisconsin - Madison, Melissa decides to pursue her dream of opening a vegan burger food truck. Being an outstanding student, she was able to pay the fixed cost for the truck using money from an award she won during her senior year. After her first few months of business, she observes that at her profit maximizing level of output AVC < MC < ATC. Given this information and holding everything else constant, should Melissa shut down in the short run?

a. Melissa should not shut down.
b. Melissa should shut down – Madisonians like meat!

Handwritten annotations: π MAX SINCE MR = MC; AT q_1, AVC < MC < ATC

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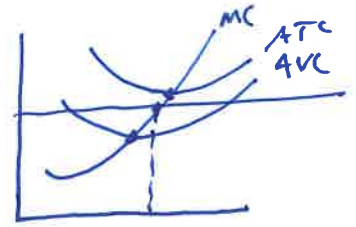
6. Holding everything else constant, the less elastic the demand for a good is, the greater the revenue increase from:

a. an increase in the price of that good.
b. a decrease in the price of that good.

Handwritten annotations: ELASTIC; INELASTIC; IN THIS REGION AN ↑ IN P ⇒ ↑ IN TR
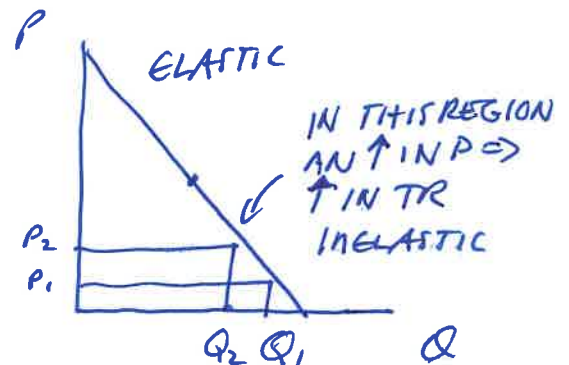
7. Nick chooses to consume a bundle of two goods: (Pizza, Soda) = (10, 6). Following an increase in his salary, he consumes a new bundle (8,8). Given this information and holding everything else constant, which good is inferior?

    a. Pizza
    b. Soda

AS INCOME ↑
QUANTITY DEMANDED
↓ FOR THE INFERIOR
GOOD ⟹ PIZZA
CONSUMPTION ↓ AS INC ↑

8. The demand for electricity is less elastic than the demand for cruise vacations. Which market is more likely to generate smaller amounts of deadweight loss in the presence of an excise tax of an equivalent amount per unit of the good?

    a. The market for electricity
    b. The market for cruise vacations
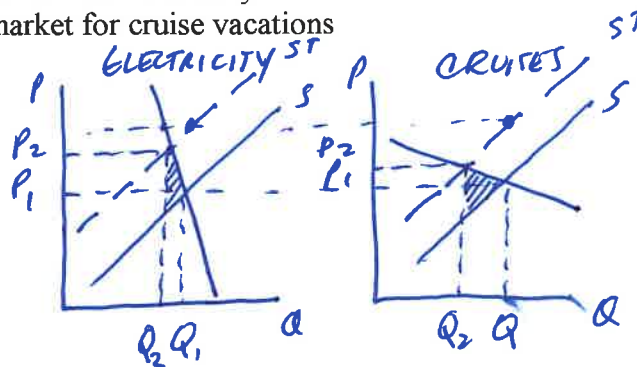
9. Suppose when the market for comic books in a small economy, country A, opens to international trade, domestic producer surplus increases by $600 and domestic consumer surplus decreases by $300. Then we can infer that the world price is _____ than the initial domestic price of comic books and the gains of country A from opening this market to international trade are _____.

    a. lower; $900
    b. higher; $300

OPENING MKT: IF PS ↑ IT MUST BE
BECAUSE WE ARE NOW EXPORTING
THE GOOD ⟹ ∴ Pw > Pclosed MKT

GAINS FROM TRADE = Δ IN TOTAL SURPLUS
= Δ IN PS + Δ IN CS
= 600 + (-300)
= 300

5

Work Space:

WAY EASY!

10. Samsung and Apple are competitors in the smartphone market. Suppose that Samsung decreases its prices. Which of the following could Apple use to predict the effect of this price change on the quantity demanded of Apple smartphones? Apple could use:

    ↳ *LOOKING FOR CROSS PRICE ELASTICITY*

    a. The elasticity of demand for Samsung smartphones with respect to the price of the Samsung smartphone. ✗
    b. The cross-price elasticity of demand for Apple smartphones and the price of Samsung smartphones.
    c. The income elasticity of demand for Apple smartphones. ✗
    d. The elasticity of supply of Apple smartphones with respect to the price of the Apple smartphone. ✗

NOT TOO BAD

11. A perfectly competitive firm is producing a non-zero quantity when the firm is operating at its long-run equilibrium. Which of the following conditions does **NOT** have to be true?

    a. Price = Marginal cost ✓
    b. Price = Short run average total cost ✓
    c. Price = Short run average variable cost
    d. Price = Marginal revenue ✓

    FIRM
    P, ATC, LR EQUILIBRIUM
    AVC, MC, MR
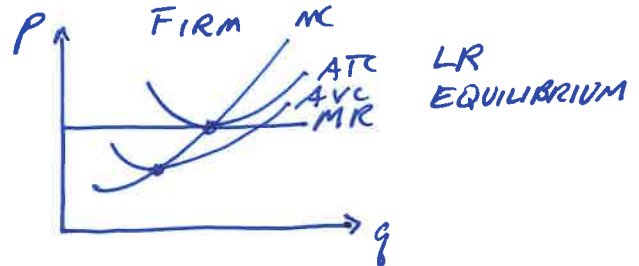
SOME WORK

12. April earns an income of $21 per day and spends it on two goods, hamburgers and apples. The price of a hamburger is $6, and the price of an apple is $3. Her marginal utility for consuming hamburgers and apples per day are listed in the table below:

Quantity of Hamburgers/Day	MU Hamburgers	Quantity of Apples/Day	MU Apples
1	10	1	14
2	8	2	9
3	5	3	4
4	2	4	1
5	1	5	1/3

Given this information and holding everything else constant, which of the following bundles of hamburgers and apples per day is optimal for April to consume?

a. 3 hamburgers; 1 apple → $\frac{MU_H}{P_H} \neq \frac{MU_A}{P_A} \Rightarrow \frac{5}{6} \neq \frac{14}{3}$

b. 1 hamburger; 5 apples → $\frac{MU_H}{P_H} \neq \frac{MU_A}{P_A} \Rightarrow \frac{10}{6} \neq \frac{1}{3}$

c. 2 hamburgers; 3 apples → $\frac{MU_H}{P_H} = \frac{MU_A}{P_A} \Rightarrow \frac{8}{6} = \frac{4}{3}$ ✓

d. 5 hamburgers; 4 apples ✗

↳ *CAN'T AFFORD THIS BUNDLE!!*

7

$\frac{MU_H}{P_H} \neq \frac{MU_A}{P_A} \Rightarrow \frac{1}{6} = \frac{1}{3}$

Work Space:

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

Disappointed with the lack of excitement in the PhD program, Jon is thinking of starting a business on the side selling pocket squares. Suppose the market for pocket squares is perfectly competitive, and the market demand for pocket squares is given by the following equation, where P is the price per pocket square and Q is the quantity of pocket squares:

Market Demand: $P = 208 - 2Q$

Suppliers of pocket squares are all identical, and each firm has the following cost structure, where q is the quantity of pocket squares produced by a single firm:

Total Cost Equation for a representative firm: $TC = 2q^2 + 8$
Marginal Cost Equation for a representative firm: $MC = 4q$

NUT TOO BAD

13. If Jon is producing at the minimum-cost output level, which two cost curves are intersecting?

    (a.) MC and ATC
    b. ATC and AVC
    c. AVC and MC
    d. MC and AFC

(handwritten graph: FIRM, MC, ATC, $P_{LR}=8$, $q=2$, MINIMUM COST AT MINIMUM COST OUTPUT)

NOT TOO BAD
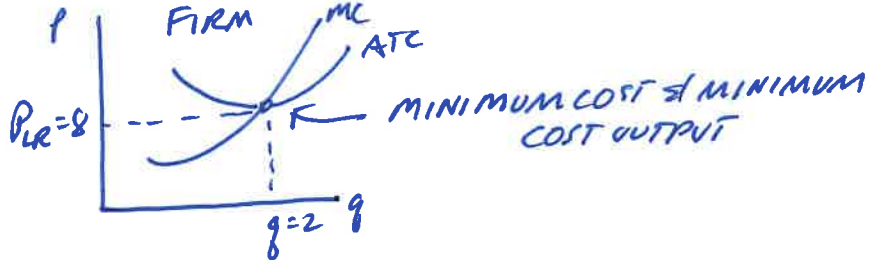
14. Given this information and holding everything else constant, in the long run what must be true about the price Jon charges for his product?
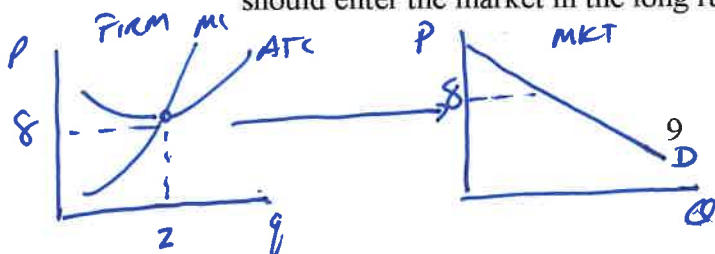
    a. The price per pocket square must be equal to $0.
    b. The price per pocket square must be equal to $2.
    c. The price per pocket square must be equal to $4.
    (d.) The price per pocket square must be equal to $8.

(handwritten: IN LR, ATC = MC FOR FIRM; $ATC = \frac{TC}{q} = 2q + \frac{8}{q}$; ATC = MC; $2q + \frac{8}{q} = 4q$; $\frac{8}{q} = 2q$; $4 = q^2$; $q=2$; At $q=2$, $P=8$)

SOME THOUGHT HERE: A BIT OF A CHALLENGE

15. Assume that Jon is not currently producing pocket squares. Furthermore assume that the market supply curve is linear. Given this information and holding everything else constant, which of the following statements is correct? *IMMEDIATELY ELIMINATE (a) & (c)*

    a. Jon should not enter the market in the long run if there are currently 24 firms; Jon should enter the market in the long run if there are currently 50 firms.
    (b.) Jon should enter the market in the long run if there are currently 24 firms; Jon should not enter the market in the long run if there are currently 50 firms.
    c. Jon should not enter the market in the long run if there are currently 24 firms; Jon should not enter the market in the long run if there are currently 50 firms.
    d. Jon should enter the market in the long run if there are currently 24 firms; Jon should enter the market in the long run if there are currently 50 firms.

(handwritten graphs: FIRM MC, ATC, P=8, q=2; MKT, P, 8, 9, D, Q)

(handwritten: IF LR P = 8, $Q^o_{MARKET} = 100$; $8 = 208 - 2Q$; $2Q = 200$; $Q = 100$ → IF $q = 2$ → THIS MEANS WE NEED 50 FIRMS; ENTER IF # OF FIRMS < 50 FIRMS; DO NOT ENTER IF # OF FIRMS ≥ 50 FIRMS)

Work Space:

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

Consider the market for crystal cups. The market demand and market supply curves are represented by the following equations, where Q is quantity of crystal cups and P is the price in dollars:

Market Demand: Q = 100 – P
Market Supply: 3Q = P - 20

[handwritten: $P = 100 - Q$; $P = 3Q + 20$]
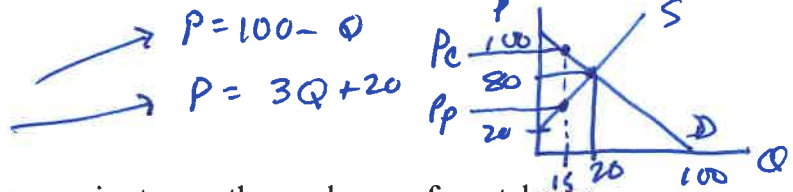
Suppose that the government imposes an excise tax on the producers of crystal cups.

NOT TOO HARD

16. Suppose the government wishes to impose an excise tax in this market such that after the tax the consumption level is 15 crystal cups. Given this information and holding everything else constant, how much will the excise tax be in order for the government to reach its goal?

   a. $20 per unit
   b. $15 per unit
   c. $10 per unit
   d. $5 per unit

[handwritten:
INITIALLY: $100 - Q = 3Q + 20$
$80 = 4Q$
$20 = Q_e$
$P_e = 80$

IF $Q = 15 \Rightarrow P_{CONSUMERS} = 100 - 15 = 85$
$P_{PRODUCERS} = 3(15) + 20 = 65$
PRICE DIFFERENCE IS EXCISE TAX NEEDED
]

SOME WORK: NOT HARD

17. Now suppose that government imposes an excise tax of $40 per unit sold. Given this information and holding everything else constant, how many of the following statements are true?

   • After the implementation of this excise tax, the price consumers pay is now $90 per crystal cup. *[handwritten: ✓ TRUE]*
   • With the implementation of this excise tax, the government generates tax revenue of $300. *[handwritten: X NOT TRUE]*
   • The producer tax incidence, given the implementation of this excise tax, is $200. *[handwritten: NOT TRUE]*

   a. All statements are false.
   b. 1 statement is true.
   c. 2 statements are true.
   d. 3 statements are true.
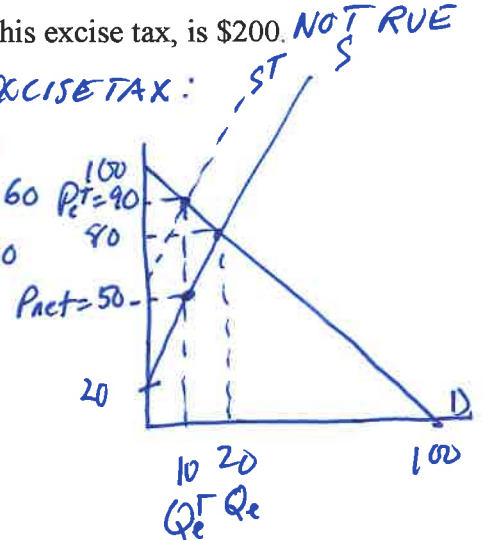
[handwritten:
w/ $40 EXCISE TAX:

D: $P = 100 - Q$
ST: $P = 3Q + 60$ $P_T = 90$
$100 - Q = 3Q + 60$
$40 = 4Q$
$10 = Q_e^T$
$90 = P_e^T$
$P_{net} = 50$

TAX REV = (TAX/UNIT)(Q_e^T)
= ($40/UNIT)(10 UNITS)
= $400

PTI = ($P_e - P_{net}$)(Q_e^T)
= (80 - 50)(10)
= 30(10) = $300
]

11

Work Space:

18. Consider the perfectly competitive market for lamps. Market demand is given by the following equation, where Q is the market quantity and P is the market price:

Market Demand: P = 95 − Q

All firms that produce lamps are identical with the same cost curves in this market. The equations for these cost curves for a representative firm are as follows where q is the quantity of lamps produced by a single firm:

Total Cost Equation for a representative firm: $TC = 100 + 25q + q^2$
Marginal Cost Equation for a representative firm: $MC = 25 + 2q$

Given the information above and holding everything else constant, when the lamp market is in long run equilibrium, the price will be ____, and there will be ____ firms in this market.

a. $35; 6
b. $40; 5
c. $45; 5
d. $50; 4

(handwritten work:)

IN LR EQUILIBRIUM
ATC = MC $P_{LR} = 45$
ATC = $\frac{100}{q} + 25 + q$
ATC = MC
$\frac{100}{q} + 25 + q = 25 + 2q$
$100 = q^2$
$10 = q$,   LR P = 25 + (2)(10) = 45 ← COULD STOP HERE

FIRM   MC   ATC
$P_{LR} = 45$ ----
q = 10   q

IN MARKET, IF P = 45
THEN ⇒ P = 95 − Q
45 = 95 − Q ⇒ Q_{MARKET} = 50 ⇒ NEED 5 FIRMS

19. Suppose Ron's income is $120 and he consumes two goods, biscuits (B) and fruit (F). When the price of a biscuit is P_B = $2 and the price of a piece of fruit is P_F = $4, Ron's optimal consumption bundle is F = 20, B = 20. You are told that if the price of biscuits rises to $6 per biscuit, then holding everything else constant, Ron's optimal consumption of fruit is 15 pieces. You are told that Ron's demand curve for biscuits is linear. Given this information and holding everything else constant, what is the equation for Ron's demand curve for biscuits?

a. $P_B = 10 − (5/2)B$ X
b. $P_B = 10 − (2/5)B$
c. $P_B = 6 − (1/5)B$ X
d. $P_B = 8 − (1/5)B$ X

(handwritten work:)

INC = 120
P_B = $2   } F = 20, B = 20
P_F = $4

P_B' = $6   } F = 15 ⇒   INC = 120
              P_B' = 6   } ⇒ IF F = 15
              P_F = 4   B = 10

TWO POINTS ON DEMAND CURVE:
(Q,P) = (20, 2) & (10, 6)

SLOPE = $-\frac{4}{10} = -\frac{2}{5}$

ELIMINATES
(a), (c), (d)

$y = mx + b$
$P = (-\frac{2}{5})Q + b$
$2 = (-\frac{2}{5})(20) + b$
$10 = b$
$P = 10 − \frac{2}{5}Q$

13

Work Space:

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

Consider the market for pumpkins on a small island. Where P is price per pound of pumpkins (in dollars), and Q is the quantity of pumpkins (in pounds), the domestic demand and domestic supply curves are represented by the following equations:

Domestic Demand: $P = 40 - 2Q$
Domestic Supply: $P = 2Q$

Assume that the world price of pumpkins is $10 per pound.

[handwritten: SOME WORK: NOT HARD]

20. Suppose the island opens its pumpkin market to international trade, but imposes a tariff of $2 per pound of pumpkins. Which of the following statements is <u>NOT</u> true? *[handwritten: → LOOKING FOR FALSE]*

   a. By opening this market and simultaneously imposing the above tariff, the domestic price of a pound of pumpkins falls on this island relative to the price of a pound of pumpkins when this market is closed to trade. *[handwritten: $P_{CLOSED} = 20$; $P_{TARIFF} = 12$]*
   b. The government revenue from this tariff is $16. *[handwritten: T]*
   c. The domestic producers on this island produce 6 pounds of pumpkins with the implementation of this tariff. *[handwritten: T]*
   d. *(circled)* The domestic consumers consume 10 pounds of pumpkins given the implementation of this tariff. *[handwritten: F]*

[handwritten: EASY]

21. What is the value of domestic producer surplus with the implementation of the tariff described in the previous question?

   a. $100
   b. $64
   c. *(circled)* $36
   d. $25

[handwritten notes:]

CLOSED TO TRADE:
$40 - 2Q = 2Q$
$40 = 4Q$
$10 = Q$
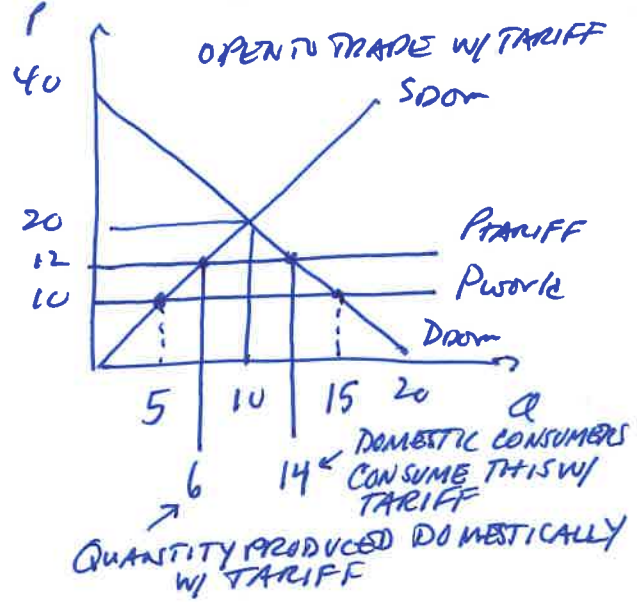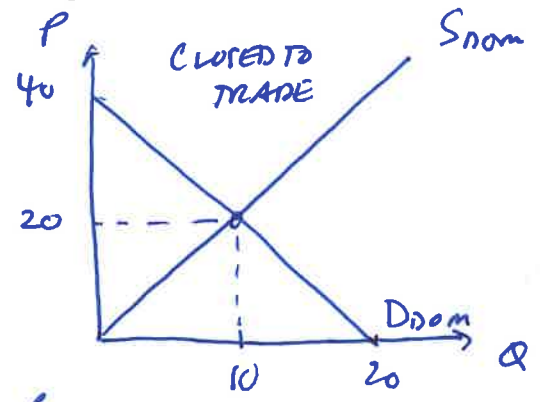$P = 20$

TARIFF REV $= (12-10)(14-6)$
TARIFF REV $= (2)(8) = \$16$

$PS_{TARIFF} = \frac{1}{2}bh$
$PS_{TARIFF} = \frac{1}{2}(12-0)(6) = \$36$


15

Work Space:

22. Consider the market for keyboards where the initial equilibrium price is \$40 per keyboard and the equilibrium quantity is 80 keyboards. We know that when the price increases to \$60, the quantity demanded will decrease by 50% and the quantity supplied will increase by 25%. Given this information and holding everything else constant, then using the standard percentage change formula, the price elasticity of demand is _____; using the arc elasticity formula, the price elasticity of supply is _____.

a. 1; 1/2
b. 1; 5/9
c. 3/2; 1/2
d. 3/2; 9/5

$P_1 = 40$

$Q_1 = 80$

$P_2 = 60 \Rightarrow \% Q^D \text{ IS } 50\% \downarrow$

$Q_2^D = 40$

$Q_2^S = 100 \Leftarrow \% Q^S \text{ is } 25\% \uparrow$

$E_D = \left| \frac{-50\%}{50\%} \right| = 1 \Rightarrow \text{ELIMINATES (c) \& (d)}$

$E_S = \left(\frac{Q_2^S - Q_1}{Q_2^S + Q_1} \right) / \left(\frac{P_2 - P_1}{P_2 + P_1} \right) = \left(\frac{100-80}{180} \right) / \left(\frac{60-40}{100} \right) = \frac{1}{9} / \frac{1}{5} = \frac{1}{9} \times \frac{5}{1} = \frac{5}{9}$

23. Consider the hypothetical budget line that we draw parallel to the new budget line such that it is just tangent to the original indifference curve. In the graph below, this is the dashed line that intersects U1 at point C.
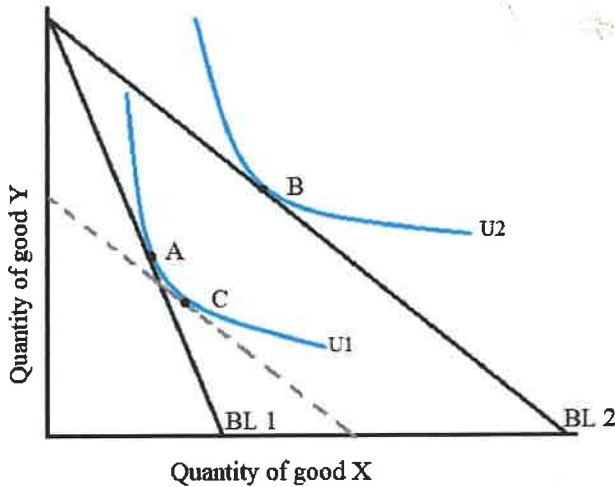
Which of the following statements is true: This dashed line represents:

BASED ON NEW PRICES

a. the imaginary budget constraint based on the initial price ratio, compensated for the consumer's new purchasing power due to the change in the price of good X.
b. the imaginary budget constraint that illustrates the change in consumption of good X that occurs given the new price ratio. ← FAILS TO MENTION ADJUSTING INCOME
c. the imaginary budget constraint based on the new price ratio, where the consumer's income is adjusted to reflect the change in their purchasing power due to the change in the price of good X. ✓
d. the imaginary budget constraint that represents the consumer's true purchasing power now that the price of good X has changed.

↳ ACTUALLY THIS IS
REPRESENTED BY
BL 2

17

24. MKT BASKET : 2A, 1B, 4C, 1D $\frac{2}{\frac{400}{3}} = 2\left(\frac{3}{400}\right) = \frac{3}{200}$

Work Space:

YEAR	COST OF MARKET BASKET
2000	$(2)(1) + (1)(2) + (4)(1) + (1)(2) = 2+2+4+2 = \$10$
2010	$(2)(.5) + (1)(3) + (4)(2) + (1)(3) = 1+3+8+3 = 15$
2020	$(2)(2) + (1)(5) + (4)(.25) + (1)(10) = 4+5+1+10 = 20$

YEAR	CPI BY 2010
2000	$\frac{10}{15}(100) \doteq 66.7$
2010	$\frac{15}{15}(100) = 100$
2020	$\frac{20}{15}(100) \doteq 133$

YEAR	NOM A	REAL A BY 2010	NOM B	REAL B BY 2010	NOM C	REAL C BY 2010	NOM D	REAL D BY 2010
						see Ⓐ		see Ⓑ
2000	1	$\frac{1}{\left(\frac{200}{3}\right)}(100) \doteq 1.50$ Ⓐ	2	$\frac{2}{\left(\frac{200}{3}\right)}(100) = 3$ Ⓑ	1	1.50	2	3
2010	\$.50	.50	3	3	2	2	3	3
2020	2	$\frac{2}{\frac{400}{3}}[100] = 1.50$	5	$\frac{5(100)}{\left(\frac{400}{3}\right)} = 3.75$	.25	$\frac{.25(100)}{\frac{400}{3}} = \frac{3}{16}$	10	$\frac{10(100)}{\left(\frac{400}{3}\right)} = 7.50$

a. 3 > 2 T
b. .50 > 7.50 F
c. 3 > 3.75 F
d. 1.50 > 3 F

ANSWER (a)

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

Suppose the market basket is comprised of two apples (A), one basketball (B), four carpets (C), and one diagram (D). The table below shows the nominal prices of these goods for three different years:

Year	Apples (A)	Basketballs (B)	Carpets (C)	Diagrams (D)
2000	$1	$2	$1	$2
2010	$0.5	$3	$2	$3
2020	$2	$5	$0.25	$10

A LOT OF WORK - JUST HARD!

24. The following are sets of real prices in 2010 dollars. The value in parentheses represents the year. For example, B(2000) is the real price of a basketball in 2000. Which of the following rankings is correct?

    (a.) B(2000) > C(2010)
    b. A(2010) > D(2020)
    c. D(2010) > B(2020)
    d. C(2000) > B(2010)

CONCEPTUALLY CHALLENGING

25. Suppose you are asked to calculate the percentage change in the real price of carpets from 2000 to 2010 using three different methods: *↳ NOT CALCULATING CPI, CALCULATING INFLATION RATE!*

    I.   Use the market basket given above and 2010 as the base year.
    II.   Use a market basket of 4 apples, 1 basketball, 2 carpets, and 1 diagram and 2010 as the base year.
    III. Use a market basket of 4 apples, 1 basketball, 2 carpets, and 1 diagram and 2000 as the base year.

SAME MKT BASKET, BUT JUST CHANGING BASE YEAR

Which of the following statements is true? The result you get from Statement:

    a. I is the same as the result you get from Statement II, but different from the result you get from Statement III.
    (b) I is different from the result you get from Statements II and III. ✓
    c. I is the same as the result you get from Statements II and III. ✗
    d. I is different from the result you get from Statement II, but the same as the result you get from Statement III. ✗

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Work Space:

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

In UW-land, a small economy, the domestic demand and domestic supply of pineapples are given by the following demand and supply equations where Q is the number of pineapples and P is the price per pineapple measured in dollars:

(handwritten) CLOSED MKT:
$$220 - 20P = 10P - 20$$
$$240 = 30P$$
$$8 = P$$
$$Q = 60$$

Domestic demand: $Q = 220 - 20P$
Domestic supply: $Q = 10P - 20$

Furthermore, you know this market is open to international trade and the world price of $4 per pineapple.

(handwritten) NOT HARD: / PREDICTABLE

26. Suppose now the government implements an import quota of 60 pineapples. Given this information and holding everything else constant, what would the license holder revenue be under this import quota?
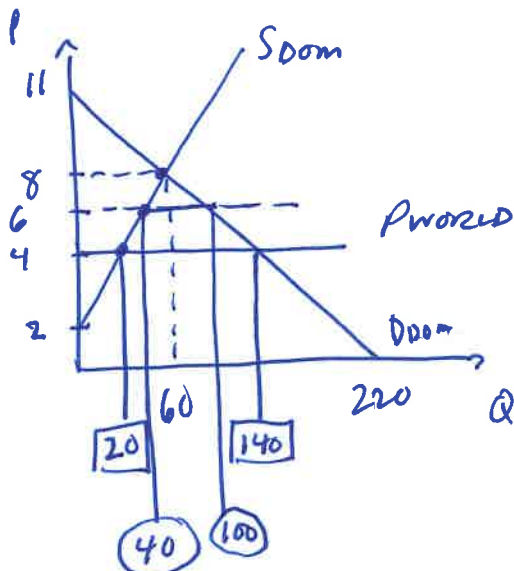
(handwritten)
$$\rightarrow Q^S_{Dom} + IMPORT\ QUOTA' = Q^D_{Dom}$$
$$10P - 20 + 30 = 220 - 20P$$
$$30P = 210$$
$$P = 7$$
$$(LICENSE\ HOLDER\ REV)' = 3(30) = \$90 \Leftarrow THIS\ IS\ LESS\ THAN\ LICENSE\ HOLDER\ REV\ WHEN\ IMPORT\ QUOTA\ IS\ 60\ UNITS$$

a. $120
b. $60
c. $180
d. $90

(a is circled)

(handwritten) NOT THAT HARD

27. Given the above information and holding everything else constant, which of the following statements is true?

a. The value of domestic consumer surplus when this pineapple market is closed to trade is larger than the value of domestic consumer surplus when this import quota is implemented. *(handwritten)* F $CS_{CLOSED} < CS_{QUOTA}$
b. The value of domestic producer surplus when this pineapple market is closed to trade is smaller than the value of domestic producer surplus when this import quota is implemented. *(handwritten)* F $PS_{CLOSED} > PS_{QUOTA}$
c. If the government replaces this import quota with a tariff of $2, the price of a pineapple will remain the same as it is with the import quota policy. *(handwritten)* T
d. License holders would prefer an import quota of 30 pineapples.

(c is circled)

(handwritten) 26.

(handwritten work)
IF $P_W = 4 \Rightarrow Q^D_{Dom} = 220 - 20(4) = 220 - 80 = 140$
$Q^S_{Dom} = 10(4) - 20 = 20$

$Q^S_{Dom} + IMPORT\ QUOTA = Q^D_{Dom}$
$(10P - 20) + 60 = 220 - 20P$
$30P = 180$
$P = 6$ QUOTA

IF $P = 6 \Rightarrow Q^D_{Dom} = 220 - 20(6) = 100$
$Q^S_{Dom} = 10(6) - 20 = 40$ } 60 UNIT DIFFERENCE

LICENSE HOLDER REV = $(2)(60) = \$120$

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Work Space:

PROOF THAT
28(d) IS
TRUE → IF P=6, Q=6 ⟹ TR=36 | IF P=4, Q=9
6=10-⅔Q | 4=10-⅔Q
⅔Q=4 | ⅔Q=6
Q=6 | Q=9
TR=36 ✓

NOT
THAT
HARD

28. Suppose you are told that the demand curve for candy is linear and downward sloping. Furthermore, you are told that the revenue-maximizing price of candy is $5 and the demand for candy at that price is 10. Given this information and holding everything else constant, which of the following statements is *false*?

↳ LOOKING FOR FALSE
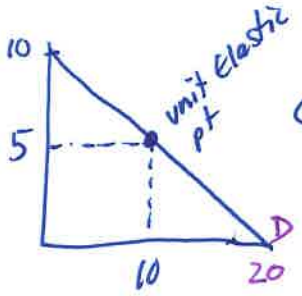
a. The price elasticity of demand at the revenue maximizing price is equal to 1. ✓
b. When price increases from $6 to $7, total revenue will decrease. ✓
c. The demand curve for candy is $Q = 15 - P$ ✗ $P = 10 - (½)Q$
d. There is a price below $5 such that the total revenue at that price is the same as the total revenue when price is $6. T

(graph: vertical axis marked 10 and 5, horizontal axis marked 10 and 20, line labeled D, "unit elastic pt")

IF (Q,P) = (10,5) IS REV MAXIMIZING AND DEMAND IS LINEAR
WE KNOW (10,5) IS MIDPOINT AND THEREFORE P-INTERCEPT
IS $10 AND Q-INTERCEPT IS 20 UNITS

TOUGH
QUESTION

29. A hypothetical consumer has $60 and consumes candy (C) and doughnuts (D). The price of candy is $5 per unit of candy and the price of doughnuts is $6 per unit of doughnuts. The consumer's utility function is given by the following equation where C is units of candy and D is units of doughnuts:

$U = CD$

We can write their marginal utilities as follows:

$MU_C = D$
$MU_D = C$
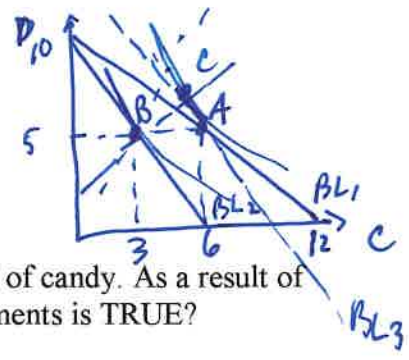
Now, consider that the price of candy increases to $10 per unit of candy. As a result of this change in the price of candy, which of the following statements is TRUE?

(graph: P axis marked 10 and 5, C axis marked 3, 6, 12, points B and A, lines BL1, BL2, BL3)

• Initially, when the price of candy is $5 per unit of candy, this consumer maximizes their utility when they consume (C, D) = (6, 5). TRUE ⟹ BUNDLE A
• The total change in consumption of candy due to the change in the price of candy is a decrease of 3 units of candy. TRUE : ΔC = 6-3 = 3
• From the provided information we can conclude that doughnuts are an inferior good and candy is a normal good. FALSE : THIS ONE IS HARD!
• For this individual to have the same level of satisfaction as they had initially while paying the new prices they would need to be compensated with a positive amount of income. TRUE : AS Pc ↑, REAL PURCHASING POWER DECREASES

a. All of these statements are true.
b. One of these statements is true.
c. Two of these statements are true.
d. Three of these statements are true.

BOTH GOODS ARE NORMAL
$C_3, D_3 = (3\sqrt{2}, 5\sqrt{2})$
USE THESE 2 EQUATIONS TO FIND
BUNDLE C: $D_3 = \frac{5}{6}C_3$ $\frac{5}{3}C_3$
$30 = C_3[\frac{5}{3}C_3]$
$\frac{3}{5}(30) = C_3^2$
$18 = C_3^2$
$C_3 = 3\sqrt{2}$

I = 60
Pc' = 10
Po = 6
BL₂: 60 = 10C + 6D
$\frac{MU_C}{Pc'} = \frac{MU_D}{Po}$
$\frac{D}{10} = \frac{C}{6}$
$6D = 10C$
$60 = 12D$
$5 = D$ } BUNDLE B
$\frac{3}{3} = C$

I = 60
Pc = 5
Po = 6
BL₁: 60 = 5C + 6D
$\frac{MU_C}{Pc} = \frac{MU_D}{Po}$
$\frac{D}{5} = \frac{C}{6}$
$6D = 5C$
$60 = 12D$
$5 = D$ } BUNDLE A ⟹ U_A = 30
$6 = C$

23 BUNDLE C: U AT C = U AT A = 30
$30 = C_3 D_3$
$\frac{D_3}{10} = \frac{C_3}{6}$
$6D_3 = 10C_3$