**Version 1**

**READ THESE INSTRUCTIONS CAREFULLY.**

**DO NOT BEGIN WORKING UNTIL THE PROCTOR TELLS YOU TO DO SO**

You have 75 minutes (plus an additional 15 minute "grace" period) to complete this exam. The exam consists of three parts: Part I is 10 binary response questions worth 2 points each for a total of 20 points; Part II is 20 multiple choice questions worth 3 points each for a total of 60 points; and Part III is two problems worth 10 points each for a total of 20 points. Total number of points on the exam is 100 points. Answer all questions neatly and legibly on the exam booklet.

### 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 EXAM OR IN THE EXAM ROOM. PLAGIARISM IS A SERIOUS ACADEMIC MISCONDUCT AND PUNISHABLE TO THE FULLEST EXTENT.

### PICK ONLY ONE BEST ANSWER FOR EACH BINARY CHOICE OR MULTIPLE CHOICE .

- If you believe 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 this exam booklet to the place indicated by the proctor.

**Problem One Score:** _____

**Problem Two Score:** _____

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DO NOT DETACH THIS SHEET FROM THIS EXAM BOOKLET!

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 this exam to other students is academic misconduct, as is taking or receiving answers to 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 _____

**I. Binary Choice (10 questions @ 2 points each = 20 points)**

Use the information below to answer the <u>**next THREE (3)**</u> questions.

*fewer people working or looking for work*

On February 13, 2016 the Wall Street Journal reported that the "percentage of white men in their 30s and 40s with a working-class job or no occupation [i.e., not classified as a professional] and [with] no more than a high-school diploma or GED" participating in the labor force fell from approximately 96% in 1970 to 79% in 2015. Looking at this same population, the percentage that was married in 1970 was approximately 86% while in 2015 the percentage that was married was at 52%. [This data is from the Current Population Survey.]

*EASY*

1. Given the above figures, which of the following statements is a <u>normative</u> statement?
   a. These figures reflect some kind of sampling bias and these numbers should not be trusted. *this is an opinion*
   b. These figures, if true (and there is no reason to question their validity) represent a significant change in the U.S. economy and the economic prospects of this group of individuals. *this is a positive statement*

*NOT HARD – BE CAREFUL HERE!*

2. Given the above data, what was the percentage change in the rate of marriage between 1970 and 2015?
   a. A decrease of approximately 34%.
   b. A decrease of approximately 40%.

*% Δ in rate of marriage* $= \left[\dfrac{52-86}{86}\right](100\%)$

$= \left(\dfrac{34}{86}\right)100\%$

$= \left(\dfrac{17}{43}\right)100\% \doteq 39+\%$

```
        .39
43 ) 17.00
     12 9
     4 10
     3 87
       23
```

*EASY*

3. Given the above information, it is likely that:
   a. The U.S. economy was producing at a point located inside its production possibility frontier in 2015.
   b. The U.S. economy was producing at a point located beyond its production possibility frontier in 2015.

*Lots of people not working & not looking for work that are 30 to 40+ years of age – not utilizing our resources fully*

3

4. Suppose that you are told that Mindy has a <u>linear</u> production possibility frontier and that two points on this production possibility are (2 pens, 4 erasers) and (4 pens, 3 erasers). Given this information, what is the maximum amount of pens that Mindy can produce?

a. 5 pens

b. 10 pens *(circled)*

*Handwritten work:*

erasers

$m = -\frac{1}{2}$
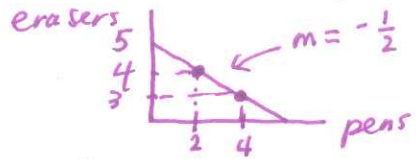
$y = mx + b$

$E = (-\frac{1}{2})P + b$

$4 = (-\frac{1}{2})(2) + b$

$5 = b$

$E = 5 - \frac{1}{2}P$

if $E = 0 \Rightarrow$

$0 = 5 - \frac{1}{2}P$

$\frac{1}{2}P = 5$

$P = 10$

5. Suppose an economy is currently producing on its PPF. The two types of goods available for this economy are capital goods and consumer goods. If economic growth in the next period is the primary goal for this economy then:

a. This economy should produce as many capital goods as possible this period of time. *(circled)*

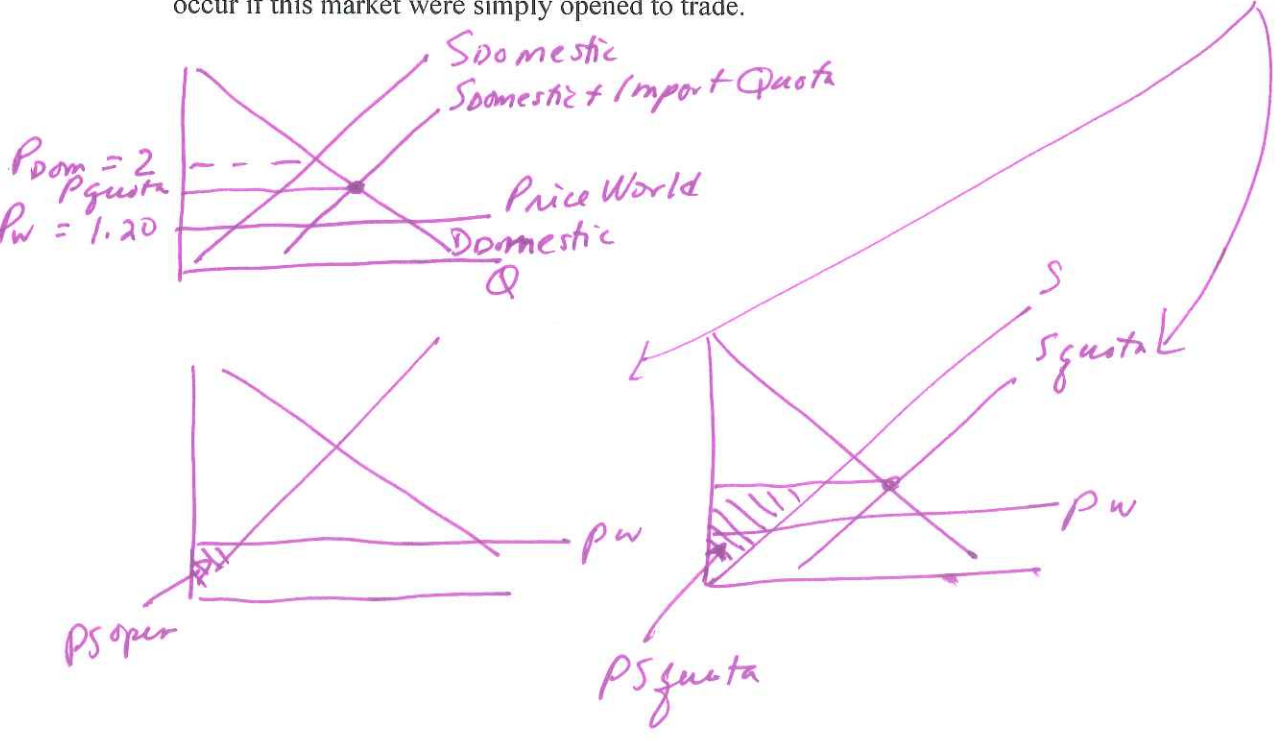b. This economy should produce as many consumer goods as possible this period of time.
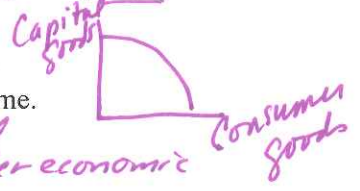
*Handwritten:* Capital goods produced this period provide additional plant & equipment for future time periods – greater economic growth

Capital goods / Consumer goods

6. Consider the market for pineapples in the small closed economy of Sweetland. Currently domestic pineapples sell for $2 in Sweetland while the world price is $1.20. If Sweetland opens their market to trade while simultaneously imposing an effective import quota on pineapples we can expect that:

a. Domestic consumers of pineapples will pay less than $2 per pineapple and more than $1.20 per pineapple. *(circled)*

b. The import quota will decrease *(will increase)* producer surplus relative to the level of producer surplus that would occur if this market were simply opened to trade.

*Handwritten graphs:*

$S$ Domestic

$S$ Domestic + Import Quota

Price World

Domestic

Q

$P_{Dom} = 2$

$P_{quota}$

$P_W = 1.20$

PS open

PS quota

$S$

$S_{quota}$

$P_W$

4

7. Consider a market for a good described by demand and supply curves. If this market is not currently at its equilibrium and if prices are free to adjust, then we can expect:

a. Prices to fall if the demand for the good is greater than the supply of the good. *No prices would rise.*

b. Prices to rise if the demand for the good is greater than the supply of the good.

8. You are told that the demand and supply curves for a good can be represented by the following equations where P is the price per good and Q is the quantity of the good:

Demand: $Q = 75 - 3P$

Supply: $Q = 3P - 15$

Suppose the government legislates that this good must sell for $12 and that this imposed policy is an effective policy. Given this information and holding everything else constant, you conclude that the government has implemented a price:

a. floor.

b. ceiling.

9. Consider the market for mangoes. Currently Smalltopia is a small closed economy where mangoes sell for $1.20 a mango. The world price of mangoes is currently $0.90. If Smalltopia opens this market to trade and everything else is held constant, then:

a. Domestic consumer surplus in Smalltopia's mango market will decrease.

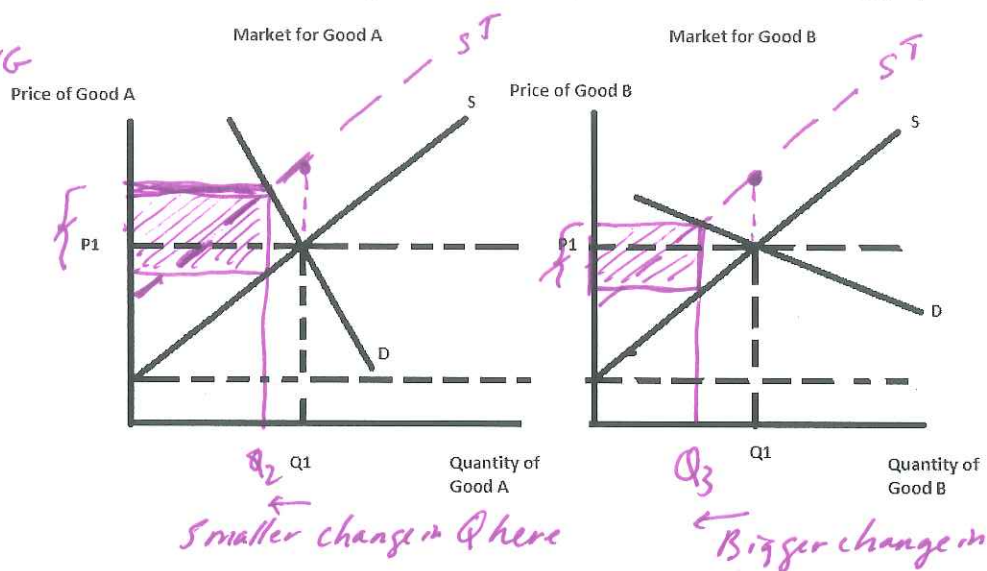b. Domestic producer surplus in Smalltopia's mango market will decrease.

8. $75 - 3P = 3P - 15$
$90 = 6P$
$15 = P$
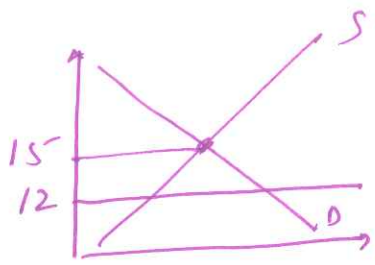
effective gov't program —
price ceiling
since it acts as a
block for the market ⇒
the market can no longer
reach $Pe = 15$

10. Consider the two markets for goods A and B represented in the following graphs.

Market for Good A

Price of Good A

P1

$Q_2$ Q1

Quantity of
Good A

Smaller change in Q here

Market for Good B

Price of Good B

P1

$Q_3$ Q1

Quantity of
Good B

Bigger change in Q here

In each market the initial equilibrium price and quantity happen to be exactly the same (Q1, P1). Suppose that the government is discussing the implementation of an excise tax of $x amount in both markets (the amount of the excise tax will be the same in both markets). Given this information and the above graphs, the tax revenue from this excise tax will be greater in the market for:

a. Good A.
b. Good B.

## II. Multiple Choice (20 questions @ 3 points each = 60 points)

*HARDER – TAKES SOME THINKING*

11. Initially the price of umbrellas in Twinsport is $13 and 100 umbrellas are supplied and demanded at that price. This year however the price of umbrellas has risen to $16 per umbrella and the equilibrium quantity of umbrellas demanded and supplied in the market has risen to 120 umbrellas. Given this information, which of the following explanations is the best explanation?

a. The supply curve has shifted to the right and the demand curve has also shifted to the right, but the supply curve shift is greater than the demand curve shift. *No, see figure – P↓, Q↑*

b. The supply curve has shifted to the left and the demand curve has shifted to the right, but the supply curve shift more than offsets the demand curve shift. *No, see figure – P↑, Q↓*

c. The demand curve has shifted to the right and there is a movement along the supply curve. *Yes, this would work*

d. The supply curve has shifted to the right and there is a movement along the demand curve. *No, see figure – P↓, Q↑*

*NOT HARD – THIS WAS PREDICTABLE*

12. Consider the market for pencils that is initially in equilibrium. Suppose that people's incomes increase while at the same time the costs of producing pencils increases. Assume that pencils are a normal good. Given this information and holding everything else constant you conclude that:

a. The new equilibrium price is indeterminate relative to the initial equilibrium price in the market for umbrellas. *X*

b. The new equilibrium quantity is indeterminate relative to the initial equilibrium quantity in the market for umbrellas. *✓*

c. The new equilibrium price has increased and the new equilibrium quantity has increased relative to their initial levels. *X*

d. The new equilibrium price has decreased and the new equilibrium quantity has increased relative to their initial levels. *X X*
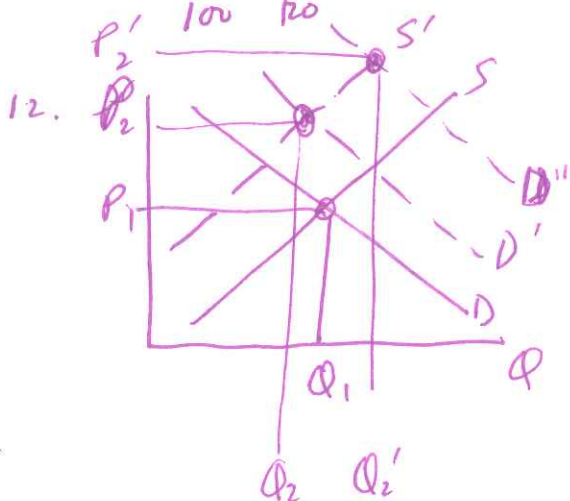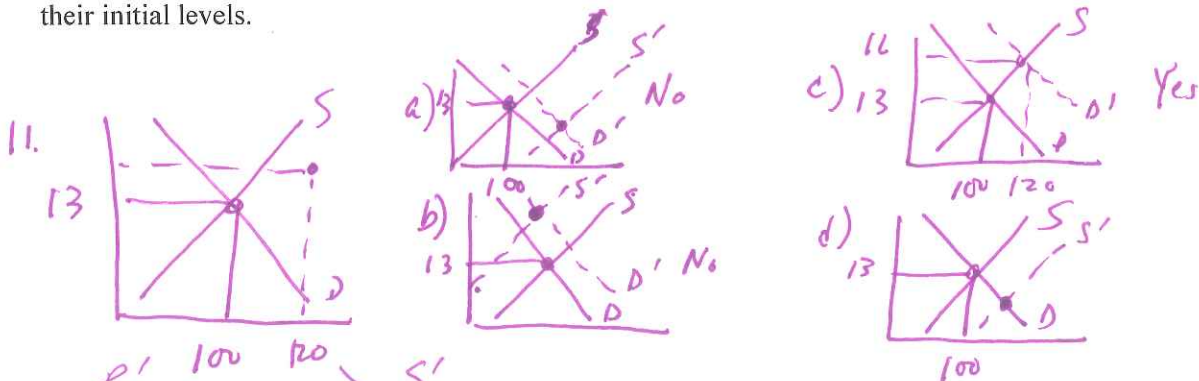


*S to S': ↑ in cost of producing pencils*

*D to D': ↑ in increase & pencils are normal*

*Relative to $P_1$, $P_2$ ↑*
*Relative to $Q_1$, $Q_2$ & $Q_2'$ ⟹ indeterminate*

*$P↑$, $Q?$*
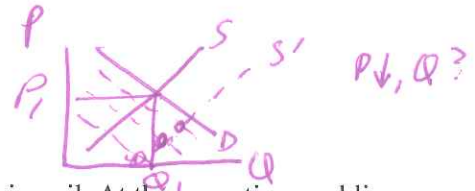
**13.** Fracking technology has substantially lowered the cost of producing oil. At the same time, public concern over climate change has altered many people's decisions about driving gas-powered cars. Given these two events, what do you predict will happen to the equilibrium price of gasoline and the equilibrium quantity of gasoline?

    a. The equilibrium price of gasoline will decrease while the equilibrium quantity of gasoline will increase. ✗

    b. The equilibrium price of gasoline will increase while the equilibrium quantity of gasoline will decrease. ✗

    (c.) The equilibrium price of gasoline will decrease while the effect on the equilibrium quantity of gasoline is indeterminate.

    d. The effect on the equilibruim price of gasoline is indeterminate ✗ while the equilibrium quantity of gasoline will decrease. ✗

Answer the next **two (2 questions)** using the following information.

Consider the market for gasoline that can be described by the following demand and supply equations where P is the price per gallon and Q is the quantity of gasoline in gallons:

    Demand: $P = 20 - 2Q$

    Supply: $P = 2 + Q$

**14.** Suppose the government decides to implement an excise tax in the market for gasoline. It levies an excise tax of $3 per gallon of gasoline on producers of gasoline. Which of the following statements is true given the above information and the implementation of this excise tax?

    ✗ I. Consumer tax incidence and producer tax incidence is equal to one another ✗ and together sum to total tax revenue.

    $CTI = (10-8)(5) = \$10, \quad PTI = (8-7)(5) = \$5$
    $TAX\ REV = (3)(5) = \$15$

    ✗ II. There is no change in the amount of gasoline consumed by consumers in this market when this excise tax is imposed.    $Q_e = 6 \Rightarrow Q_e^T = 5$

    (III.) When this excise tax is imposed consumers find that they pay $2 more per gallon of gasoline. ✓

    (IV.) The government "captures" some of the consumer tax incidence as well as some of the producer tax incidence when it implements this excise tax. ✓    See figure

    a. Statements I and II are both true.

    b. Statement I is true.

    c. Statement III is true.
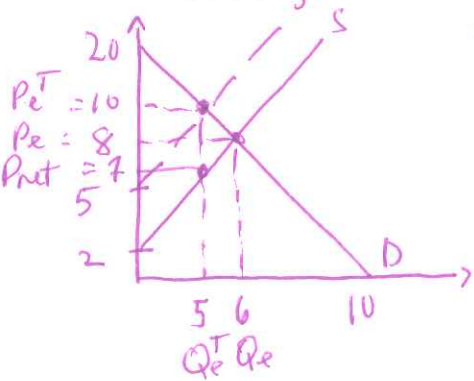
    (d.) Statements III and IV are both true.

**15.** Consider the excise tax described in this last problem. When this excise tax is implemented, the deadweight loss due to this excise tax equals:

    a. $3

    b. $6

    (c.) $1.50

    d. $2.50

$20 - 2Q = 2 + Q$
$18 = 3Q$
$6 = Q_e$
$P_e = 2 + Q_e = 8$

$S^T: P = 5 + Q$
$D = S^T$
$20 - 2Q = 5 + Q$
$15 = 3Q_e^T$
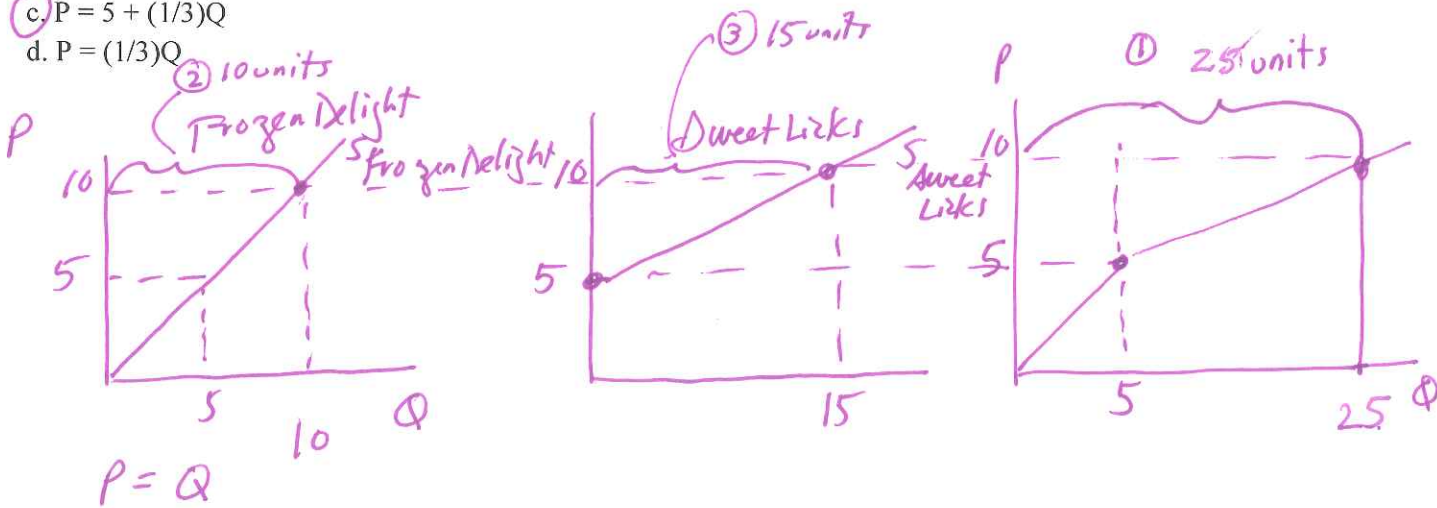$5 = Q_e^T$
$P_e^T = 20 - 2(5) = 10$

$DWL = \frac{1}{2}(\$10/unit - \$7/unit)(6-5)$
$DWL = \frac{1}{2}(3)(6\ units - 5\ units)$
$DWL = \$1.50$

$P_e^T = 10$
$P_e = 8$
$P_{net} = 7$

16. The graph below depicts the market supply curve for popsicles. This market has only two producers, Sweet Licks and Frozen Delight. You are told that Frozen Delight is able to supply popsicles at a lower price than can Sweet Licks.

Price of a
Popsicle

Market Supply

10

5

↑ Frozen Delight

5          25    Quantity of Popsicles
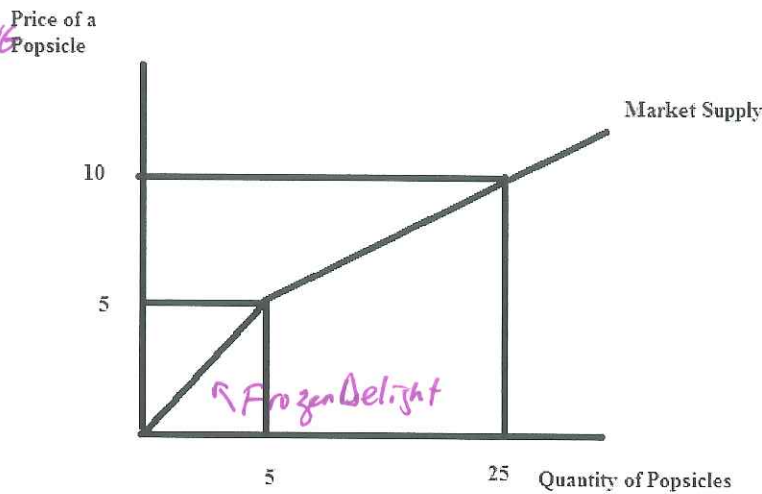
Based upon the above information and the provided graph, what is the equation for Sweet Licks' supply curve for popsicles?

a. $P = (1/4)Q + 5$
b. $P = (1/4)Q + (15/4)$
c. $P = 5 + (1/3)Q$
d. $P = (1/3)Q$

② 10 units
Frozen Delight

Frozen Delight

③ 15 units
Sweet Licks

① 25 units

P

10

5

5
10
Q

$P = Q$

P

5

15
Q

Sweet Licks

P

10

5

5

25   Q

① At $P = 10$, 25 units are supplied
② Frozen Delight will supply 10 units at $P = 10$
③ That implies Sweet Licks must supply $25 - 10$ or 15 units at $P = 10$
④ Slope of Sweet Licks' supply curve: $m = \frac{10-5}{15-0} = \frac{5}{15} = \frac{1}{3}$
   (eliminates answers (a) & (b))
⑤ y-intercept of Sweet Licks' Supply curve: $b = 5$
⑥ Equation: $P = 5 + \frac{1}{3}Q$

Use the information below for the next **four (4) questions**.

The market demand and market supply curves for the wheat market in Visalia are given by the following equations where P is the price per bushel and Q is the number of bushels of wheat:

Market Demand: $P = 10 - (1/100)Q$

Market Supply: $P = 2 + (1/100)Q$

*EASY*

17. Suppose this market is in equilibrium. Then, the value of total surplus in this market is:
    a. $800
    b. $3200
    c. $2400
    d. $1600

*[handwritten graph with TS, S, D curves; points 10, 2, 400, 1000]*
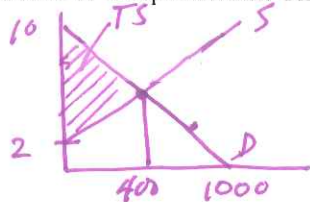
$10 - \frac{1}{100}Q = 2 + \frac{1}{100}Q$

$8 = \frac{2}{100}Q$

$400 = Q$

$TS = \frac{1}{2}(10-2)(400)$

$TS = \frac{1}{2}(8)(400)$

$TS = 1600$

*HARD — AND A LOT OF WORK!*

18. Suppose that the government decides to impose a price subsidy program in this market. This program costs the government $4200. Given this information and holding everything else constant, what was the value of the subsidy per bushel of wheat?
    a. $9 per bushel of wheat
    b. $3 per bushel of wheat
    c. $6 per bushel of wheat
    d. $7 per bushel of wheat

*[handwritten graph with Ps, Pd, subsidy per unit, Qs]*

Cost to govt = 4200

Cost to govt = (subsidy per unit)(Qs)

$4200 = (\text{subsidy per unit})Q_s$

Subsidy per unit $= P_s - P_d$

Subsidy per unit $= [2 + \frac{1}{100}Q] - [10 - \frac{1}{100}Q]$

Subsidy per unit $= \frac{1}{50}Q - 8$  ⟶

*NOT THAT HARD*
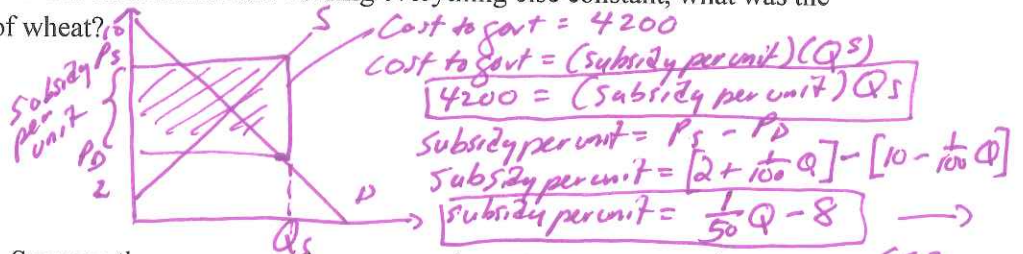
19. Return to the initial scenario. Suppose the government imposes a price support program where the price floor is set at $8 per bushel of wheat and the government agrees to purchase any surplus bushels of wheat. With this program, wheat farmers will produce _____ bushels of wheat, the government will purchase ___ bushels of wheat, and consumers will purchase ___ bushels of wheat.
    a. 600; 400; 200 ✓
    b. 600; 200; 400
    c. 600; 300; 300
    d. 400; 200; 200

*See figure*

*see next page*

*NOT THAT HARD — JUST BE CAREFUL & ANALYTICAL HERE*

20. Consider the program described in the last question. Suppose that storage costs for wheat are $10 per bushel of wheat per year. What is the **total** cost of this price support program to the government if the program as described is implemented for two years and if there are no changes to the program and everything else is held constant?
    a. $14,400
    b. $18,400
    c. $6400
    d. $11,400

2 years:

Direct Cost of wheat first year = (400) × 8 = 3200

Storage of wheat first year = 400 × 10 = 4000

Storage of this wheat 2nd year = 400 × 10 = 4000

Direct Cost of wheat second year = 400 × 8 = 3200

Storage cost of wheat this year = 400 × 10 = 4000

18,400

(This page is intentionally left blank as an extra work sheet.)

**DO NOT DETACH THIS SHEET FROM THIS EXAM BOOKLET!**

18. So we have 2 equations we will use:

$4200 = (\text{subsidy/unit}) \cdot Q$  and  $\text{subsidy/unit} = \frac{1}{50}Q - 8$

a. if subsidy/unit = 9

$4200 = 9(850)?$ ✗

$9 \times 800 = 7200$

this is <u>not</u> true

$9 = \frac{1}{50}Q - 8$

$17 = \frac{1}{50}Q$

$850 = Q$

b. if subsidy/unit = 3

$4200 = 3(550)?$ ✗

$3 \times 500 = 1500$

$3 \times 600 = 1800$

this is <u>not</u> true

$3 = \frac{1}{50}Q - 8$

$11 = \frac{1}{50}Q$

$550 = Q$

c. if subsidy/unit = 6
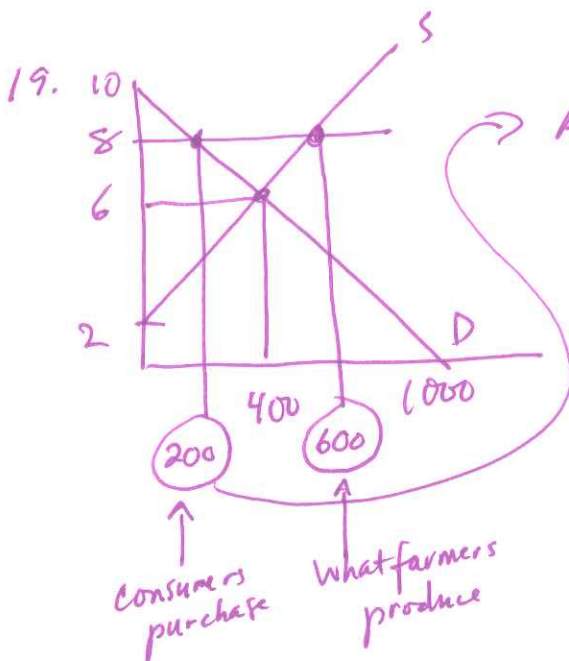
$4200 = 6(700)$ ✓

This is TRUE !!

$6 = \frac{1}{50}Q - 8$

$14 = \frac{1}{50}Q$

$700 = Q$

19.



At $P = 8 \Rightarrow P = 10 - \frac{1}{100}Q^D$

$8 = 10 - \frac{1}{100}Q^D$

$\frac{1}{100}Q^D = 2$

$Q^D = 200$

$\Rightarrow P = 2 + \frac{1}{100}Q^S$

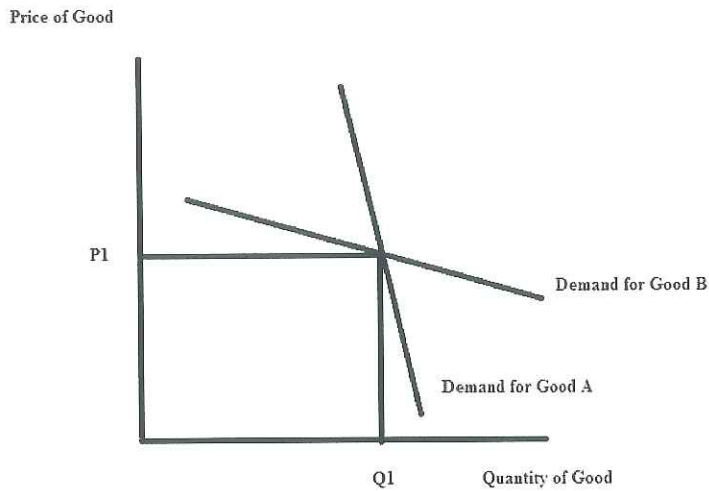$8 = 2 + \frac{1}{100}Q^S$

$6 = \frac{1}{100}Q^S$

$600 = Q^S$

Govt buys $\Rightarrow Q^S - Q^D = 600 - 200 = 400$

11

Use the figure below to answer the **next question**. Treat this figure as drawn to scale. This is a bit of a "thought experiment"! **So, as a hint: think about this one a bit.**

Price of Good



P1

Demand for Good B

Demand for Good A
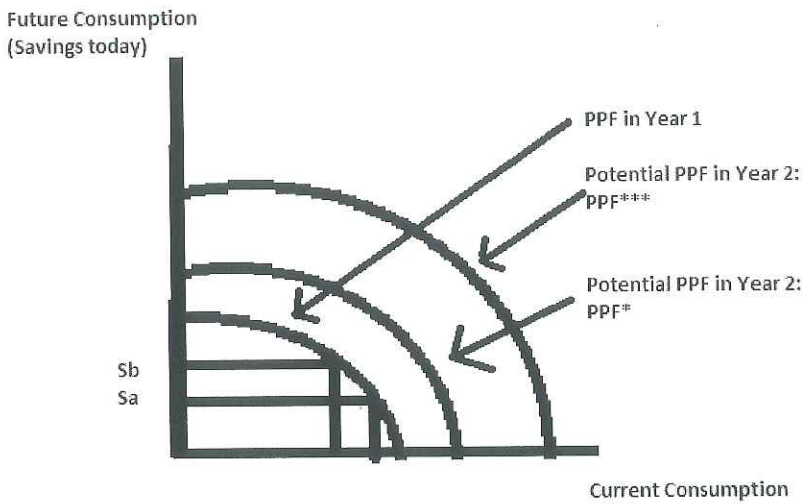
Q1          Quantity of Good

*NOT THAT BAD - REQUIRES SOME THOUGHT*

21. Consider the two demand curves in the above figure. As shown, one of them is the demand curve for Good A and one is the demand curve for Good B. Currently the price of Good A and the price of Good B is P1. Suppose the sellers of these two goods are considering reducing the prices of their products by 10% in a spring sale. Which of the following statements is true?

a. A price reduction of 10% in the market for good A will increase ✗ firm revenue while a price reduction of 10% in the market for good B will decrease ✗ firm revenue.

b. A price reduction of 10% in the market for good A will decrease firm revenue while a price reduction of 10% in the market for good B will increase firm revenue.

c. A price reduction of 10% in either the market for good A or the market for good B will result in a reduction in each firm's revenue. ✗ *Price reduction ↑ revenue in mkt for Good B*

d. A price reduction of 10% in either the market for good A or the market for good B will result in an increase in each firm's revenue. ✗ *Price reduction ↓ revenue in mkt for good A*

12

Use the figure below to answer the next question.

Future Consumption
(Savings today)

PPF in Year 1

Potential PPF in Year 2:
PPF***

Potential PPF in Year 2:
PPF*

Sb
Sa

Current Consumption

EASY –
STRAIGHT
FROM
NOTES

22. In the above figure, PPF in Year 1 shows the PPF for an economy in a given year. During this year the people in this economy can make a choice of saving the amount $S_a$ to invest to raise future consumption or they can instead choose a higher amount of savings in year 1 shown as $S_b$. The PPF for year 2 could be at PPF* or at PPF*** as shown in the diagram depending on whether people save $S_a$ or $S_b$ in Year 1. Given this information, if people in the economy choose the amount of savings shown as _____ in Year 1, then the PPF in year 2 will be _____.

a. $S_a$, PPF*** X    $S_a$, PPF*
b. $S_b$, PPF*** ✓
c. $S_b$, PPF*    $S_b$, PPF***
d. It is not possible to reach PPF*** with either choice! X

13

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

Joe and Susie both produce ornaments and notepads and they both have linear PPFs. You are told that Joe can produce 20 ornaments and zero notepads or he can produce zero ornaments and 30 notepads from his available resources, technology or time. Susie can produce either 10 ornaments and 5 notepads or 5 ornaments and 10 notepads from her available resources, technology or time.

*EASY STRAIGHT FROM NOTES - PREDICTABLE*

23. Given this information and holding everything else constant, you know that: *See figure & work below*

   a. Joe has the absolute advantage in the production of both goods, and Susie has the comparative advantage in the production of ornaments. ✓

   b. Joe has the absolute advantage in the production of notepads and Susie has the comparative advantage in the production of notepads. ✗

   c. Susie has the comparative advantage in the production of notepads and Joe has the comparative advantage in the production of ornaments. ✗

   d. Susie has the absolute advantage in the production of ornaments and Joe has the comparative advantage in the production of notepads. ✗ ✓

*EASY - YOU SAW THIS ONE COMING*

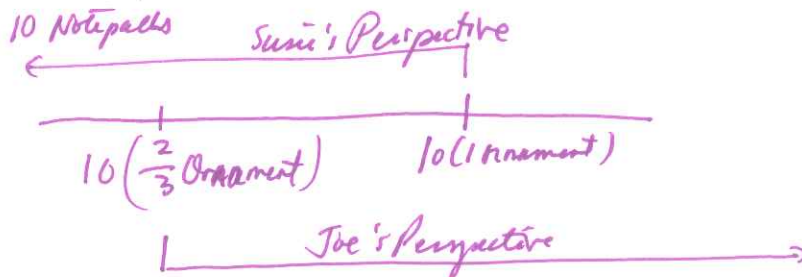24. Given this information and holding everything else constant, you know that the "kink" point on the joint PPF is:

   a. (20 ornaments, 15 notepads) ✗
   b. (30 ornaments, 15 notepads) ✗
   c. (15 ornaments, 30 notepads) ✓
   d. (15 ornaments, 20 notepads) ✗

*NOT HARD, BUT - CAREFUL READING HERE*

25. If Joe and Susie decide to specialize and then trade with one another, then:

   a. Susie is willing to accept (20/3) ornaments or less for 10 notepads. ✗ *She is willing to pay this*
   b. Susie is willing to pay 10 ornaments or more for 10 notepads. ✗ *She is unwilling to pay more than 10 ornaments*
   c. Joe is willing to accept (20/3) ornaments or more for 10 notepads. ✓ *(see figure below)*
   d. Joe is willing to pay 10 ornaments or less for 10 notepads. ✗

   ↳ *Joe is selling notepads*



*Joe*  $m = -\frac{3}{2}$  *Susie*  $M = -1$  (15, 30)
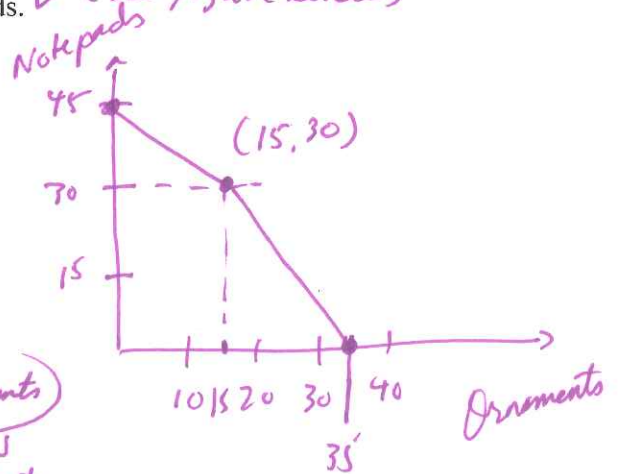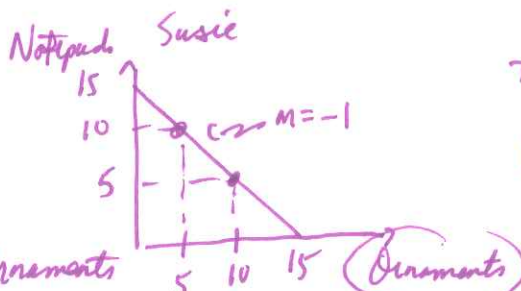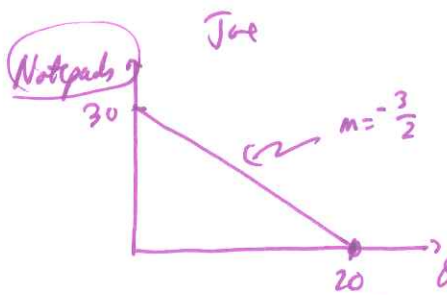
OC of 1 Ornament is $\frac{3}{2}$ N        OC of 1 Ornament is 1 N

OC of 1 N is $\frac{2}{3}$ Ornaments    OC of 1 N is 1 Ornament

10 Notepads    *Susie's Perspective*

$10\left(\frac{2}{3} \text{ Ornament}\right)$    $10(1 \text{ Ornament})$

*Joe's Perspective*

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(This page is intentionally left blank as an extra work sheet.)

**DO NOT DETACH THIS SHEET FROM THIS EXAM BOOKLET!**

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

Suppose there exists a market for flat-screen TVs. Demand comes from two types of customers: rich customers and poor customers, who have demand curves given by the following equations where P is the price per flat-screen TV and Q is the quantity of flat-screen TVs:
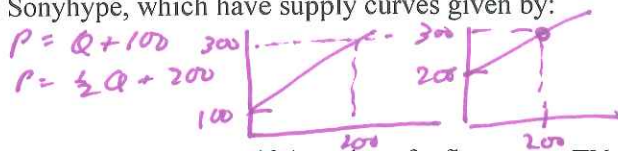
Rich customer demand: $P_{Rich} = 1000 - Q_{rich}$
Poor customer demand: $P_{poor} = 200 - (1/2)Q_{Poor}$

Supply is made up of two firms, RCA Victor and Sonyhype, which have supply curves given by:

RCA Victor: $Q_{RCAVICTOR} = P - 100$
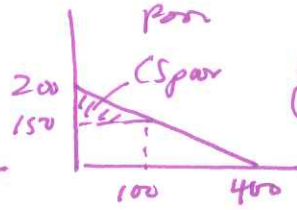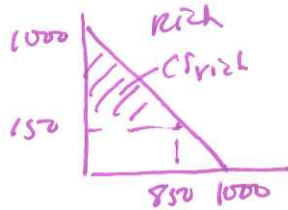Sonyhype: $P = (1/2)Q_{SPNYHYPE} + 200$

*[handwritten: $425$ / $850$ / $21250$ / $340000$ / $361,250$ / $2500$ / $363,750$]*

*[handwritten: $P = Q + 100$   300 / $P = \frac{1}{2}Q + 200$   200 / 100 / 200 / 200]*

*[handwritten left margin: NOT THAT HARD IF YOU UNDERSTAND CONCEPTS]*

26. Given the above information and holding everything else constant, if the price of a flat-screen TV was $150, how many flat-screen TVs would be demanded in this market?

 a. 850 flat-screen TVs
 b. 200 flat-screen TVs
 c. 950 flat-screen TVs *[circled]*
 d. 1000 flat-screen TVs

*[handwritten: $P = 150 \Rightarrow$   $150 = 1000 - Q_{rich}$ / $850 = Q_{rich}$ / $\Rightarrow$ $150 = 200 - \frac{1}{2}Q_{poor}$ / $50 = \frac{1}{2}Q_{poor}$ / $100 = Q_{poor}$]*
*[handwritten: $Q_{rich} + Q_{poor}$ at $P = 150$ / $Q_{TOTAL} = 950$]*

*[handwritten left margin: JUST A LOT OF MATH!]*

27. Suppose that the price of a flat-screen TV is $150 per TV. Given this information, what is the value of consumer surplus?

 a. $363,750 *[circled]*
 b. $412,500
 c. $366,250
 d. $540,000

*[handwritten diagrams labeled Rich and Poor with $CS_{rich}$ and $CS_{poor}$]*
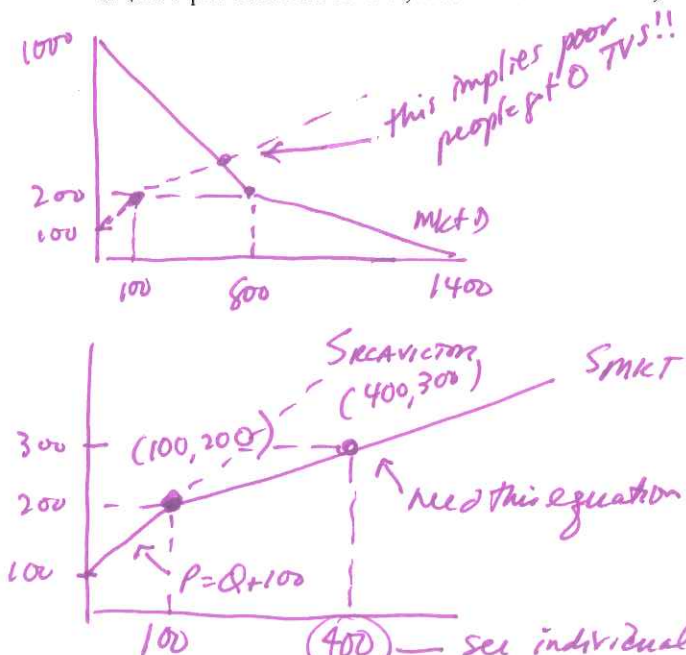*[handwritten: $CS_{rich} + CS_{poor} = CS_{TOTAL}$ / $\frac{1}{2}(850)(850) + \frac{1}{2}(50)(100) = CS_{TOTAL}$ / $(425)(850) + 2500 = CS_{TOTAL}$ / $361,250 + 2500 = CS_{TOTAL}$ / $363,750 = CS_{TOTAL}$]*

*[handwritten left margin: HARD, BUT THERE ARE SOME SHORTCUTS]*

28. Now suppose that the market is allowed to find the equilibrium price. At the market equilibrium the price is ____, rich consumers buy ____ flat-screen TVs and poor consumers buy ____ flat-screen TVs.

 a. $375 per flat-screen TV; 625 flat-screen TVs; 0 flat-screen TVs *[circled]* *[handwritten: Could choose this w/out anymore work!]*
 b. $200 per flat-screen TV; 800 flat-screen TVs; 0 flat-screen TVs *[X]* *[handwritten: looking at my diagram I know this is not right!!]*
 c. $150 per flat-screen TV; 8500 flat-screen TVs; 150 flat-screen TVs *[X]*
 d. $200 per flat-screen TV; 200 flat-screen TVs; 175 flat-screen TVs *[X]*

*[handwritten graphs and work]*
*[handwritten: this implies poor people get 0 TVs!!]*
*[handwritten: $m = \frac{100}{300} = \frac{1}{3}$ / $P = \frac{1}{3}Q + b$ / $200 = \frac{100}{3} + b$ / $600 = 100 + 3b$ / $500 = 3b$ / $\frac{500}{3} = b$ / S: $P = \frac{1}{3}Q + \frac{500}{3}$]*
*[handwritten: Both are in the work!! I know (100,200) or (400,300) are on mkt S segment I want]*
*[handwritten: D: $P = 1000 - Q_{rich}$ / $\frac{1}{3}Q + \frac{500}{3} = 1000 - Q_{rich}$ / $Q_{rich} + 500 = 3000 - 3Q_{rich}$ / $4Q = 2500$ / $Q = 625!$ / $P = 1000 - 625 = 375!$]*
*[handwritten graph labels: $S_{RCAVICTOR}$ (400,300), $S_{MKT}$, (100,200), $P = Q + 100$, 400, need this equation, see individual supply curve diagram]*
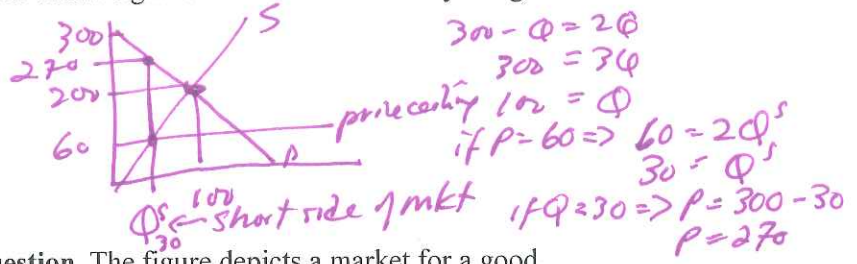
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29. Demand and supply for gadgets are given by the following equations where P is the price per gadget in dollars and Q is the quantity of gadgets:
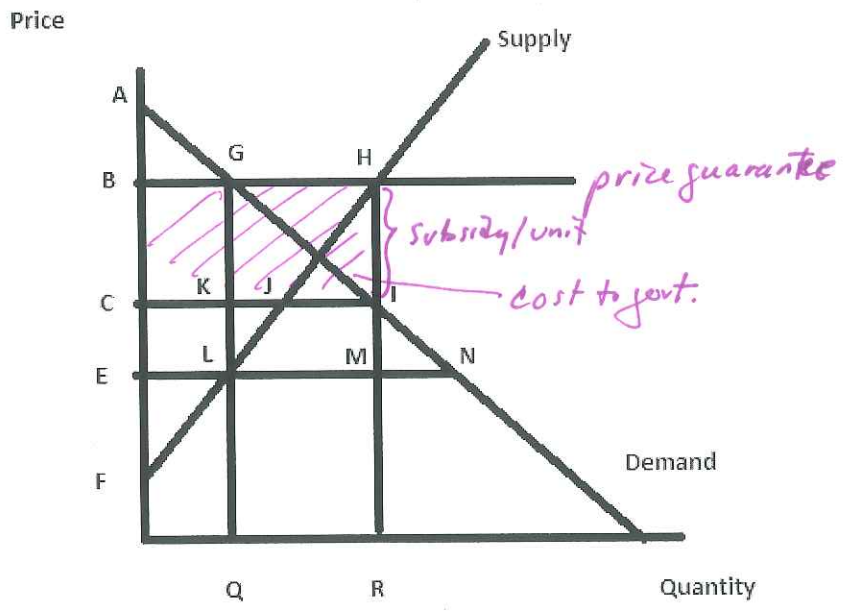
Demand for gadgets: P = 300 – Q

Supply of gadgets: P = 2Q

Suppose the government imposes a price ceiling of $60 in this market? What is the "short" side of the market given this price ceiling and how much deadweight loss would be caused by the government imposing this price ceiling?

a) the demand side; $0

b) the supply side; $450

c) the demand side; $7200

d) the supply side; $7350

*Handwritten work:*

$$300 - Q = 2Q$$
$$300 = 3Q$$
$$100 = Q$$

price ceiling

if P = 60 => $60 = 2Q_s$
$$30 = Q_s$$

$Q_s$ ← short side of mkt

if Q = 30 => P = 300 – 30
$$P = 270$$

$$DWL = \frac{1}{2}(270-60)(70)$$
$$= \frac{1}{2}(210)(70)$$
$$= (105)(70)$$
$$= 7350$$

Use the figure below to answer the **next question**. The figure depicts a market for a good.

Price / Supply / A / G / H / B / price guarantee / Subsidy/unit / cost to govt. / K / J / C / I / L / M / N / E / Demand / F / Q / R / Quantity

30. Suppose that the government decides to implement a price guarantee program in the above market. If the guaranteed price is set at "B", then what area represents the cost to the government of this program?

a. Area BHME

b. Area BHIC

c. Area GHIK

d. Area GHRQ

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**III. PROBLEMS (2 problems @ 10 points = 20 points)**

1. 1. Consider the market for bicycles in the small closed economy of Circleville. The domestic demand and domestic supply curves for bicycles are given by the following equations where P is the price per bicycle and Q is the quantity of bicycles.

Domestic Demand: Q = 200 – 2P $\Rightarrow 2P = 200 - Q \Rightarrow P = 100 - \frac{1}{2}Q$

Domestic Supply: Q = (2/3)P $\Rightarrow P = \frac{3}{2}Q$

a. (2 points) Given the above information calculate the value of consumer surplus (CS) and producer surplus (PS) if this economy is closed to trade. Show your work.

CS = $\underline{\$625}$

PS = $\underline{\$1875}$
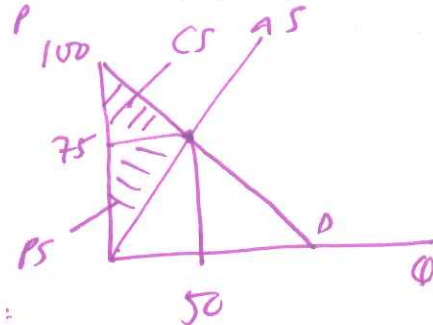
$200 - 2P = \frac{2}{3}P$

$600 - 6P = 2P$

$600 = 8P$

$75 = P$

$Q = 200 - 2(75) =$
$Q = 200 - 150$
$Q = 50$



$CS = \frac{1}{2}(100-75)(50)$
$= \frac{1}{2}(25)(50)$
$= (25)(25) = 625$

$PS = \frac{1}{2}(75)(50)$
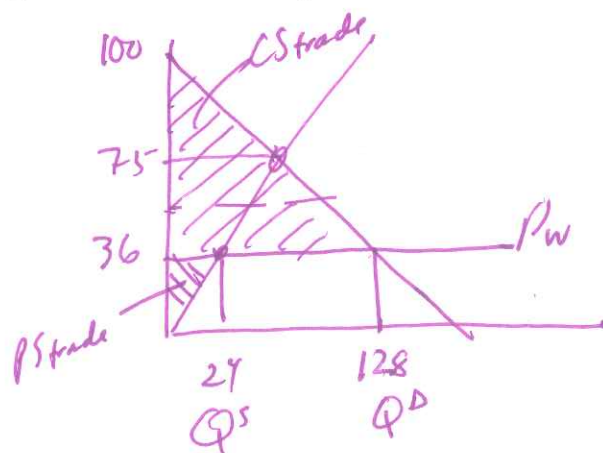$PS = (75)(25)$

$\begin{array}{r} 75 \\ 25 \\ \hline 375 \\ 150 \\ \hline 1875 \end{array}$

b. (2 points) Suppose the world price of bicycles is $36 per bicycle and that Circleville opens its bicycle market to trade. In the space below calculate the value of consumer surplus (CSwithtrade) and producer surplus (PSwithtrade) when this economy opens this market. Show your work.

CSwithtrade = $\underline{\$4096}$

PSwithtrade = $\underline{\$432}$



At Pw:
$Q^D = 200 - 2(36)$
$Q^D = 200 - 72$
$Q^D = 128$
$Q^S = (2/3)(36)$
$Q^S = 2(12) = 24$

$CS\ trade = \frac{1}{2}(100-36)(128)$
$= \frac{1}{2}(64)(128)$
$= (64)(64)$
$= \$ $

$PS\ trade = \frac{1}{2}(36)(24)$
$= (18)(24)$
$= 432$

$\begin{array}{r} 24 \\ 18 \\ \hline 192 \\ 24 \\ \hline 432 \end{array}$

$\begin{array}{r} 64 \\ \times 64 \\ \hline 256 \\ 384 \\ \hline \$ 4096 \end{array}$

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c. Suppose that Circleville opens this market to trade when the world price of bicycles is $36 per bicycle. At the same time the government of Circleville imposes a tariff that raises the prices of bicycles in Circleville to $63. Answer the following questions, given this information. Show your work in the space provided.

    i. (1 point) How many bicycles will Circleville import? ___**32 bicycles**___

    ii. (1 point) How many bicycles will be produced by domestic producers given this tariff?
___**42 bicycles**___

    iii. (2 points) How much tariff revenue will the government earn with the imposition of this tariff? ___**$864**___

d. (2 points) From class discussion we know that the imposition of a tariff creates two kinds of deadweight loss. Given the tariff described in (d), calculate the value of the deadweight loss due to the decision to impose a policy that results in the less efficient domestic producers producing more of the good. Show your work.

DWL due to less efficient domestic producers producing more of the good = ___**$243**___
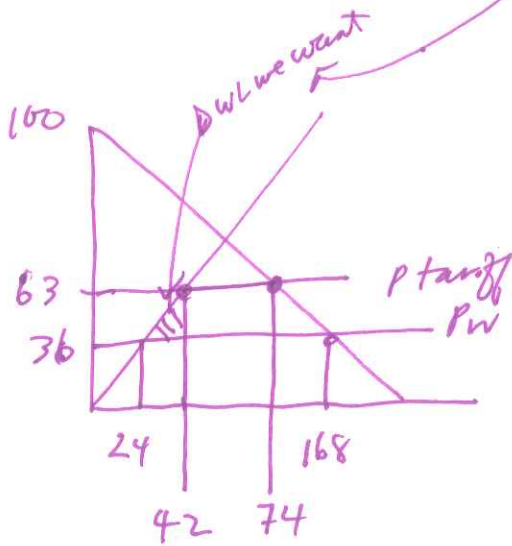


At $P_{tariff} = 63$:

$$Q^D = 200 - 2(63)$$
$$Q^D = 200 - 126$$
$$Q^D = 74$$
$$Q^S = \left(\tfrac{2}{3}\right)P$$
$$Q^S = \tfrac{2}{3}(63)$$
$$Q^S = 2(21)$$
ii) $Q^S = 42 = $ amt produced by domestic producers

$$\begin{array}{r} 74 \\ -42 \\ \hline 32 \end{array}$$

i) Imports $= Q^D - Q^S$
Imports $= 74 - 42 = 32$

$$\begin{array}{r} 63 \\ 36 \\ \hline 27 \end{array}$$

iii) tariff rev $= (63-36)(32)$
$= (27)(32)$
$= (20+7)(30+2)$
$= 600 + 40 + 210 + 14$
$= 810 + 54$
$= \$864$

DWL $= \tfrac{1}{2}(63-36)(42-24)$
$= \tfrac{1}{2}(27)(18)$
$= (27)(9) = (20+7)(9)$
$= 180 + 63 = \$243$

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2. Betty and Morgan both produce maps (M) and compasses (C). They both have linear production possibility frontiers and you are also told that Morgan has the comparative advantage in the production of compasses. The figure below depicts Betty and Morgan's joint PPF per year if they specialize according to comparative advantage.

Compasses

BETTY AND
MORGAN'S JOINT PPF

700

*Betty* 600 - - -

400

*Morga*

*Betty*      400    *Morga*  700     Maps
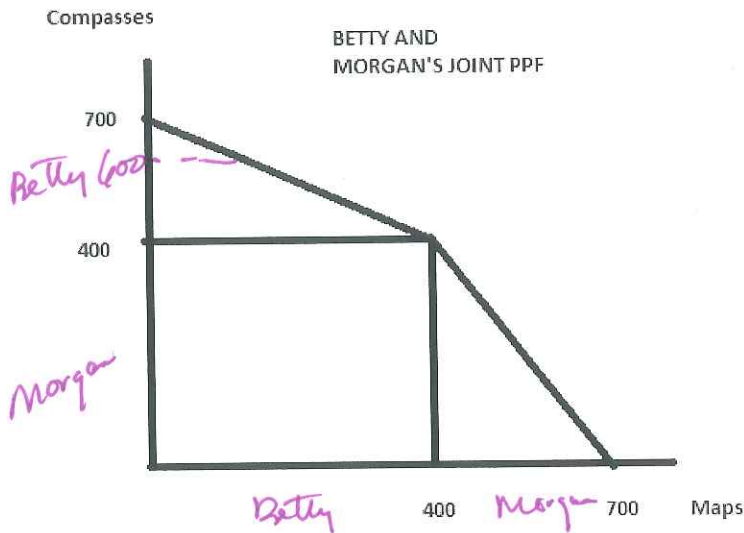
a. (2 points) In the space below draw Morgan's PPF based upon the above information and figure. Make sure your graph is completely and carefully labeled.

*Compasses*      *Morga*

*400*

*Maps*

*300*

$OC \cap 1 M$ is $4/3 C$
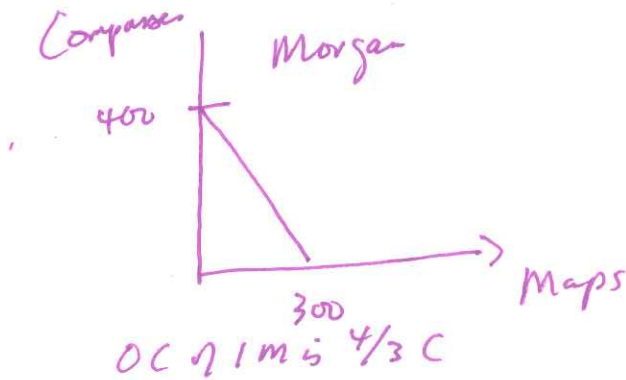
b. (1 point) Write an equation in slope-intercept form (where compasses are the variable measured on the vertical axis) for Betty's PPF using M as the symbol for maps and C as the symbol for compasses.

*Compasses*  *Betty*

*300*

$C = 300 - \frac{3}{4} M$

*400  Maps*   $OC \cap 1 M$ is $3/4 C$
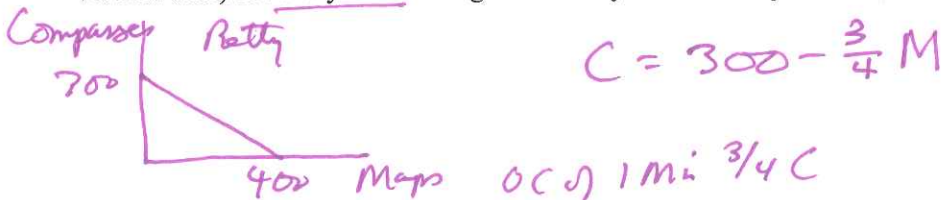
c. (1 point) Write an equation in slope-intercept form for Morgan's PPF using M as the symbol for maps and C as the symbol for compasses.

$C = 400 - \frac{4}{3} M$

d. (2 points) In the space below write the equation(s) for the joint PPF. For any equation provided make sure you identify the relevant range for the equation.

$$C = 700 - \frac{3}{4}M \text{ for } 400 \leq C \leq 700 \text{ or } 0 \leq M \leq 400$$

$$C = \frac{2800}{3} - \frac{4}{3}M \text{ for } 0 \leq C \leq 400 \text{ or } 400 \leq M \leq 700$$

$$C = b - \frac{4}{3}M \qquad \frac{2800}{3} = b$$
$$400 = b - \frac{4}{3}(400)$$
$$1200 = 3b - 1600$$
$$2800 = 3b$$

e) (2 points) Suppose that Morgan and Betty specialize and together they produce 600 compasses. Assume that they are producing on their joint PPF. Given this information answer the following questions:
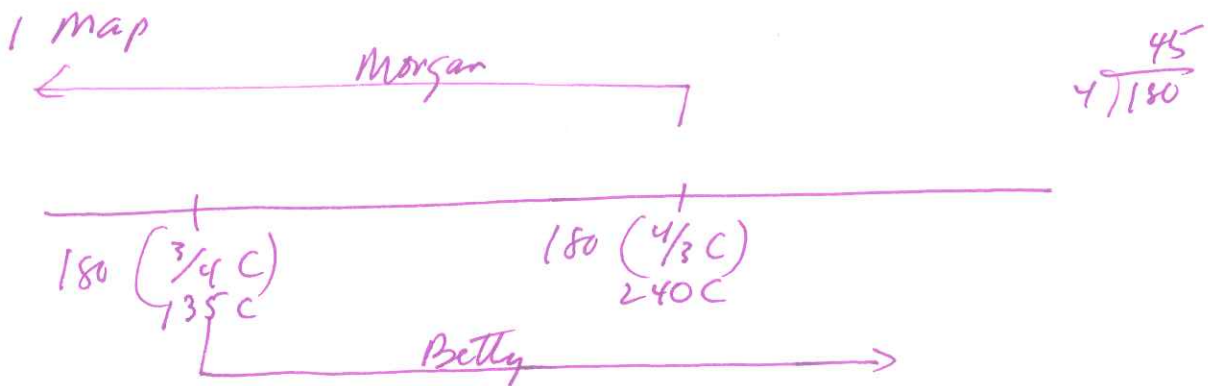
    i. How many compasses will Morgan produce?  **400**

    ii. How many compasses will Betty produce?  **200**

    iii. How many maps will Morgan produce?  **0**

    iv. How many maps will Betty produce?  **400/3**

$$600 = 700 - \frac{3}{4}M$$
$$\frac{3}{4}M = 100$$
$$M = \frac{100 \cdot 4}{3} = \frac{400}{3}$$

f) (2 points) What is the trading range of prices for 180 maps? Use the number line approach to display your answer and in your answer indicate both Morgan and Betty's perspectives with regard to this range of trading prices.



**END OF EXAM!**