

Economics 102
Spring 2018
First Midterm
Date: Tuesday, February 27, 2018

Name _____
TA Name _____
Section _____

Version 1

The exam consists of three parts: (1) 11 Binary Choice Questions worth 2.5 points each (27.5 points total); (2) 20 Multiple Choice Questions worth 3.5 points each (70 points total); (3) Administrative Points worth 2.5 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 and section number on the provided scantron as well as on the exam booklet. Please provide the version number as well on your scantron. Answer all questions on the scantron sheet with a #2 pencil.

Directions for filling out scantron:

- a) Bubble in name and student ID number after entering this information in the appropriate cells.
- b) Bubble in your discussion section number in special codes ABC and your exam version number in special code D.

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

PICK THE BEST ANSWER FOR EACH QUESTION.

Section	Time and Location	TA
320	Fri. 1:20 PM - 2:10 PM, Social Science 6314	Steven Zhang
321	Fri. 2:25 PM - 3:15 PM, Social Science 4322	Wentao Zhou
322	Fri. 2:25 PM - 3:15 PM, Social Science 6232	Erika Forst
323	Fri. 9:55 AM - 10:45 AM, Van Hise 482	Wentao Zhou
324	Fri. 11:00 AM - 11:50 AM, Van Hise 144	Wentao Zhou
325	Fri. 9:55 AM - 10:45 AM, Van Hise 590	Erika Forst
326	Fri. 11:00 AM - 11:50 AM, Van Hise 240	Erika Forst
327	Fri. 8:50 AM - 9:40 AM, Sterling 2333	Wenqi Wu
328	Thur. 3:30 PM - 4:20 PM, Social Science 6314	Wenqi Wu
329	Fri. 8:50 AM - 9:40 AM, Social Science 5231	Erika Forst
331	Fri. 12:05 PM - 12:55 PM, Sterling 1407	Wenqi Wu
332	Fri. 12:05 PM - 12:55 PM, Ingraham Hall 116	Steven Zhang
333	Fri. 1:20 PM - 2:10 PM, Sterling 1335	Wenqi Wu

Version 1

Worksheet
DO NOT REMOVE FROM EXAM BOOKLET!!

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 (11 questions each worth 2.5 points = 27.5 points)

1. Consider the economy of Prelimania that consists of two people: Elise and Natalia. The following equations give their individual demand curves for badger blast ice cream where Q is the quantity of scoops and P is the price per scoop:

$$\text{Elise's demand curve for badger blast: } P = 3 - Q$$

$$\text{Natalia's demand curve for badger blast: } P = 2 - 2Q$$

Given this information and holding everything else constant, what is the economy-wide demand function for badger blast ice cream?

a. $P = 3 - Q$ for $Q \leq 1$;

$$P = 8 - 2Q \text{ for } Q \geq 1;$$

b. $P = 3 - Q$ for $Q \leq 1$;

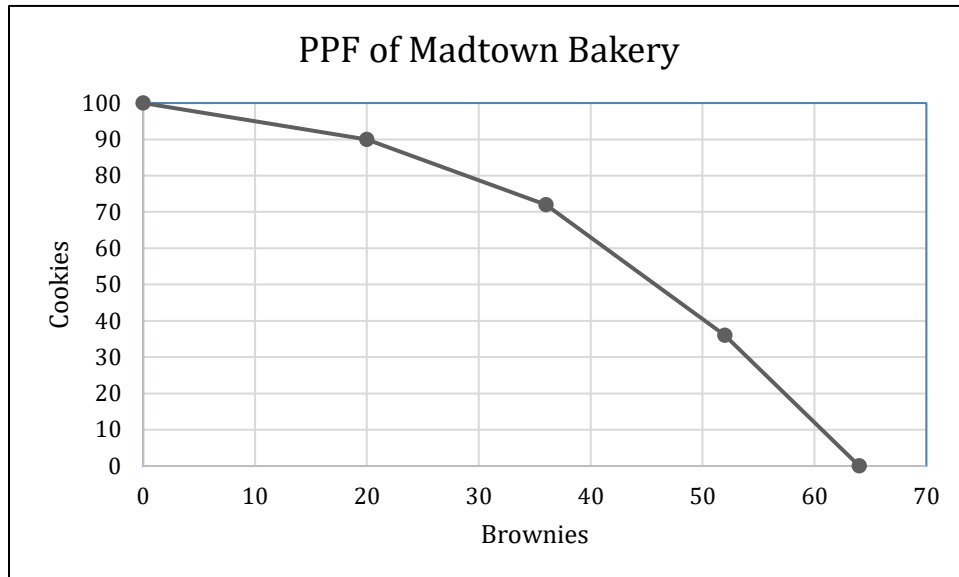
$$P = 8/3 - 2/3Q \text{ for } Q \geq 1;$$

2. Which of the following questions is positive?

a. Given the distributional effects of the new tax rate relative to the current tax structure, should the government implement this new tax rate?

b. How will tax revenue change if the government implements a 35% flat tax?

3. Madtown Bakery can produce cookies and brownies according to the following production possibility frontier:



True or False: It is efficient for Madtown bakery to produce 24 brownies and 72 cookies.

a. True

b. False

4. You are given the following two equations:

$$\text{Eq. 1: } Y = 20 - 4X$$

$$\text{Eq. 2: } Y = 64 - 7.5X$$

Suppose Eq. 1 shifts such that for every X value, the new Y value is 20 units smaller. Given this information and holding everything else constant, which of the following statements is true?

a. The x-value of the intersection of the new Eq. 1 with the original Eq. 2 is *less than* the x-value of the intersection of the original two lines.

b. The x-value of the intersection of the new Eq. 1 with the original Eq. 2 is *more than* the x-value of the intersection of the original two lines.

5. Menzio is taking a course that requires him to write a report on the impacts of employment protection policies on unemployment and aggregate welfare. Which course is more likely to be the one that he is taking?

a. Macroeconomics

b. Microeconomics

6. When Lois says that she has run 2,018 miles, is she using a flow measure or a stock measure?

a. Stock measure

b. Flow measure

7. Kayley graduates with a degree in computer science from the University of Wisconsin-Madison with \$4,000 in debt and \$2,500 in savings. She plans to move to Silicon Valley to work for a tech start-up, who gave her a \$5,000 signing bonus. She has a Honda Accord that is worth \$3,000 which she will drive across country to move to California. What is Kayley's net worth?

a. \$1,500

b. \$6,500

8. True or False: Your opportunity cost of taking this course is the cost of the activity you would have chosen if you had not taken the course.

a. True

b. False

9. Before buying a water bottle, April drank 5 cups of tea and 5 cups of water a day. Since purchasing a water bottle that holds 4 cups of water, April now drinks 4 bottles a day and 1 cup of tea. How much did her intake of liquid change, in terms of cups? Assume she only drinks water and tea.

a. April's intake of liquid increased by 70%

b. April's intake of liquid increased by 20%

10. You are given a line represented by the following equation:

$$Y = 12 - 4X$$

Suppose that the line is shifted to the left by three units. Given this information, what is the equation of the new line?

a. $Y = -4X$

b. $Y = 24 - 4X$

11. Consider the following statement: As an assistant professor, Jason wrote more journal papers than any other professor in the department, implying that he has a comparative advantage in writing journal papers.

Is this statement true or false?

a. True

b. False

Part II. Multiple Choice Questions (20 questions each worth 3.5 points = 70 points)

12. Consider a market for calzones in which there are only 2 consumers, Ben and Chris. When the price is \$2, Ben demands 10 calzones, and when the price doubles, Ben demands 2 fewer calzones. When the price is \$2, Chris demands 7 calzones, and when the price increases to \$5, Chris only buys 1 calzone. Assume that both Ben and Chris have linear demand curves. What is the market demand curve?

a. $P = -1/3 Q + 23/3$ for $p \leq 11/2$

$P = -Q + 12$ for $11/2 \leq p \leq 12$

b. $P = -3 Q + 23/3$ for $p \leq 11/2$

$P = -1/2 Q + 11/2$ for $11/2 \leq p \leq 12$

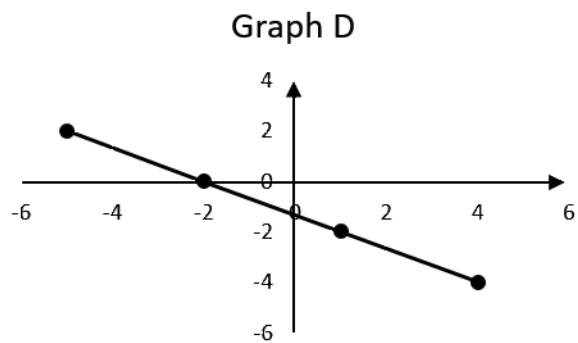
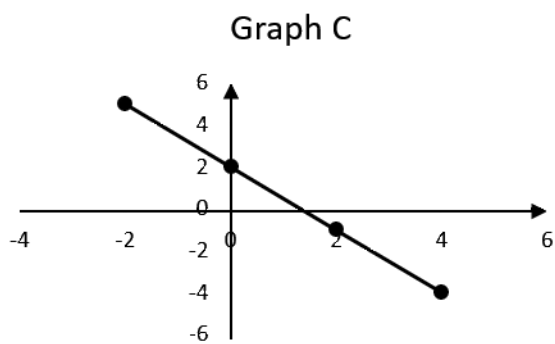
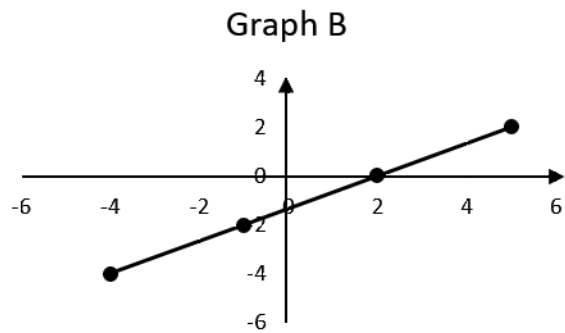
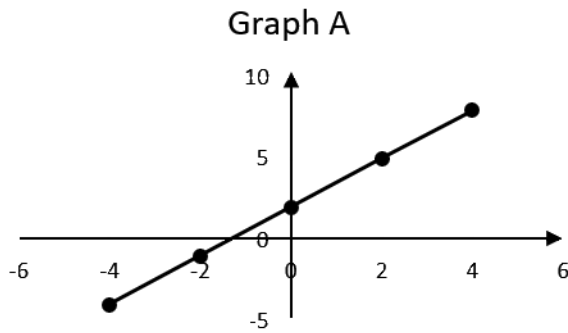
c. $P = -1/3 Q + 23/3$ for $p \leq 11/2$

$P = -1/2 Q + 11/2$ for $11/2 \leq p \leq 12$

d. $P = -3 Q + 23/3$ for $p \leq 11/2$

$P = -Q + 12$ for $11/2 \leq p \leq 12$

13. Pick the graph corresponding to the following information: for every 3 unit increase in the y-variable, the x-variable increases by 2 units.



a. Graph A

b. Graph B

c. Graph C

d. Graph D

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

Suppose that Eric and Mike are farmers. Eric can use one day of work to produce 11 tons of rice or 22 tons of wheat (or any combination of the two goods that lies on the straight line between these given combinations). Mike can use one day of work to produce 13 tons of rice or 15 tons of wheat (or any combination of the two goods that lies on the straight line between these given combinations). Assume that Eric and Mike both have linear production possibility frontiers.

14. What is Eric's opportunity cost of producing 5 tons of wheat?

- a. 2 tons of rice
- b. 0.5 ton of rice
- c. **2.5 tons of rice**
- d. 10 tons of rice

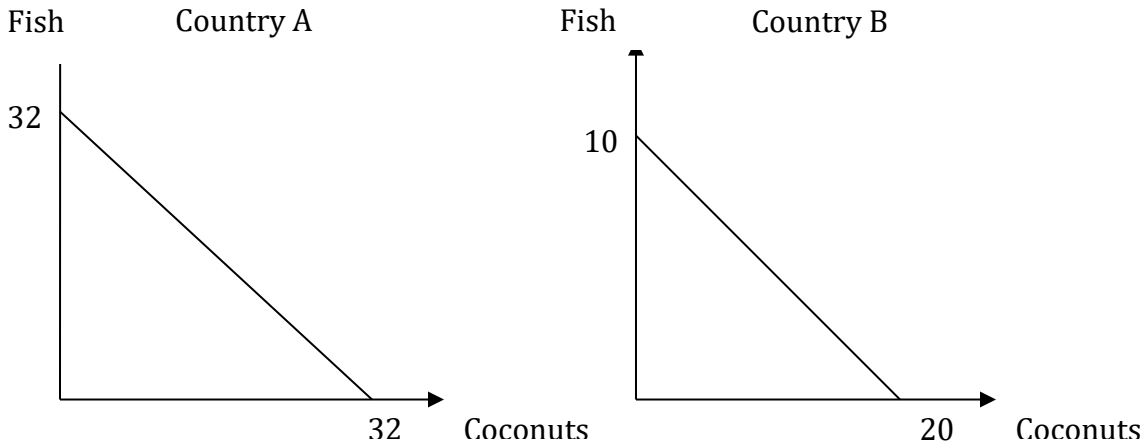
15. Let the y-axis represent wheat production and the x-axis represent rice production. We can then draw the joint PPF for Eric and Mike. Given the information above, which of the following points is feasible, but inefficient, for them to produce in a day?

- a. (24,13)
- b. (13,30)
- c. (13,22)
- d. **(11,22)**

16. Now assume that Eric adopts a new technology in rice production so that he can produce twice the original amount of rice a day, but his production of wheat does not change. Consider Eric's Production Possibility Frontier. Let the y-axis represent wheat production and the x-axis represent rice production. Then, which of the following statements is true?

- a. Eric's new Production Possibility Frontier will shift out from the origin but be parallel to his original production possibility frontier.
- b. Eric's new Production Possibility Frontier will shift in toward the origin, but the y-intercept remains unchanged.
- c. **Eric's new Production Possibility Frontier will shift out away from the origin, but the y-intercept remains unchanged.**
- d. Eric's new Production Possibility Frontier is the same as his original Production Possibility Frontier.

17. Consider a situation where there are 2 countries, A and B. They both can produce either fish or coconuts. Their respective PPFs are shown in the following graph.



Which of the following prices could be the trading price for 1 coconut (C) in terms of fish (F) between these two countries?

- a. This trade cannot happen at all given the above information.
- b. $4/3$ F
- c. $2/3$ F
- d. $1/3$ F

18. Suppose the market for bottled water in Madison is characterized by the following equations, where Q is the number of bottles in thousands and P is the price per bottle (in dollars).

Demand: $P = 20 - 2Q^D$
 Supply: $P = 2$

What is the consumer surplus (CS) in this market? What is the producer surplus in this market?

- a. CS = \$0; PS = \$81,000
- b. CS = \$81,000; PS = \$0
- c. CS = \$81; PS = \$18
- d. CS = \$81,000; PS = \$1800

Use the following information to answer the next **FOUR (4)** questions.

The market for Tesla Roadster is initially characterized by the following demand and supply functions, where Q is the quantity of Tesla Roadsters and P is the price per Tesla Roadster in **tens of thousands** of U.S. Dollars (**$P = 1$ denotes the price of \$10,000**):

$$\text{Demand Function for Tesla Roadster: } Q^D = -300P + 8,900$$

$$\text{Supply Function for Tesla Roadster: } Q^S = 500P - 9500$$

19. After Space X's Falcon Heavy Rocket successfully launched Elon Musk's own Tesla Roadster to the Asteroid Belt on Feb. 6, 2018, the demand for Tesla Roadsters skyrocketed and pushed the equilibrium price to \$420,000. How many Tesla Roadsters are sold in the new equilibrium?

- a. 2,000 Tesla Roadsters
- b. 7,500 Tesla Roadsters
- c. 10,000 Tesla Roadsters
- d. 11,500 Tesla Roadsters

20. Compared to the original equilibrium, how many *more* Tesla Roadsters do consumers demand if the price stayed at the original equilibrium level? Assume that the new demand curve is parallel to the initial demand curve.

- a. 9,500 more Tesla Roadsters
- b. 15,200 more Tesla Roadsters
- c. 17,200 more Tesla Roadsters
- d. 19,200 more Tesla Roadsters

21. Suppose that after the increase in demand described in the last question, the prices for Tesla Roadster's major input components increased significantly due to shortages. Due to this increase in the production costs of making Tesla Roadsters, Tesla has responded by decreasing the level of production at every price. Assume that the new supply curve is parallel to the initial supply curve. You are told that 10,000 Roadsters are sold at the new equilibrium. Given this information and the previous question's information about the changes in demand, what is the equilibrium price?

- a. \$430,000
- b. \$450,000
- c. \$470,000
- d. \$490,000

22. Consider the price level above which Tesla is willing to supply Roadsters initially and compare this price level to the price level above which Tesla is willing to supply Roadsters after the increase in production costs described in the last question. Compared to the initial price level before the increase in production costs, the new price level above which Tesla will supply a positive number of Roadsters has _____ by _____.

- a. Decreased; \$60,000
- b. Decreased; \$80,000
- c. Increased; \$60,000
- d. Increased; \$80,000

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

In the free city of Pentos, the market for wine is characterized by the following equations, where Q is the quantity of wine in bottles and P is the price per bottle (in coins).

$$\text{Domestic Demand Curve for wine: } P = 200 - 2Q^D$$

$$\text{Domestic Supply Curve for wine: } P = 40 + 2Q^S$$

23. The price for a bottle of wine on the world market is 60 coins per bottle. If Pentos allows free trade of wine, how many bottles of wine does it import?

- a. Pentos imports 60 bottles of wine.
- b. Pentos imports 40 bottles of wine.
- c. Pentos imports 30 bottles of wine.
- d. Pentos imports 20 bottles of wine.

24. The ruler of Pentos, Illyrio, imposes an import quota of 20 bottles of wine. Given this import quota and holding everything else constant, what is the total revenue for all domestic wine producers in Pentos?

- a. \$900
- b. \$1800
- c. \$3000
- d. \$5000

25. As a corrupted ruler, Illyrio awards the license for importing wine to himself. To maximize his own revenue (i.e. the license-holder's revenue), what should the import quota level be?

- a. 20 bottles
- b. 30 bottles
- c. 40 bottles
- d. 50 bottles

26. Consider the hypothetical economy consisting of three firms in the table below. In this economy, Steel, Inc buys intermediate goods from Ore, Inc. Motors, Inc buys its intermediate goods from Steel, Inc. Choose the true statement from the following choices.

	Ore, Inc	Motors, Inc	Steel, Inc
Intermediate goods	0	9,000	4,200
Wages	2,000	10,000	3,700
Interest payments	1,000	1,000	600
Rent	200	500	300
Profit	1,000	1,000	200
Value of Sales	4,200	21,500	9,000

- a. The total payments to factors are equal to the total value added and the GDP in this economy is \$21,500.
- b. Summing the total value of sales of each of the three companies we can compute the GDP of this economy, which equals \$34,700.
- c. The value added by the firm Motors, Inc. is \$12,500.
- d. Both answers (a) and (c) are correct.

27. A rancher raises sheep. Once a year he shears them and sells the raw wool to a processor who cleans it and spins it into yarn. The yarn is then sold to a knitting mill, which produces and sells sweaters. In calculating GDP using the expenditure approach, we would count

- a. the raw wool, the yarn, and the sweaters.
- b. only the yarn and the sweaters.
- c. only the sweaters.
- d. only the raw wool and the yarn.

Use the following information to answer the next **FOUR (4)** questions.

In the small Baltic nation of Latvia, the market for potatoes is characterized by the following equations, where Q is the quantity of potatoes in tons and P is the price per ton (in dollars).

$$\text{Domestic Demand Curve for Potatoes: } Q^D = 100 - P$$

$$\text{Domestic Supply Curve for Potatoes: } Q^S = 0.5P - 5$$

28. If Latvia opens its potato market to the European market, it could purchase potatoes for \$20 per ton of potatoes. Given this information and holding everything else constant, calculate the deadweight loss (DWL) if Latvia refuses to join the European market for potatoes?

- a. \$1850
- b. \$2700
- c. \$150
- d. \$1875

29. If Latvia enters the European market for potatoes, who benefits from the free trade and by how much do they benefit relative to the closed market outcome?

- a. Latvian potato consumers benefit from open trade in the potato market. Consumer surplus increases by \$2750 when this market opens to trade.
- b. Latvian potato consumers benefit from open trade in the potato market. Consumer surplus increases by \$1875 when this market opens to trade.
- c. Latvian potato producers benefit from open trade in the potato market. Producer surplus increases by \$875 when this market opens to trade.
- d. Latvian potato producers benefit from open trade in the potato market. Producer surplus increases by \$2750 when this market opens to trade.

30. After Latvia opens its potato market to trade with the European market, the government in Latvia decides to impose a tariff of \$20 per ton of potatoes in this market in order to protect the Latvian potato producers. What is the dead weight loss (DWL) resulting from this policy?

- a. $DWL = \$0$
- b. $DWL = \$200$
- c. $DWL = \$300$
- d. $DWL = \$1200$

31. Suppose that the Latvian government redesigns the tariff, such that the resulting consumer surplus in the potato market is twice as large as the producer surplus for Latvian potato producers. What is the amount of this tariff?

- a. Tariff = \$15 per ton of potatoes
- b. Tariff = \$25 per ton of potatoes
- c. Tariff = \$35 per ton of potatoes
- d. Tariff = \$45 per ton of potatoes

End of Exam! Thank you!

Worksheet
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