

MICROECONOMICS

MIDTERM EXAM #1

October 10, 2022

Professor Betsey Stevenson

Your name: _____

Your student ID number: _____

Your mailbox number: _____

You have **80 minutes** to complete this exam.

There are **9 questions, worth a total of 125 points**, so you should try to work at a pace that's a little faster than 1½ points per minute.

The exam has 2 parts: **Part 1 is 60 points and Part 2 is 65 points**. Pace yourself to make sure you spend enough time on both parts.



This pencil icon signals questions that require you to draw a graph as a part of your response. When you see this icon, note that you may need to spend a few extra minutes on the question.

Please explain your answers and **show your work**. The answer alone is not sufficient – you will also be graded on the quality of your reasoning. It is in your best interest to show each of your steps clearly in order to receive partial credit and so that you are not penalized in later parts for mistakes in earlier ones. If you're stuck on a specific question, take the opportunity to demonstrate that you understand the general principles being examined.

Please write directly on the exam. If you need to use the back side of the exam (try not to), write on the back of the same page of the question you are answering, and indicate that you have done so.

This is a **closed book exam**, but you are allowed **one two-sided page of notes**. You may not consult any other resources or any electronic device, apart from a calculator which is allowed (but not necessary).

Good luck!

Exam #1 – PART ONE

[60 POINTS]

Question 1 [10 POINTS]

Miguel Cardona, the United States Secretary of Education, wants to cancel more student loan debt for individuals with loans. Given your understanding of microeconomics, Secretary Cardona approaches you to help him determine how much student loan debt he should cancel. What would you tell him?

Use the four core principles to help him think about the steps he should take to make this decision. In your answer, you should:

- Name each principle
- Briefly define each principle
- Provide a clear explanation of how each principle can be used to analyze Secretary Cardona's question. Provide a concrete example.
- At the end, write the "Rational Rule for Student Loan Cancellation".

Question 2 [12 POINTS]

The Ann Arbor School District received a \$10 million grant in January 2022 to increase student access to technology. The grant is supposed to pay for teacher salaries, additional classroom computers, and iPads for students. So far, the school district has hired teachers and purchased classroom computers. However, classroom computers cost more than anticipated and there wasn't enough money in the initial budget to purchase iPads.

Sam, who leads the program, has just approached the Superintendent's office to ask for an additional \$2 million to buy iPads for each child. The Superintendent's office must decide whether to approve the \$2M to implement the initiative.

Superintendent office staffers have suggested making the following arguments; indicate which of them are economically valid, which are invalid, and why.

- a) "Although buying the iPads will cost another \$2 million, the benefit from that \$2 million investment to these children and our community outweighs the costs from this point forward."

- b) "Although the project has been expensive, our initial cost-benefit analysis from June of 2021 showed that the total benefits of the entire education initiative will exceed the total costs. Therefore, this budget increase should be approved."

- c) "We're spending so much money on this project! Think about the other projects we could fund with that \$2 million. We could put that money towards lunch programs for all our elementary schools instead."

- d) “This project will never generate more than \$2 million in revenue for the district. We should not continue with the project since we won’t make that money back.”

Question 3 [20 POINTS]

Joseph Kahn is the Executive Editor of the New York Times newspaper. He is concerned about the company’s internal efficiency and subscription growth. He approaches you for help analyzing how each of the following events might impact the market for the New York Times in October 2022.

For each part:

- State whether the event will impact supply or demand.
- Identify if it will cause a shift in the curve (and what direction), or a movement along the curve.
- Name a specific shifter, if applicable.
- Describe what will happen to equilibrium price and quantity.
- State your assumptions and explain your reasoning.

You do not need to draw any graphs. Treat each case independently (the events do not “build” on each other).

- a) Unemployment rises drastically as a recession hits.

- b) The Washington Post (another newspaper) has recently increased its price.
- c) The average journalist's salary has increased throughout the US.
- d) A rumor leaks that the NYT will be lowering the price of subscriptions in December 2022.

Question 4 [12 POINTS]

Verizon, one of the largest wireless networks in the United States, also supplies cell phones. At a Verizon store in Ann Arbor, the average price of the phones they sell increased from \$800 to \$1000 during the month of September 2022. At the same time, the average monthly sales decreased from 200 to 180.

- a) Calculate price elasticity of demand using the midpoint formula. Round to the nearest hundredth. (2 points)
- b) How would you interpret this price elasticity? Is it elastic or inelastic? What factors might have caused this? (4 points)

c) Which do you think is more elastic: the demand for iPhones or the demand for all smartphones? Explain your reasoning. (2 points)

d) Starting in 2014, Verizon started allowing customers to “bring their own phone” when signing up for wireless phone service, rather than requiring customers to purchase new phones directly from the Verizon store. How do you think this impacted the elasticity of demand for smartphones from Verizon? (4 points)

Question 5 [6 POINTS]

In 2007 Amazon sold the first Kindle, a tablet device that allows people to read electronic versions of books, newspapers, and magazines. By 2010, the price of Amazon Kindles had decreased by 10%, and the number of physical books purchased decreased by 15%.

- Calculate cross-price elasticity of Kindles and books. (2 points)
- Are these goods substitutes or complements? How do you know? (2 points)
- Do you think the income elasticity of demand for Kindles would be positive or negative? Justify your answer. (2 points)

Exam #1 – PART TWO

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Question 6 [18 POINTS]

As the world economy continues to adjust after the COVID-19 pandemic, there have been many changes in the market for airline travel. As an economist, you've been asked to analyze these changes. For each event:

- Identify whether the event will impact the supply curve, demand curve, or both. Indicate the directions of each shift.
- State your assumptions and name any relevant shifters, if applicable.
- Draw a complete graph with properly labeled axes, curves, and equilibria.
- Clearly state the impact on equilibrium price and quantity of airline tickets.

a) In 2022, as people became immunized and boosted, COVID-19 appeared to become less of a threat. Therefore, people were more willing to sit closely together on an airplane without the fear of getting sick. (9 points)

- b) In summer 2022, the price of fuel increased significantly. People who had been planning summer road trips with their cars were faced with much larger gasoline costs to get to their destination, and airlines were faced with higher costs to fuel their planes. (9 points)