

Exam Statistics

Mean = 19.7, Median = 19.5, Max = 25.0, Standard Deviation = 2.6

Tentative Grade Thresholds

A = 22.5, A- = 21.0, B+ = 19.5, B = 17.0

Part One, Multiple Choice Questions (one point each)

The correct answers are: 1. D, 2. C, 3. B, 4. B, 5. A, 6. A, 7. D, 8. A, 9. D, 10. C

Part Two, Short-Answer Questions (4 points each)

For each question, a clear statement of the correct answer was worth two points. The remaining two points were awarded based on the quality of the argument offered in support of the answer. The following are sketches of the correct answer. They are not ideal answers.

- Ann lives in Princeton and commutes by train each day to her job in New York City (20 round trips per month). When the price of a round trip goes up from \$10 to \$20, Ann consumes exactly the same number of trips as before while spending \$200 less per month on restaurant meals. Is Ann's behavior compatible with economic rationality? Explain. Does it make economic sense that an increase in the price of commuting leads Ann to reduce the amount she spends on restaurant meals? Why or why not?

Ann's behavior is certainly compatible with economic rationality. The fact that Ann continues to purchase 20 round trips per month even though the price of a round trip has increased from \$10 to \$20 means that her reservation price for the 20th trip exceeds \$20. It would not have to work out this way. For example, if Ann was allowed to tele-commute, she might have lowered the number of monthly trips she takes. We have no reason to believe that Ann's budget has changed. Thus, the effect of the commuter ticket price increase has been to lower the funds that Ann has available to spend on other goods by \$200. It makes sense that the "income effect" on restaurant meals would be large although we ought not be surprised if Ann had split the income reduction between restaurant meals and other luxuries such as trips to the day spa or high price wines.

- The Paducah Slugger Company makes baseball bats out of lumber supplied to it by Acme Sporting Goods, which pays Paducah \$10.00 for each finished bat. Paducah's only factors of production are lathe operators and a small building with a lathe. The wood it uses is freely available in a forest that Paducah owns. The number of bats per day Paducah produces depends on the number of employee hours per day, as shown in the table.

Bats per day	Number of Employee Hours per day	Marginal Product (bats per hour)	Marginal Benefit of hiring an additional hour (Price of bat is \$10.00)
0	0		
5	1	5	\$50.00
10	2	5	\$50.00
15	4	2.5	\$25.00
20	7	1.67	\$16.67
25	11	1.25	\$12.50
30	16	1	\$10.00
35	22	.83	\$8.33

- If the wage is \$15.00 per hour and Paducah's daily fixed cost for the lathe and building is \$60.00, what is the profit maximizing quantity of bats?

As the third column of the table shows, additional hours of employment have lower marginal products measured as bats per hour. Therefore, the marginal benefit of employing more hours falls as the fourth column shows. Provided that it is optimal to produce bats, marginal benefit remains above marginal cost for all hours up to 7 but falls below marginal cost after 7 hours. Therefore, if Paducah operates at all, it should employ 7

hours and supply 20 bats. Now should Paducah operate? If Paducah hires 7 hours of labor it earns \$200 in revenue and pays \$105 dollars in labor. The surplus is therefore more than sufficient to pay the \$60 cost of operating the lathe and building. So Paducah should operate and supply 20 bats.

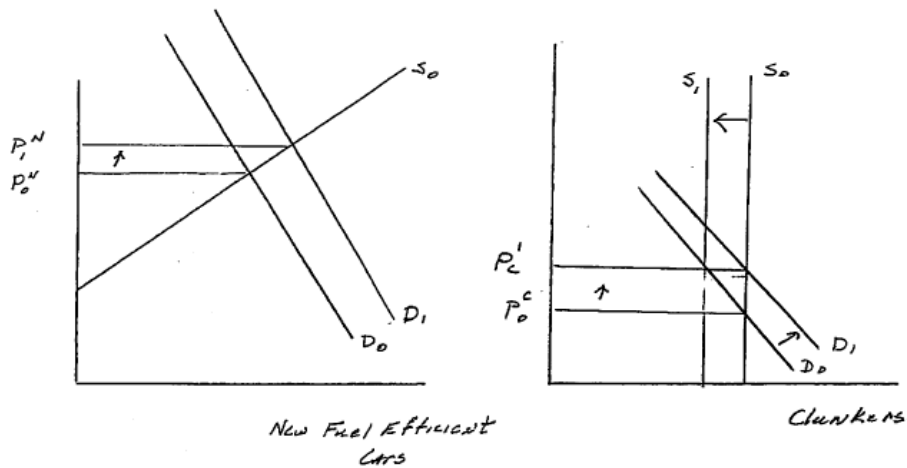
b. What is Paducah's reservation price for supplying 25 bats?

In effect, the question asks you to derive a second point on Paducah's supply schedule. Paducah will be just willing to supply 25 bats if the marginal benefit just equals the marginal cost for the 25th bat. The marginal cost of bats in the range of 21 through 25 is (4 hours * \$15.00 per hour)/(5 bats) = \$12.00 per bat. So Paducah's reservation price to supply 21-25 bats is \$12.00. Note that if the price of a bat is \$12.00, Paducah will earn sufficient surplus (\$300-\$165) to pay the daily cost of the lathe and building.

Note that quite a few students answered part a by computing profit for each possible output level and then choosing the maximum profit output level. That will work for part (a) but will leave you confused about part (b). The right way to tackle this question is to apply the cost-benefit principle.

Part Three, Essay (7 Points)

In late August of 2009, the U.S. government operated a "cash for clunkers" program. Owners of old vehicles with low fuel economy were able to trade those "clunkers" into new car dealers in exchange for new vehicles with high fuel economy and receive a \$4500 trade in allowance for the old vehicle. Automobile dealers were required by the program to destroy the clunkers that they acquired. Write an essay in which you analyze the impact of the "cash for clunkers" program on the market for new fuel-efficient cars and the market for used fuel-inefficient cars. To earn full marks, a student must provide appropriate demand and supply diagrams and interpret those in writing.



My version of the demand and supply diagrams is above. There are two markets that should be analyzed—the market for new, fuel-efficient cars and the market for clunkers.

In the market for clunkers, the supply schedule shifts to the left because the government requires that clunkers be destroyed. I have drawn the supply schedule as a vertical line because the supply of clunkers is fixed—they were produced long ago. The demand for clunkers increases as a result of the program because the government has assigned a minimum value of \$4500 to a clunker for the duration of the program and because clunkers are a substitute for new cars whose prices are rising as a result of the program.

In the market for new, fuel-efficient vehicles, the program increases demand but does not change supply. The program increases the quantity demanded at each price because it promises a trade in allowance larger than that which the market would provide. If, for example, you trade in a clunker that was previously worth \$1000 you receive a \$4500 trade in allowance. Keep in mind that the price on the vertical axis of the left panel is the price without the rebate. The increase in demand for new vehicles will cause an increase in the equilibrium price of those vehicles. Thus, the program raises the price of both new fuel efficient vehicles and clunkers.

Quite a few students argued that the demand for used cars would fall. That claim does not make sense because one must trade in a clunker in order to get the trade in allowance.