Economics 101 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Spring 2020

Quiz #3 with answers

2/20/20 TA/Discussion Section Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_

All quizzes will be graded on a 10 point scale: you will get two points simply by being on time to class and putting your name on the quiz for that day. The remaining eight points are based upon your answers to the quiz questions.

1. Suppose that you are told that the market for corn can be described by the following equations where P is the price per unit of corn and Q is the number of units of corn:

Market Demand curve for corn: P = 400 – (1/2)Q

Market Supply curve for corn: P = (3/4)Q

a. (6 points) Suppose the government implements a price floor in this market of $330 per unit of corn. Furthermore, suppose the government agrees to buy any surplus amount of the good that occurs at this price floor. Given this information and holding everything else constant, provide **numeric values** for each of the following **(make sure you include units of measurement in your answers)**:

i. Number of units of corn purchased by consumers given this price floor = \_\_\_\_\_\_\_\_\_\_\_\_\_

ii. Number of units of corn purchased by the government given this price floor = \_\_\_\_\_\_\_\_\_\_

iii. Consumer expenditure on corn given this price floor = \_\_\_\_\_\_\_\_\_\_\_\_\_

iv. Total revenue received by farmers of corn given this price floor = \_\_\_\_\_\_\_\_\_\_\_\_\_

**Show how you found your answers in the space below: correct answers without supporting work will receive no credit!**

Answers:

If the price floor is equal to $330 per unit, then the quantity demanded at this price floor is given as:

P = 400 – (1/2)Q

330 = 400 – (1/2)Q

(1/2)Q = 70

Qdemanded = 140

Consumers will buy 140 units of corn given this price floor.

If the price floor is equal to $330 per unit, then the quantity supplied at this price floor is given as:

P = (3/4)Q

330 = (3/4)Q

Qsupplied = 440

Farmers will produce 440 units of corn given this price floor.

Number of units of corn purchased by the government = Qsupplied – Qdemanded = 440 – 140 = 300 units of corn

Consumer expenditure on corn = (price support price)(number of units consumers purchase) = ($330 per unit)(140 units of corn) = $46,200

Total revenue received by farmers with this price support = (price support price)(number of units produced by farmers) = ($330 per unit)(440 units of corn) = $145,200. Or, you could reason that you just need to figure out the cost to the government of this program and add that to the consumer expenditure. Thus:

Total revenue received by farmers = Consumer Expenditure on good with the price support + Direct expenditure on the good by the government = $46,200 + ($330 per unit)(300 units of corn) = $46,200 + $99,000 = $145,200.

i. Number of units of corn purchased by consumers given this price floor = \_\_\_\_\_\_140 units\_\_\_\_

ii. Number of units of corn purchased by the government given this price floor = \_\_300 units\_\_\_

iii. Consumer expenditure on corn given this price floor = \_\_\_$46,200\_\_\_\_\_\_\_\_\_\_

iv. Total revenue received by farmers of corn given this price floor = \_\_\_\_$145,200\_\_\_\_\_\_\_\_\_

b. (2 points) Suppose the government replaces the price floor program described in (a) with a price guarantee program. The government guarantees farmers a price of $330 per unit of corn. Farmers are told to produce with this guarantee in mind, then go out and sell their product at whatever price they can and then the government will provide the farmers with a subsidy so that their total price per unit of corn is equal to $330. Given this information and holding everything else constant, answer the following questions. Make sure you show the work you did to find your answers: no work, no credit!

i. Given the subsidy program described, what is the subsidy per unit that the government will pay to farmers? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ii. What is the cost of this subsidy program to the government? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answers:

From (a) we know that if the price is $330 per unit, that farmers are willing to produce 440 units of the good. For farmers to sell 440 units of the good they must sell the good at a price that demanders are willing to pay. Thus:

P = 400 – (1/2)Q

P = 400 – (1/2)(440)

P = 400 – 220

Pconsumers are willing to pay per unit for 440 units = $180

To calculate the subsidy per unit:

Subsidy per unit = Price guarantee price – price consumers are willing to pay

Subsidy per unit = 330 – 180 = $150 per unit

Cost to the government of this price guarantee program = (subsidy per unit)(number of units produced by farmers) = ($150 per unit)(440 units) = $66,000

i. Given the subsidy program described, what is the subsidy per unit that the government will pay to farmers? \_\_\_\_\_\_$150 per unit\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ii. What is the cost of this subsidy program to the government? \_\_\_\_\_$66,000\_\_\_\_\_\_\_\_\_\_\_\_