

# Week 1 Discussion Section – Solutions

## Part 1

---

Recall the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) discussed in lecture. The expansion of unemployment insurance associated with this legislation created a *financial incentive* to remain unemployed.

1. Identify at least one *non-financial incentive* that may be preventing people from returning to work during the current global pandemic.

Worry about contracting Covid-19, additional childcare needs due to school closures.

## Part 2

---

Larry works as a contract-based computer programmer. In this job, he works from home and is free to choose how many hours he wants to work each day. He is paid \$16 an hour.

Larry owns a car that is paid off and fully insured, so he also sometimes works as a driver for Uber. Larry estimates that for every mile he drives his car, he can expect to incur costs of \$0.50 per mile (gas and additional wear and tear).

2. Describe the *tradeoff* that Larry faces in this scenario?

For every hour Larry drives for Uber, that is one less hour he can work as a computer programmer.

3. Larry is at his computer working and he gets an Uber notification that someone nearby has made a trip request. This trip will take Larry away from his computer for one hour and he will drive approximately 20 miles. What is the *opportunity cost* of accepting the trip request?

$$\text{Opportunity cost} = \underbrace{\text{foregone wages}}_{\$16} + \underbrace{\text{car wear and tear}}_{\$0.50 \times (20 \text{ miles}) = \$10} = \$26$$

4. Suppose that Larry expects to earn \$20 for the Uber trip described in question 2. Should Larry accept the trip request or work an additional hour at his computer programming job. Explain.

Compare the costs of the trip to the benefits of the trip

Cost = \$26

Benefit = \$20

He should just work the additional hour because the costs of the Uber trip outweigh the benefits

5. Suppose that Larry has just dropped off a passenger 5 miles and a 15-minute drive from his home when he gets another Uber trip request. If he accepts the request, he will not get back to his home for 60 minutes and he will have to drive a total of 20 miles. He expects to earn \$20 for this Uber trip. Should Larry accept the trip request or just drive home and get back to work. Explain.

Compare the costs of the trip to the benefits of the trip

Cost = 45 minutes less work and 15 additional miles on car.

$$\text{Cost} = \underbrace{\frac{3}{4} \times \$16}_{\text{foregone wages}} + \underbrace{\frac{1}{2} \times 15 \text{ mi}}_{\text{car wear and tear}} = \$12 + \$7.50 = \$19.50$$

Benefit = \$20

He should accept the Uber trip because the benefits outweigh the costs.

## Part 3

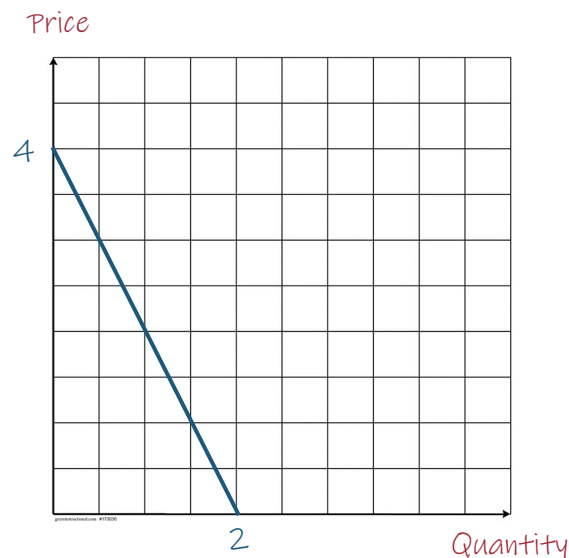
Suppose the relationship between price ( $P$ ) and quantity ( $Q$ ), is given by the equation:  $Q = 2 - 0.5P$ . This is referred to a *demand curve*.

6. Solve the equation  $Q = 2 - 0.5P$  for  $P$  (a.k.a., find the *inverse demand curve*).

Working with fractions makes this simpler:

$$\frac{1}{2}P = 2 - Q \rightarrow P = 2(2 - Q) \rightarrow P = 4 - 2Q$$

7. Plot the relationship between price and quantity on the following graph. Make sure to accurately label both axes intersection points.



8. Calculate the *slope* of the line plotted in question 7.

$$\text{Slope} = \text{rise/run} = -\frac{4}{2} = -2$$