

# Practice Problem Set 1

180.102 Elements of Microeconomics - TA Section 03

Pinda Wang, 30 August 2024

## Part I. Opportunity Cost

Noel was about to go on stage for the first stop of his band's reunion tour when he found that his guitar broke. His merciless brother Liam offer to lend him a guitar in exchange for \$1,000. Incensed, Noel dashed out to the closest guitar repair shop, where they can repair his guitar for \$800. Suppose the utility for Noel to go on stage with a functional guitar is \$2,000.

1. Should Noel borrow a guitar from his brother or repair his own guitar?

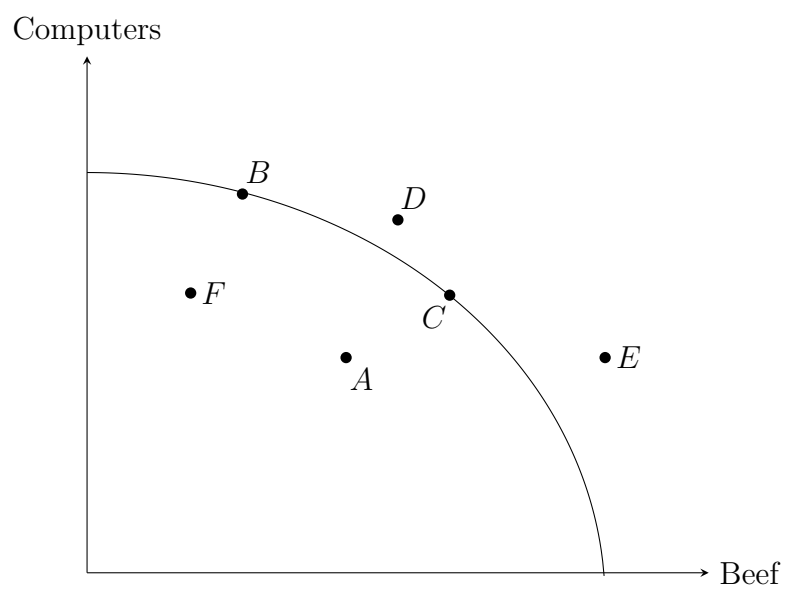
Noel chose to repair his guitar and paid \$800 to the repair shop. He waited at the shop for an hour, when the shop owner re-emerged and told him that something else is wrong with his guitar, and he'll have to pay another \$800 to have it fully fixed. Liam called at this moment and said that, out of brotherly spirit, he could always lend Noel a guitar (for \$1,000, of course) if Noel wants.

2. What should Noel do?
3. If the utility of having a functional guitar is \$1,500 instead of \$2,000, what should Noel do?
4. Following question (2), if Noel knew in advance (that is to say, before he paid the first \$800 to the repair shop) about the need for the additional repair, would his decision change?

## Part II. Production Possibilities Frontier

The Republic of Sordland produces two goods, beef and computers. The country's production possibilities frontier is given in the figure below.

1. Of the points A-F, which are efficient? Which are inefficient? Which are impossible?
2. Of points B and C, which one has a higher cost of producing an extra unit of beef? Explain.
3. Suppose technological progress in the production of computers makes point D possible and efficient. Draw the PPF curve after the progress.



# Solutions to Practice Problem Set 1

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## Part I. Opportunity Cost

1. Noel should repair his own guitar. The net benefit (i.e. benefit minus cost) of borrowing Liam's guitar is  $2,000 - 1,000 = \$1,000$ . The net benefit of repairing his own guitar is  $2,000 - 800 = \$1,200$ , which is higher.
2. Noel should pay the additional \$800 and continue to repair his guitar. The first \$800 he already paid is "sunk cost" that he cannot get back regardless of his subsequent decision. The net benefit of turning to his brother is  $2,000 - 800 - 1,000 = \$200$ , and the net benefit of repairing is  $2,000 - 800 - 800 = \$400$ .
3. Noel should still pay the additional \$800 and continue to repair his guitar. Again, the first \$800 he paid is sunk cost. Even if further repairing results in a net loss, he cannot recover that loss by turning to his brother instead. The net benefit of turning to his brother is  $1,500 - 800 - 1,000 = -\$300$ , and the net benefit of repairing is  $1,500 - 800 - 800 = -\$100$ .
4. Noel would borrow a guitar from his brother instead. This is because the first \$800 is no longer sunk cost, but something Noel could choose. The net benefit of turning to his brother is  $2,000 - 1,000 = \$1,000$ , and the net benefit of repairing is  $2,000 - 800 - 800 = \$400$ .

## Part II. Production Possibilities Frontier

1. Points B and C are efficient; A and F are inefficient; D and E are impossible.
2. Point C has a higher cost of producing an extra unit of beef. The slope of the PPF at point C is steeper than at B: to produce an extra unit of beef at C, the country has to give up more units of computer in return.
3. See the figure below. Technological progress in computer production means that the country would be able to produce more units of computers given a fixed amount of beef production; hence the upward shift of the PPF.

