**Chapter 1 Thinking Like an Economist**

# Answers to Review Questions

1. The opportunity cost of reading a novel this evening is not being able to do whatever you would have done instead. If you would have watched TV, then your opportunity cost is not watching TV; if you would have studied economics, then your opportunity cost is not studying economics.
2. The tuition is a sunk cost and so your roommate should consider only costs and benefits relevant now and in the future. If he will be better off in life by leaving school now, he should not let the tuition make the rest of life less meaningful.
3. Driving an automobile (which pollutes the atmosphere) imposes an external cost on others. Building a house which others admire presents an external benefit. Inventing something which is new and useful, but which cannot be patented presents another external benefit.
4. A 50-year-old presumably is in a higher pay bracket than a 20-year-old so the opportunity cost of leaving the job is greater for the older person.
5. By definition, a sunk cost is a cost that is incurred regardless of one's current decisions.
6. Economists generally argue that people act in their own self-interest even if they do not consistently evaluate costs and benefits. The analogy most frequently used (from Milton Friedman) is that of a pool player who knows how to sink his shots without having studied physics.

# Answers to Chapter 1 Problems

1. Let $X be the amount Jamal earns in a day on his job. The cost to Jamal of going to the park is then $15 (admission fee) + $5 (gas & parking) + $10 (the lost satisfaction from not working) + $X (lost salary) = $30 + $X. The benefit of going to the park is $45. He should go to the park if his salary is $10/day, and shouldn't go if his salary is $20/day. At a salary of $15/day, he is indifferent between going and not going.
2. If Tom kept the $200 and invested it in additional mushrooms, at the end of a year's time he would have an additional $400 worth of mushrooms to sell. Dick must therefore give Tom $200 of interest in order for Tom not to lose money on the loan.
3. It is reasonable to assume that everybody has decreasing satisfaction from each pound of food as consumption level increases. In University A, everybody will eat until the benefit from eating an extra pound of food is equal to $0, since this is the cost of each pound of food. In University B, people will eat until the benefit decreases to $2. Thus, everybody will eat less if they are at University B. So, not just average consumption but also each individual’s personal consumption will be lower. Note that to reach this conclusion we need the assumption that the students at both universities have the same appetites.
4. The only costs that vary with mileage are fuel, maintenance, and tires, which are average $0.25/mile (cost of driving for fuel $1,200/10,000 = $0.12, for maintenance $1,100/10,000 = $0.11, and tires $200/10,000 = $0.02). The cost of driving will thus be $250 (= $0.25 × 1,000), and since this is less than the cost of the bus, you should drive.
5. The band and hall rental fees are fixed costs. The caterers charge at the rate of $7/guest ($5 catering bill/$2 drink). So, an extra 10 guests will increase total costs by only $70.
6. You gave up the $60 (= $1,000 × 0.06) you would have earned if the money was in your savings account. This assumes that your tax rate on interest earned is zero.
7. Monica has already bought her ticket, so her cost‑benefit calculation when it is time to go is as follows: benefit of seeing game vs. cost of the drive + time costs, etc. Rachel, not having bought her ticket, faces a different calculation: benefit of seeing game vs. $30 + cost of the drive + time costs, etc. Since the benefits are the same in each case, but the costs are larger for Rachel at the moment of decision, she is less likely to go.
8. A plane of either type—large or small—should use the state-of-the-art device if the extra benefits of that device exceed its extra costs. Because the device will save more lives in large planes than in small planes, its benefits are larger in large planes than in small ones. Your original recommendation was presumably based on the calculation that the benefits for the larger planes justified the extra cost but did not do so in the case of the smaller planes. Airline passengers are like other people insofar as their willingness to invest in extra safety is constrained by other pressing uses for their scarce resources. Where extra safety is relatively cheap, as in large planes, they will rationally choose to purchase more than when it is relatively more expensive, as in small planes.
9. With more than a week to go, the $100 driver's fee and the $50 bus cancellation fee are sunk costs. If the trip takes place, the additional costs will be the remaining $450 of the bus fee plus the $75 in tolls, for a total of $525 in additional costs. If at least 30 tickets will be sold, it makes sense to continue the trip, since total revenue ($540) will exceed the additional cost.
10. Assuming that residents are required to recycle cans, they simply cannot put them with the regular trash. In the first case, the fixed cost of $6/week is a sunk cost. Therefore, for the residents, the cost of disposing an extra can is $0. In the tag system, the cost of disposing an extra can is $2, regardless of the number of cans. Therefore, since the costs are higher and the benefit of setting out a can is assumed to be the same in both cases, you expect less cans to be collected in the tag system.
11. The benefit of the 1st gigabyte is $32, the 2nd is $16, the 3rd is $8, the 4th is $4, the 5th is $2, the 6th is $1, the 7th is $0.50 and the 8th is $0.25. At a cost of $8, you should purchase 3 gigabytes. At higher levels of benefit, the benefit is less than the cost. At lower levels, benefit exceeds the cost.

Price

32.00

16.00

8.00

4.00

1 2 3 4 5 6 7 8 9 Memory (GB)

1. The benefit of the 1st gigabyte is $1,600, the 2nd is $800, the 3rd is $400, the 4th is $200, the 5th is $100, the 6th is $50, the 7th is $25, and the 8th is $12.50. At a cost of $50 and your willingness to pay $800 for the first gigabyte, you should purchase 5 gigabytes. When your benefit rises to $1,600 for the first gigabyte, you consume 6 GB of RAM.

Price

32.00

The curve to the right shows the new benefit function.

16.00

8.00

4.00

1 2 3 4 5 6 7 8 9 Memory (GB)

1. False. The fact that Dana would have chosen the party before she bought her ticket means that she prefers a party to an event that costs $40. Now her choice is between two events that she can attend with no further payment.

Taylor Swift Bruno Mars

Benefit Bp Br

Cost (initial) $75 $75

Cost (final) $75 $50

In the problem, we are given that

Bp – $75 > Br – $75

or

Bp > Br (\*)

Now, we need to find out whether the following is true or not:

Bp – $75 > Br – $50

which is the same as

Bp > Br + $25 (\*\*)

Notice that (\*) does not necessarily imply (\*\*). For example, if Bp= $80 and Br= $60, then (\*) holds while (\*\*) does not. So we can conclude that you should not go to the Taylor Swift concert in the above scenario if you are a rational utility maximizer.

Your decision will depend on the relative values of Bp and Br. The fact that you would have bought a Taylor Swift ticket means that the benefit of attending the Taylor Swift concert, denoted Bp, must be greater than $75. Let Bs denote the benefit of going to the Bruno Mars concert. The fact that you would have chosen the Taylor Swift concert before receiving your Bruno Mars concert ticket means that Bp > Bs. But this does not imply that you should go to the Taylor Swift concert. Suppose Bp = $80 and Bs = $60. When you now choose between the two concerts, the opportunity cost of attending the Bruno Mars concert is $50, so the net benefits of attending each concert are given by Bd – $75 =$5 and Bs – 50 = $10, which means you should go to the Bruno Mars concert. So FALSE.

1. Safari provides $10,000+/yr more enjoyment than a business job. $70,000 = gross benefit of business job salary.

*Costs of Business Job:*

10,000 opportunity cost of loan

50,000 lost salary as safari leader

10,000 + lost enjoyment from safari job

$70,000 + total cost of taking of business job > benefit, so don't take the job.

If business salary was $70,001/yr, he would have taken it.

1. True. If you got $20,000 for the Equinox and paid that plus $5,000 more for the Explorer, the entire Explorer expense would have cost you $25,000. Since you have already shown that you did not want the Explorer for $25,000, why would you spend that for it now?