The following questions practice these skills:

- Identify and compute opportunity costs.
- Use marginal analysis to make a decision by comparing the marginal benefit to the marginal cost: increase quantity as long as the marginal benefit is greater than marginal cost.
- Describe how a voluntary trade makes a rational person better off (happier, more satisfied, …)
- Describe trade when one party is relatively better at producing Good X than another party, and relatively worse at producing Good Y.
- Describe and identify an equilibrium as a rest point, or stationary point.
- Describe and identify efficiency as when all opportunities for improvement without hurt are exhausted.
- Show how incentives affect decisions.
- Describe how incentives can restore efficiency.

Question: Describe some of the opportunity costs when you decide to do the following.

a. Attend college instead of taking a job
b. Watch a movie instead of studying for an exam
c. Ride the bus instead of driving your car

Answer to Question:

a. One of the opportunity costs of going to college is not being able to take a job. By choosing to go to college, you give up the income you would have earned on the job and the valuable on-the-job experience you would have acquired. Another opportunity cost of going to college is the cost of tuition, books, supplies, and so on. On the other hand, the benefit of going to college is being able to find a better, more highly paid job after graduation in addition to the joy of learning.

b. Watching the movie gives you a certain benefit, but allocating your time (a scarce resource) to watching the movie also involves the opportunity cost of not being able to study for the exam. As a result, you will likely get a lower grade on the exam—and all that that implies.

c. Riding the bus gets you where you need to go more cheaply than, but probably not as conveniently as, driving your car. That is, some of the opportunity costs of taking the bus involve waiting for the bus, having to walk from the bus stop to where you need to go rather than parking right outside the building, and probably a slower journey. If the opportunity cost of your time is high (your time is valuable), these costs may be prohibitive.

Question: Liza needs to buy a textbook for the next economics class. The price at the college bookstore is $65. One online site offers it for $55 and another site, for $57. All prices include sales tax. The accompanying table indicates the typical shipping and handling charges for the textbook ordered online.
a. What is the opportunity cost of buying online instead of at the bookstore? Note that if you buy the book online, you must wait to get it.

b. Show the relevant choices for this student. What determines which of these options the student will choose?

Answer to Question:

a. The opportunity cost of buying online is whatever you must give up to get the book online. So the opportunity cost of buying online is the sum of the shipping charges plus the opportunity cost of your time spent waiting for the book to arrive (at the bookstore the book is available immediately) minus the cost saving you receive by buying online versus buying at the bookstore.

b. Below is a list of all of Liza’s options and their purely monetary costs: Buy from bookstore $65 Buy from first site (price $55), 1-day delivery $55 + $13.98 = $68.98 Buy from first site (price $55), 2-day delivery $55 + $ 8.98 = $63.98 Buy from first site (price $55), 3- to 7-day delivery $55 + $ 3.99 = $58.99 Buy from second site (price $57), 1-day delivery $57 + $13.98 = $70.98 Buy from second site (price $57), 2-day delivery $57 + $ 8.98 = $65.98 Buy from second site (price $57), 3- to 7-day delivery $57 + $ 3.99 = $60.99

It is clear that Liza would never buy from the second site, where the book costs $57: for each delivery time, she is better off buying the book from the first site, where the book costs $55. It is also clear that she would never buy the book from the first site and have it delivered the next business day: it costs more that way ($68.98) than getting it from the bookstore (assuming that it is costless to get to and from the bookstore). But it is not clear whether she will buy the book from the bookstore or the first site with delivery times of 2 or 3–7 days: this depends on her opportunity cost of time. The higher the cost of waiting, the more likely she is to buy the book from the bookstore, where she does not need to wait.

Question: In the following examples, state how you would use the principle of marginal analysis to make a decision.

a. Deciding how many days to wait before doing your laundry
b. Deciding how much library research to do before writing your term paper
c. Deciding how many bags of chips to eat
d. Deciding how many lectures of a class to skip

Answer to Question:

a. Each day that you wait to do your laundry imposes a cost: you have fewer clean clothes to choose from. But each day that you wait also confers a benefit: you can spend your time doing other things. You will wait another day to do your laundry if the benefit of waiting to do the laundry that day is greater than the cost.

b. The more research you do, the better your paper will be. But there is also an opportunity cost: every additional hour you spend doing research means you cannot do other things. You will weigh the opportunity cost of doing one more hour of research against the benefit gained (in terms of an improved paper) from doing research. You will do one more hour of research if the benefit of that hour outweighs the cost.
c. Each bag of chips you eat gives you a benefit: it satisfies your hunger. But it also has a cost: the money spent for each bag (and, if you are weight-conscious, the additional calories). You will weigh the cost against the benefit of eating one more bag. If the cost is less than the benefit, you will eat that one more bag of chips.

d. Each lecture that you skip implies a cost: getting further behind with the material and having to teach it to yourself just before the exam. But each skipped lecture also means you can spend the time doing other things. You will continue to skip lectures if the cost of skipping is lower than the benefit of spending that time doing other things.

Question: This morning you made the following individual choices: you bought a bagel and coffee at the local café, you drove to school in your car during rush hour, and you typed your roommate’s term paper because you are a fast typist—in return for which she will do your laundry for a month. For each of these actions, describe how your individual choices interacted with the individual choices made by others. Were other people left better off or worse off by your choices in each case?

Answer to Question: When you bought the bagel and coffee, you paid a price for them. You would not have bought that breakfast if your enjoyment of it (your welfare) had not been greater than the price you paid. Similarly, the café owner would not have sold you the bagel and coffee if the price he received from you was less than the cost to him of making them. This is an example of how everybody gains from trade: both you and the café owner are better off.

When you chose to drive your car during the rush hour, you added to the congestion on the road. Your choice had a side effect for other motorists: your driving slowed everybody else down just a little bit more. Your choice made other motorists worse off.

Typing your roommate’s term paper in exchange for her doing your laundry is another example of the gains that come from trade. Both of you voluntarily agreed to specialize in a task that each is comparatively better at because you expected to gain from this interaction. Your choice made both you and your roommate better off.

Question: The Hatfield family lives on the east side of the Hatatoochie River, and the McCoy family lives on the west side. Each family’s diet consists of fried chicken and corn on-the-cob, and each is self-sufficient, raising their own chickens and growing their own corn. Explain the conditions under which each of the following would be true.

a. The two families are made better off when the Hatfields specialize in raising chickens, the McCoys specialize in growing corn, and the two families trade.

b. The two families are made better off when the McCoys specialize in raising chickens, the Hatfields specialize in growing corn, and the two families trade.

Answer to Question: Solution

a. Gains from trade usually arise from specialization. If the Hatfields (compared to the McCoys) are better at raising chickens and the McCoys (compared to the Hatfields) are better at growing corn, then there will be gains from specialization and trade.

b. Similar to the answer to part a, if the McCoys (compared to the Hatfields) are better at raising chickens and the Hatfields (compared to the McCoys) are better at growing corn, then there will be gains from specialization and trade.
**Question:** Which of the following situations describes an equilibrium? Which does not? If the situation does not describe an equilibrium, what would an equilibrium look like?

a. Many people regularly commute from the suburbs to downtown Pleasantville. Due to traffic congestion, the trip takes 30 minutes when you travel by highway but only 15 minutes when you go by side streets.

b. At the intersection of Main and Broadway are two gas stations. One station charges $3.00 per gallon for regular gas and the other charges $2.85 per gallon. Customers can get service immediately at the first station but must wait in a long line at the second.

c. Every student enrolled in Economics 101 must also attend a weekly tutorial. This year there are two sections offered: section A and section B, which meet at the same time in adjoining classrooms and are taught by equally competent instructors. Section A is overcrowded, with people sitting on the floor and often unable to see the chalkboard. Section B has many empty seats.

**Answer to Question:**

a. This is not an equilibrium. Assume that all people care about is the travel time to work (not, for instance, how many turns they need to make or what the scenery is like). Some people could be better off using the side streets, which would cut down their travel time. Eventually, as the situation moves to equilibrium (that is, as more people use the side streets), travel times on the highway and along the side streets will equalize.

b. This might be an equilibrium. Those who buy gas at the first station would be worse off by buying gas at the second if the value of their time spent waiting exceeded the savings at the pump: they would save 15 cents per gallon but would incur the opportunity cost of waiting in a long line. You should expect very busy people (a high opportunity cost of time) to buy gas at the first station. Those who buy gas at the second station might be worse off by buying gas at the first: they would not have to wait in line but would pay 15 cents more per gallon. You should expect people with a lot of free time (a low opportunity cost of time) to buy gas at the second station.

c. This is not an equilibrium. If students from section A attended section B instead, they would be better off: they could get seats and see the chalkboard without incurring any cost (since the section meets at the same time and is taught by an equally competent instructor). Over time, you should expect students to switch from section A to section B until equilibrium is established.

**Question:** In each of the following cases, explain whether you think the situation is efficient or not. If it is not efficient, why not? What actions would make the situation efficient?

a. Electricity is included in the rent at your dorm. Some residents in your dorm leave lights, computers, and appliances on when they are not in their rooms.

b. Although they cost the same amount to prepare, the cafeteria in your dorm consistently provides too many dishes that diners don’t like, such as tofu casserole, and too few dishes that diners do like, such as roast turkey with dressing.

c. The enrollment for a particular course exceeds the spaces available. Some students who need to take this course to complete their major are unable to get a space even though others who are taking it as an elective do get a space.

**Answer to Question:**

a. This is not efficient. If the lights were turned off, some students could be made better off without
Practice Questions and Answers from Lesson I-1: Introduction and Lesson I-2: Controversial Rationality

making other students worse off because the college would save money on electricity that it could spend on student programs. By leaving lights and appliances on when leaving their rooms, residents do not take into account the negative side effect they impose on their college—the higher cost of electricity. If students were forced to pay their own individual electricity costs (that is, if they fully took into account the cost of their actions), then they would turn the lights and appliances off when leaving their rooms. This situation would be efficient.

b. This is not efficient. Instead of serving dishes that many diners do not like, the cafeteria should serve more of the equal-cost dishes that diners do like. That way, some students could be made better off without other students being made worse off.

c. This is not efficient. In an efficient scheme, spaces would be allocated to those students who value them most. In this case, however, some spaces are allocated to students who value them less (those who take the course as an elective) than other students (those who need the course to graduate). Efficiency could be improved as follows: if a student who is not currently enrolled in the course values it more than a student who is enrolled, then the unenrolled student should be willing to pay the enrolled student to give up his or her space. At some price, this trade would make both students better off and the outcome would be efficient.

**Question:** Discuss the efficiency and equity implications of each of the following policies. How would you go about balancing the concerns of equity and efficiency in these areas?

a. The government pays the full tuition for every college student to study whatever subject he or she wishes.

b. When people lose their jobs, the government provides unemployment benefits until they find new ones.

**Answer to Question:**

a. Although this policy is equitable, it may not be efficient, depending on the beneficial side effects of education. It does allow everyone, regardless of ability to pay, to attend college. But it may not be efficient: subsidizing the full cost of tuition for everyone lowers the opportunity cost of going to college, and this might lead some people to go to college when they could more productively follow a career that does not require a college education. And since resources (including government money) are scarce, paying tuition for these people has an opportunity cost: some other (possibly more worthwhile) government projects cannot be undertaken.

b. Although this policy may be equitable (it guarantees everyone a certain amount of income), it may not be efficient. People respond to incentives. If unemployment becomes more attractive because of the unemployment benefit, some unemployed people may no longer try to find a job or may not try to find one as quickly as they would without the benefit. Ways to get around this problem are to provide unemployment benefits only for a limited time or to require recipients to prove that they are actively searching for a new job.

**Question:** Governments often adopt certain policies in order to promote desired behavior among their citizens. For each of the following policies, determine what the incentive is and what behavior the government wishes to promote. In each case, why do you think that the government might wish to change people’s behavior, rather than allow their actions to be solely determined by individual choice?

a. A tax of $5 per pack is imposed on cigarettes.

b. The government pays parents $100 when their child is vaccinated for measles.
c. The government pays college students to tutor children from low-income families.
d. The government imposes a tax on the amount of air pollution that a company discharges.

**Answer to Question:**

a. This policy creates an incentive to smoke less by making a pack of cigarettes more costly. This is exactly what policy makers wish to promote. Cigarettes have undesirable side effects on other people, which smokers do not (or only insufficiently) take into account. One is that other people have to breathe in second-hand smoke. Another is the cost of health care: when smokers who need treatment for lung cancer are covered by Medicare or Medicaid, the rest of society has to foot the bill. Since individuals do not take these costs (costs that arise for other people) into account in deciding whether or not (or how much) to smoke, the amount of cigarettes smoked will be inefficiently high. The tax is a way to make people take these costs into account in deciding whether or not to smoke.

b. This policy creates an incentive to have children vaccinated: it increases the benefit to parents from vaccination of their children. Getting vaccinated means not only that a child will not contract the measles but also that he or she cannot pass the measles on to other children. That is, there is a side effect for other people (their children get sick less often) that parents do not take into account in their decision of whether or not to have their own child vaccinated. The subsidy is a way to make individuals take into account in their decisions the benefit they can create for other people.

c. This policy creates incentives for low-income families to get college students to tutor their children, since getting a tutor is now cheaper or free. This results in better performance in school by these children and higher levels of educational attainment. We later consider whether such programs are efficient.

d. This tax creates the incentive to emit fewer air pollutants. Pollution has a negative side effect for others: it decreases air quality (for instance, it contributes to the formation of ozone smog) and results in a variety of health complications (for instance, asthma). In deciding how much pollution to discharge, a company does not take these negative side effects sufficiently into account. The tax is a way to make pollution more expensive, that is, to make the company face the cost it imposes on others.

**Question:** In each of the following situations, explain how government intervention could improve society’s welfare by changing people’s incentives. In what sense is the market going wrong?

a. Pollution from auto emissions has reached unhealthy levels.

b. Everyone in Woodville would be better off if streetlights were installed in the town. But no individual resident is willing to pay for installation of a streetlight in front of his or her house because it is impossible to recoup the cost by charging other residents for the benefit they receive from it.

**Answer to Question:**

a. In deciding how much to drive, each driver does not take into account the cost of auto emissions he or she imposes on others. That is, the market will lead to there being too much pollution. One way for governments to intervene would be to tax fuel or to tax cars that get low gas mileage. Or governments could subsidize new and cleaner fuels or technologies, such as hybrid cars. This would create incentives for people to switch to cars that use less polluting gas or to drive less.

b. The market in this situation leads to too few (or no) streetlights in Woodville. Governments could improve residents’ welfare by paying for streetlight installation from the taxes paid by residents.