Major Purchases

Chapter Learning Objectives

After reading this chapter, students will be able to:

- Calculate the costs of owning a major consumer item.
- Determine the impact on their budget of using a loan to make a large purchase.
- Estimate the future value of their purchase by taking depreciation into account.
- Recognize the opportunity costs associated with a major purchase.
- Carefully consider alternatives before making a purchase.
- Identify exit strategies for a major purchase.

INTRODUCTION: THE COMPLEXITY OF CHOICES

Over the course of your lifetime, you will buy many things. Most of your purchases will be small, though those small costs add up to large sums over time. But some of your purchases will be large and expensive. A persuasive industry exists to convince you to spend a lot of your money on consumer goods such as vehicles, appliances, and electronics. Vehicles and their

related expenses, for example, can amount to up to 25% of a household's budget.[1] Because they are so important, and a common purchase, we will devote considerable space in this chapter to the financial implications of buying a car, but some of the considerations used in making this purchase apply to other items as well.

Major consumer purchases can represent a significant part of your personal or household budget; therefore, it's important to enter into purchasing decisions with as much information as possible. Understanding your options for how to pay for those purchases, knowing what happens to the value of those purchases over time, and understanding the costs and benefits of your alternatives are essential to making an informed decision.

After reading this textbook, we hope you will retain the habit of considering the present and future impacts of all of your decisions, as well as the risks inherent with each, by asking yourself the three questions for financial decision making. Doing so will help you make decisions that work with your unique financial situation. However, when deciding to make a purchase or investment, you should always keep another question in mind: *Is this a need or is it a want?*

At the most basic level, needs are the things which are necessary for survival—nutritious food, adequate shelter, basic health care, and climate-appropriate clothing—wants are everything else. It is important to be able to provide for basic needs. Of course, in our modern world, wants and needs can seem more complicated than this and depend on individual preferences. Many choices we are presented with involve a perplexing mix of wants and needs. Food, for example, is a need, but because of personal preferences, you might want to have a burger more than a salad, to eat out every night rather than prepare food, or to drink sparkling bottled water rather than tap water. When it comes to the things we purchase that help us make a living (appropriate

[1] See http://www.fhwa.dot.gov/livability/fact_sheets/transandhousing.cfm.

workwear, technological devices, transportation to a workplace) in order to pay for things we need every day, like food and shelter, the questions become more complex. Getting in the habit of asking yourself whether something is a want or need may help foster introspection and help you make sure your money is going where it is needed and serves you best.

THE COSTS OF OWNERSHIP

As with most financial decisions that involve a purchase, your biggest gain will result from how carefully you analyze that purchase. The larger the purchase, the more you stand to lose (or gain) by a bad (or good) decision. While an important initial consideration is the purchase price, the costs of owning vehicles, appliances, and electronics go well beyond the purchase price so you need to know what additional costs you can expect, as those can have a significant impact on your finances. Owning a home is such a big expense that we have dedicated an entire chapter to that (see Chapter 8). In this chapter, we look at major consumer purchases other than a house using the example of the second largest purchase for most people, which is a car.

Purchase Price: Determining Value

Your first consideration in researching a purchase will be purchase price. Because we buy consumer goods in a competitive marketplace, in which prices can vary, it's important to know what a fair price for the item you plan to buy is. Research and comparison-shopping are important in making sure you get a good deal on a purchase, and there are many resources available to help you do so. Consumer reviews can be a good source of information, as are organizations such as Consumers Union, a nonprofit organization that publishes *Consumer Reports* magazine. *Consumer Reports* offers ratings, reviews, and prices of thousands of

consumer products and services. It's a good place to start if you are considering a major purchase, but there are numerous other resources available, too.

Let's say you are buying a car. Whether you are considering buying from a dealership or a private individual, you need to know where to find reliable information about the value of the car you want to purchase. Careful buyers and sellers of used and new cars refer to the blue book value of a car. This is a determination of the car's value based on the type of car, its age, and its condition as listed in the **Kelley Blue Book**, which has been published since 1926 and is now available online.

The Kelley Blue book gives you several prices for the cars listed, including the manufacturer's suggested retail price (MSRP) and the fair purchase price. The MSRP is the price that is displayed on cars that are for sale in a dealer's lot. The fair purchase price is usually less than the MSRP but still allows dealers to make a reasonable profit on the vehicle.

Reliable new cars can be expensive, and you may save a significant amount of money by buying a used car. Because of depreciation—the decrease in the resale value of an item over time—the price of a car (or a bike, washing machine, or computer) drops, even though it may be in very good condition. A five-year-old car can be worth half as much as the same model brand new. Of course, the condition of used cars can vary and the older a car is, the less likely it is to be in very good condition. While buying used can be a good deal, there may be reasons that a new car is a better deal for you. The important thing is to do the research and calculations that relate to your personal situation so that you can evaluate your options.

Taxes and Registration Fees

The final purchase price of an item will often include sales tax. Sales tax is imposed by a state,

city, and/or county, and is charged as a percentage of the purchase price. If you make a purchase in Tennessee, for instance, you will pay 9.46% of the price of your purchased item in addition to its list price.

This doesn't amount to much if you are buying a low-priced item. Using the Tennessee state sales tax rate, an $11 hat will cost $1.04 in sales tax. But for higher-priced items, such as an $800 laptop computer, you would pay $75.68 in sales tax versus $83.25 on an $880.00 machine. In 2015, the average American household spent $1,818 on household furnishings and equipment.[2] For a Tennessee resident, that would amount to almost $172 in sales tax. The more expensive the purchase price, the more you will pay in sales tax, so it can be an important consideration.

Taxes and fees can be more complicated with certain purchases. When you buy a car, for instance, you have to register it with your state government. Different states charge different amounts for registration, and sometimes they also charge a tax, either at the time of purchase or annually. Some states require that fees be paid to both the state and the town. The various non-tax fees for state registration are not terribly expensive and can be found online. Many towns, however, charge a "personal property tax" on cars, which is based on the value of the car. This cost is "hidden" because it is not part of the purchase price, and takes some extra work to determine how much it will be. You have to call the town office and tell them what car you intend to register and what you paid for it. If you don't do this, when you go to register your car you may be surprised with a $500 personal property tax bill. On the other hand, it might be as low as $40 if your car is not worth so much. This tax decreases every year with the value of your car. Before you buy a car, it is good to know how the taxes and fees in your area work, as you will pay them every year.

[2] Bureau of Labor Statistics: https://www.bls.gov/news.release/cesan.nr0.htm

For most consumer purchases, there is no registration required, or registration of the item is optional. One advantage to registration is that if a product you own is recalled, the company has your name and contact information and can contact you directly to inform you of the recall.

Warranties and Insurance

With almost any consumer purchase that will be used frequently over an extended period of time—toasters, cellphones, laptop computers—you will be offered a **warranty**. A warranty is an optional type of insurance and having one can put your mind at ease that the product will be repaired or replaced if it breaks. However, many consumer experts will tell you that from an economic standpoint, a warranty is not usually money well spent. Certain types of damage might be excluded from the warranty, the manufacturer may guarantee the product even without a warranty, and a reliable product may not need any repairs in the time you own it. You are likely better off putting any money you would have spent on a warranty into a savings account, where you can earmark it for repairs of any product you own. Mathematically, it's likely that the expected cost of repairs is less than the cost of the warranty. You can read more about warranties in Chapter 12.

Some purchases need to be insured. For example, most states in the U.S. require a car owner to have insurance. Why is this? In the United States, there are millions of car accidents every year. Statistically speaking, you are fairly likely to be in a car accident, and if you are, the costs that result from the accident are likely to be high. The average cost of car accidents range from a few thousand to over a million dollars, depending on the amount of damage and injury involved. Having insurance—a predictable cost that can be factored into your monthly budget—protects you from the possibility of having to pay money you don't have to cover the damages

resulting from an accident.

There are basically two kinds of car insurance: liability and collision. Both are discussed in detail in Chapter 12. You need to know what is going to happen if you damage, wreck, or need to sell the car. Lenders require collision insurance on vehicles, so they don't lose their investment in case of an accident. If you were hoping to avoid this type of insurance by buying a cheap car and taking your chances, don't take a loan to pay for it.

What your insurance will cost depends on who you are, where you live, what kind of car you drive, and whether you own the car or have a loan for it. These calculations are based on statistical studies and are complex enough that to get an insurance estimate, you must deal directly with an agency and ask for a quote. Insurance charges are called **premiums**, and in order to tell you what your premium will be, the insurance company will want to know a lot about you, including your age, your gender (men often pay higher premiums than women), whether you have had accidents, if you are employed, if you are a student (and what your grades are). They will also want to know all about your car and will take into account where you live and who else may be driving the car.

In 2013, MSN money reported the average annual insurance cost for a Mustang coupe to be $1,437. Edmunds, a competitor of the Kelley Blue Book, estimates $2,206 for a 2008 model owned in 2013. Taken alone, these are meaningless as an estimate of what you would pay to insure this type of car. However, these numbers demonstrate the impact of insurance on a personal budget, in the first case, slightly over $100 per month. Variation is high, however. It could easily be twice or half that amount depending on what your insurance company determines your premium to be.

Repairs and Maintenance

Many of the things you buy will need to be periodically maintained to retain their usefulness and will occasionally need to be repaired. Being aware of repair and maintenance costs associated with a purchase will help you know the true cost of what you are buying—beyond the sticker price.

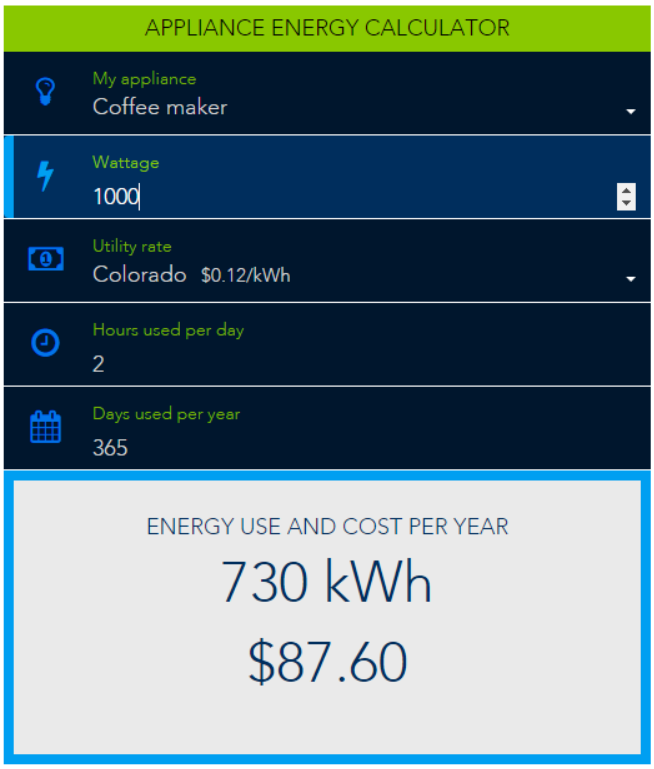
Think about the things you own and the maintenance that they require. Sporting equipment provides a range of examples of maintenance and repairs you might expect. Mountain bikes require new tires and brakes; alpine skis require regular base wax, edge sharpening, and binding adjustments; tennis racquets periodically need restringing. Musical instruments need tuning and replacement parts. Smart phones need cracked screens repaired. Seasonal sporting equipment requires off-season storage, not to mention reliable systems for transporting the equipment.

Car maintenance entails regular oil changes, tune-ups, tire rotations, and change of lubricants in the transmission, brakes, and wheels. Repairs can range from small and inexpensive (replacing a hose) to large and expensive (repairing or replacing a blown engine). Estimates of repair costs for various types of cars can be found online. Edmunds.com is one source for estimates, though you might be able to find more precise information by talking to a mechanic. For a 2008 Mustang coupe, Edmunds estimated over $1,000 in maintenance and repairs for the year 2013, an amount they project to increase annually. In 2018, for the same car, they estimate over $2,000 in maintenance and repairs. Whether these estimates are realistic is difficult to say, as data on the repairs needed by various older vehicles is not available. Nevertheless, just because you have to estimate doesn’t mean you can avoid these costs. They have to be built into your monthly budget.

Operating Costs

Many consumer items you might purchase cost money to own. One good example is the energy needed to power your newly purchased item. Most appliances need electricity or gas, and average costs of energy required are reported on the sales tag. You can also do your own calculations using online resources, such as the U.S. Department of Energy's website. Figure 7.1 illustrates the operating costs for a coffee maker.

Figure 7.1: Coffee Maker Energy Cost per Year in Colorado



Caption: You might save $10 by buying a new coffee maker on sale, but the purchase price is not necessarily where your greatest costs are, as this energy calculator illustrates.

Source: https://energy.gov/energysaver/estimating-appliance-and-home-electronic-energy-use

Fuel expenses for cars can be substantial, running hundreds or thousands of dollars each year. Anticipating this expense means doing some simple math. How many miles to the gallon does your car get, how many miles do you drive per month, and what is the price of gas? Let's say the price of gas is $3.42 per gallon. If you are getting around 20 miles per gallon on average, and commuting five miles to work every day and tooting around on the weekends another 25 miles, you might expect to use 2.5 gallons in a week. Many car owners drive more than that, using their cars for longer trips or a longer daily commute, but let's assume you are conservative about your car use. In this scenario, you spend $8.55 per week, or about $34 per month, on gas.

This scenario isn't so bad. If, however, you were driving a vehicle averaging 40 miles to the gallon, you would use only five gallons of gas per month. Your cost would then be about $17 per month. This is not a huge difference. However, most people will drive more than that, magnifying the difference accordingly. Two hundred miles per week at 20 miles to the gallon would mean you use 10 gallons of gas each week, for a cost of $136.80 per month. Two hundred miles per week in a car that gets 40 miles to the gallon would cost half of that. The more you drive, the bigger the difference becomes.

Unanticipated Expenses

Often outside the scope of the predictable costs of car ownership are things like parking tickets and traffic violations. You can plan for the cost of regular parking, such as at your workplace, if there is a fee. If you are prone to getting parking tickets, build those costs into your budget, too.

The cost of bad driving and traffic violations can be high enough that they are worth considering before you buy a car. In addition to hundreds of dollars for an actual speeding ticket

you might get, there can be court fees, plus a rise in your insurance costs as a result of your driving record. If you are found to be driving under the influence of alcohol, you are likely to pay fines in the thousands of dollars, with the cost going up for further offenses until you lose your license. These are just violations in which nobody gets hurt. The worse the violation is, the more you pay at the courthouse and the higher your insurance premium goes. Nobody really budgets for these sorts of expenses, and the consequences of a big ticket on a small budget can be quite significant.

Unanticipated expenses are just that: unanticipated. However, if you know that you may be prone to forgetting to pay for parking at a metered spot or are prone to driving too fast, know the costs of doing so. This is where personal tendencies and habits can have a significant impact on your finances.

All of the expenses described in this section amount to what is sometimes called the true cost to own (see Do the Math 7.1 for a further example).

[Insert Do the Math 7.1: True Cost to Own]

[Begin Case Study Part 1]

Case Study Part 1: Meet Tiffany

Tiffany lives in Denver, Colorado. She has just completed all the necessary requirements to become a Licensed Practical Nurse (LPN). Her ultimate plan is to pursue her bachelor's degree in nursing but that is temporarily on hold while she works for a few years to save enough to pay for her education. During Tiffany's senior year in high school, her mother was diagnosed with a rare blood disorder and though her prognosis is good, the treatments are expensive, even with health insurance. This means there is not much family money to help with Tiffany's college

expenses.

Tiffany has just received a job offer for an LPN position at a clinic with a starting salary of $42,000 per year. Right now, she has $7,000 in savings and she plans to add to that with income from her job. Now that she is employed, her top priority is purchasing the cobalt blue Ford Mustang that she has dreamed of having for as long as she can remember.

Over dinner with her parents and Aunt Tilda—who has been staying with them since her mom got sick—she brings up the subject of her dream car. With the money from her new job, it seems that having the car could finally become a reality. Aunt Tilda, who drives an eight-year-old Honda Accord, doesn't say much, but offers to take Tiffany car shopping.

On their way to the car dealership, Tiffany chats excitedly about her dream car, yet Aunt Tilda is silent. Noticing her expressionless face, it begins to dawn on Tiffany that practical and thrifty Aunt Tilda does not approve of such a sporty car.

Finally, Aunt Tilda says, "Are you sure you really need a car?" Tiffany tries not to sound irritated while explaining her complicated schedule and transportation needs. "What about taking the bus?" asks Aunt Tilda. "Or maybe you could bike to work?" Tiffany patiently explains the complications of the bus route and the impossibility of riding her bike to work, arriving sweaty and tired. "They probably have a shower," suggests Aunt Tilda. Annoyed, Tiffany doesn't reply.

Caption: A licensed practical nurse works under the supervision of a registered nurse or

physician to care for people who are sick, injured, convalescent, or disabled.

At the Ford dealership, they wander the lot. Tiffany forgets her annoyance when she spots her car. It's beautiful. She imagines driving around town with the engine purring in that distinctive Mustang style. She takes a look at the sticker on the car window: MSRP $25,045. "Ouch," says Aunt Tilda. She takes out her smartphone. "The Blue Book says fair price for this car is anywhere from $22,082 to $23,552. If you were paying cash, you might be able to get that, or at least pay something under the MSRP. Do you have $22,082 in the bank?" Tiffany raises an eyebrow at her: Aunt Tilda knows she does not. Aunt Tilda tells Tiffany a story about the time she wrote a check for the fair price of a car she wanted to buy and let it sit on the dealer's desk while they negotiated. She ended up getting that price. Of course, that was for a used Buick sedan. But interesting nevertheless, thinks Tiffany.

Aunt Tilda leads Tiffany toward the used cars at the back of the lot. As they walk, she reads more prices from her phone:

- The blue book's suggested retail value of a 2014 Mustang Coupe in good condition or better is $15,698 if bought from a dealer, $13,120 if bought from a private party;
- A 2012 Mustang coupe is $13,472; a 2010 model is $11,624;
- The 2008 model is $10,583.

The five-year-old car is worth half as much as the new one. The cost savings is about $10,000. A 2002 Mustang coupe in very good condition is valued at $4,229. Although there are fewer available in "very good condition" as they get older, if Tiffany could find such a car she would save over $15,000.

They stop in front of a gorgeous black Mustang in what looks like perfect condition; it's a

2014 model priced at $15,500. Tiffany absolutely loves it. Aunt Tilda calls to her from the far end of the line. Tiffany spots her next to a car in her favorite cobalt blue: a Dodge Avenger priced at $7,800.

On the drive home from the Ford dealership, Aunt Tilda has some questions for Tiffany. Have you thought about insurance? What about gas mileage? How about reliability? Does she have to pay for parking at work? Tiffany pretends to listen politely as Aunt Tilda rattles on, but all she can think about is driving around town with her friends, windows down, music playing. She can't get the image of that Mustang out of her head.

That night, Aunt Tilda pokes her head into Tiffany's room and hands her a piece of paper (see Table 7.1). "Here you go," she says. "Fill this out and let's plan to take another trip to the car dealership on Saturday."

Table 7.1: First Year of Ownership Costs of Tiffany's Two Car Possibilities

	2014 Ford Mustang	2011 Dodge Avenger
Purchase price	$15,500	$7,800
Insurance	$960	$841
Maintenance	$362	$840
Repairs	$288	$475
Taxes and fees	$1,161	$616
Fuel	$1,453	$1,331
Parking	$0	$0
Total extra costs	$4,224	$4,103

Caption: Tiffany's research of a year's worth of expenses is pulled from the annual "true cost to own" for each vehicle based on a 2016 five-year estimate with 15,000 miles driven per year. Source: Edmunds.com.

Discussion Questions

1. Are there any hidden costs of buying and owning a car that neither Aunt Tilda nor Tiffany have considered?
2. Can you think of an argument Tiffany might make to Aunt Tilda at this point to convince her that the Mustang is the better deal?
3. At this point, which of these cars do you think is the better deal, and why?

[End Case Study Part 1]

PAYING FOR LARGE PURCHASES

If you have enough money in the bank and the money is not needed for other things, you can pay cash for a large consumer purchase. Some people are able to do this; many are not. In this section, we will focus on options for paying for large purchases when you do not have available cash on hand to do so. Even if you do have the cash, remember to be clear about whether you are considering a want or a need and recognize the opportunity costs that are part of your decision. For most people, spending $400 for a pair of designer shoes satisfies a want rather than a need and, for anyone, doing so means you do not have that $400 to spend on something else.

Loans and Collateral

If you pay for a consumer purchase with a credit card and maintain a balance on your card from

month to month, you are borrowing money to buy that item. Many consumer purchases are bought with credit, and the cost of doing so can be very high, as discussed in Chapter 5.

Cars are consumer items that have an entire credit industry dedicated to their purchase. Getting a loan to buy a car is common. According to Consumer Reports, in 2013, 84% of all car purchases involved a loan.[3] A sizeable fraction of consumer credit is devoted to car loans. There are two options if you are looking for a loan to buy a car: direct lending or dealership financing. With direct lending, you find the lender—a bank, credit union, or finance company. With dealership financing, the car dealer does the work of finding the lender, saving you work, but possibly costing you more money.

Some lenders will offer a loan that is secured with **collateral**, meaning that they will have a lien on one of your possessions, as explained in Chapter 5. Such loans will tend to have a lower rate of interest than an **unsecured loan**. Dealerships offer loans secured by the vehicle itself, have a lien on that vehicle, and can repossess it if you fail to pay.

Down Payment and Trade In

When making large consumer purchases with a loan, a down payment is sometimes required, meaning you will not borrow the entire cost of the purchased item. A down payment reduces the amount you need to borrow. A trade in does the same; in the case of a car, you sell the car you currently own, putting the value of your trade-in vehicle as a credit toward the cost of the car you are purchasing. Be aware that although you could make a trade-in directly to the dealership, you might make more money on the vehicle by selling it on your own.

Traditionally, a down payment for a car is about 20% of the purchase price, but that

[3] Jeff Bartlett, "Consumers rely on car financing more than ever," *Consumer Reports*, September 6, 2013, http://www.consumerreports.org/cro/news/2013/09/car-financing-on-rise-loans-and-leases/index.htm.

percentage has been shifting in recent years, as many consumers are unable to afford to put 20% down. In 2015, the average down payment on a vehicle was 10.4%.[4] For other large purchases, the seller may not take a trade in and may actually charge you for taking the old item away. Refrigerators, for example, are not easy to throw out. When a new fridge is delivered, the company might agree to take the old one away, at a price. In such cases disposal fees are another hidden cost of buying the new appliance.

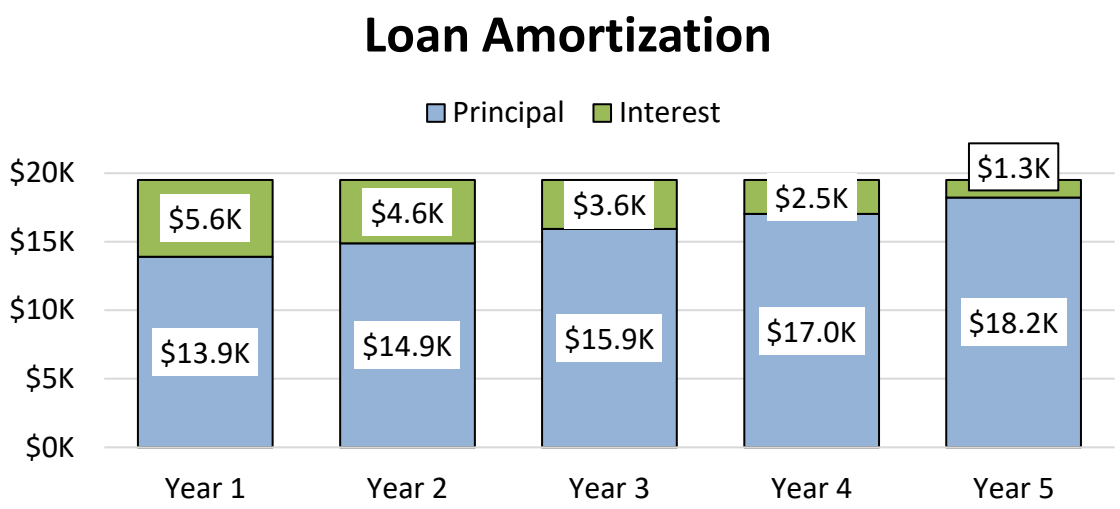
Calculating Monthly Payments

As we discussed in Chapter 7, when a loan is repaid in installments, the **loan balance** (the amount still owed at a given time, i.e. the **principal**) is gradually reduced over time. This is known as **amortization**. When a balance is amortized, a portion of each payment is used to repay the interest accrued on the balance between payments. The remainder is used to reduce the balance. As the balance shrinks, the interest owed in each subsequent period will decline, and a larger portion of the payment will be used to reduce the principal. To illustrate how loan payments work when making a large consumer purchase, we'll consider three examples.

Example 1: Imagine that you borrow $80,000 to buy a very fancy car. You take out a five-year auto loan with an interest rate of 7% that requires annual payments. You must make payments of $19,511 each year for the next five years. Figure 7.2 shows the principal and interest payments for this loan.

[4] Ronald Montoya, "How Much Should a Car Down Payment Be?" *Edmunds*, January 22, 2016, https://www.edmunds.com/car-buying/how-much-should-a-car-down-payment-be.html.

Figure 7.2: Principal and Interest Payments on an $80,000 Loan Over Five Years



The payment is approximately $19,500 each year, but the interest payment declines while the principal payment increases.

Example 2: Table 7.2 is an amortization schedule for a loan of $7,000. Like the one in Chapter 5, it illustrates a month-by-month breakdown of a loan. Separate columns list the payment amount, how much of that payment goes to the principal of the loan, how much interest is paid that month, how much total interest you have paid over time, and your balance, or how much you still owe after that month's payment is made. You can find amortization schedule calculators online or use a spreadsheet to create one.

Table 7.2: Amortization Schedule for a Four-Year, $7,000 Loan with a 4% Annual Interest Rate

Month / Year	Payment	Principal Paid	Interest Paid	Total Interest	Balance
April 2013	$158.05	$134.72	$23.33	$23.33	$6,865.28

May 2013	$158.05	$135.17	$22.88	$46.22	$6,730.11
June 2013	$158.05	$135.62	$22.43	$68.65	$6,594.49
July 2013	$158.05	$136.07	$21.98	$90.63	$6,458.42
Aug. 2013	$158.05	$136.53	$21.53	$112.16	$6,321.89
Sept. 2013	$158.05	$136.98	$21.07	$133.23	$6,184.91
Oct. 2013	$158.05	$137.44	$20.62	$153.85	$6,047.48
Nov. 2013	$158.05	$137.90	$20.16	$174.01	$5,909.58
Dec. 2013	$158.05	$138.35	$19.70	$193.71	$5,771.23
Jan. 2014	$158.05	$138.82	$19.24	$212.94	$5,632.41
Feb. 2014	$158.05	$139.28	$18.77	$231.72	$5,493.13
Mar. 2014	$158.05	$139.74	$18.31	$250.03	$5,353.39
April 2014	$158.05	$140.21	$17.84	$267.87	$5,213.18
May 2014	$158.05	$140.68	$17.38	$285.25	$5,072.50
June 2014	$158.05	$141.15	$16.91	$302.16	$4,931.36
July 2014	$158.05	$141.62	$16.44	$318.60	$4,789.74
Aug. 2014	$158.05	$142.09	$15.97	$334.56	$4,647.66
Sept. 2014	$158.05	$142.56	$15.49	$350.06	$4,505.10
Oct. 2014	$158.05	$143.04	$15.02	$365.07	$4,362.06
Nov. 2014	$158.05	$143.51	$14.54	$379.61	$4,218.55
Dec. 2014	$158.05	$143.99	$14.06	$393.67	$4,074.55
Jan. 2015	$158.05	$144.47	$13.58	$407.26	$3,930.08
Feb. 2015	$158.05	$144.95	$13.10	$420.36	$3,785.13

Mar. 2015	$158.05	$145.44	$12.62	$432.97	$3,639.69
April 2015	$158.05	$145.92	$12.13	$445.11	$3,493.77
May 2015	$158.05	$146.41	$11.65	$456.75	$3,347.36
June 2015	$158.05	$146.90	$11.16	$467.91	$3,200.47
July 2015	$158.05	$147.39	$10.67	$478.58	$3,053.08
Aug. 2015	$158.05	$147.88	$10.18	$488.76	$2,905.21
Sept. 2015	$158.05	$148.37	$9.68	$498.44	$2,756.84
Oct. 2015	$158.05	$148.86	$9.19	$507.63	$2,607.97
Nov. 2015	$158.05	$149.36	$8.69	$516.32	$2,458.61
Dec. 2015	$158.05	$149.86	$8.20	$524.52	$2,308.76
Jan. 2016	$158.05	$150.36	$7.70	$532.21	$2,158.40
Feb. 2016	$158.05	$150.86	$7.19	$539.41	$2,007.54
Mar. 2016	$158.05	$151.36	$6.69	$546.10	$1,856.18
April 2016	$158.05	$151.87	$6.19	$552.29	$1,704.31
May 2016	$158.05	$152.37	$5.68	$557.97	$1,551.94
June 2016	$158.05	$152.88	$5.17	$563.14	$1,399.06
July 2016	$158.05	$153.39	$4.66	$567.80	$1,245.67
Aug. 2016	$158.05	$153.90	$4.15	$571.96	$1,091.77
Sept. 2016	$158.05	$154.41	$3.64	$575.60	$937.35
Oct. 2016	$158.05	$154.93	$3.12	$578.72	$782.43
Nov. 2016	$158.05	$155.45	$2.61	$581.33	$626.98
Dec. 2016	$158.05	$155.96	$2.09	$583.42	$471.02

Jan. 2017	$158.05	$156.48	$1.57	$584.99	$314.53
Feb. 2017	$158.05	$157.00	$1.05	$586.04	$157.53
Mar. 2017	$158.05	$157.53	$0.53	$586.56	$0.00

Notice that the loan adds $586.56 to the price of the car. Every month, the interest paid represents one-twelfth of 4% of the remaining principal. Notice that in the early months, the amount of interest paid is quite high, declining to nothing as the car is paid off.

Example 3: Let's compare two car loans for the purchase of a car priced at $10,583. If your down payment is 20% of the price, that would be $2,117, leaving you with $8,466 to borrow. You do some research into loan and financing options. The car dealer can arrange a loan at 4.8% for five years. Your bank offers a loan at 3.8% for four years. Doing the math, you find your payment would be $159 per month from the dealer, $190 per month from the bank, as shown in Table 7.3.

Table 7.3: Two Loans for a $10,583 Car

Loan option and interest rate	**Timeframe**	**Monthly payment**	**Total cost**	**Difference between total cost and amount borrowed**
Dealer, 4.8%	5 years (60 months)	$159	$9,540	$9,540 – $8,466 = **$1,074**
Bank, 3.8%	4 years (48 months)	$190	$9,120	$9,120 – $8,466 = **$654**
		Difference	**$420**	

In the short run, the loan from the dealer results in smaller monthly payments, but the loan is for five years, not four. In both situations, you are paying quite a bit more for the car just because you took out a loan to pay for it. This is the cost of borrowing. You can determine these payment costs using a financial calculator, as demonstrated in Do the Math 7.2.

[Insert Do the Math 7.2: Calculating Car Payments Using a Financial Calculator]

With the car dealer's loan offer, you would be about $30 richer each month for the first four years, $190 poorer each month for the last year of that five-year loan, and $420 poorer overall at the end of your payments. How important is that $30 per month right now? How important will that $190 per month be to your future self? Only you can decide. Similarly, if you have some money in the bank, or other investments, that you could use to increase your down payment, you would also decrease your monthly payments and/or the total cost of the car. Again, only you can decide whether it is important to have that money in your savings right now, or if that money is better used to increase your down payment. These considerations are not just about the car, but also your entire budget.

Credit Cards

As you learned in Chapter 5, credit cards are a type of unsecured loan with a flexible repayment schedule. Consequently, interest rates charged on credit card balances tend to be high compared to other types of loans. For large consumer purchases, credit cards are an expensive way to borrow money if other options are available. For example, take the numbers considered in the above example in which you need to borrow $8,466 to purchase a car. If you were to put that amount on a credit card that charges an 18% interest rate and make the same monthly payment you would to the dealer for a five-year (60 month) loan, it would take you nearly nine years (107

months) to pay off the balance of $8,466. Of course, if you are just using the card for convenience and know that you are able to pay it off in a very short time frame, such as a few months, it can be a convenient option.

[Begin Case Study Part 2]

Case Study Part 2: Tiffany Considers Payment Options

Having determined the average cost to own each of the vehicles that caught her eye last weekend, Tiffany checked that she will have no parking costs at work, and confirmed that she does indeed have just over $7,000 in her savings account. Without admitting it to Aunt Tilda, she also did some thinking about the possibility of not owning a car at all. She investigated public transportation options and seriously considered biking to work. She knows that her schedule for the first month of work will be a mix of day and night shifts. Public transportation from the small hospital she is working at is adequate during certain times of day, but very limited at other times, and the thought of biking 10 miles home in the dark on potentially busy roads or in inclement weather after a long shift sounds unappealing, if not dangerous. Having a car will make a lot of sense.

During their next visit to the car dealership, Tiffany and Aunt Tilda talk financing with a salesperson. Tiffany does not have a vehicle to trade in, but she does have $7,000 in savings that she has earmarked for a car.

After a lengthy negotiation with the dealership about both cars, during which the salesperson disappeared numerous times to talk to the manager about price reductions and interest rates, they settle on two prices: $15,000 for the Mustang and $7,000 for the Dodge. Aunt

Tilda has made sure that there are no hidden costs as part of the negotiation: no dealer fees, no surprise charges for fancy hubcaps, no payments for an extended service package. To buy the Mustang, Tiffany will need a loan of $8,000. The cost of that loan is broken out in Table 7.4.

Table 7.4: Cost of Tiffany's Two Options

	2014 Ford Mustang ($15,000)	2011 Dodge Avenger ($7,000)
Amount borrowed at 4.5% for five years	$8,000	$0
Monthly payment	$149.14	$0
Total interest paid	$948.65	$0
Cost of car plus interest	$15,948.65	$7,000

The salesperson wants her to make a decision and commit to a purchase then and there but Aunt Tilda insists that they think about it and Tiffany promises they will be back in touch next week.

Discussion Questions

1. How would you negotiate the price of a car you want to buy?
2. Is the interest rate offered on the car loan good or bad? What could Tiffany have done in anticipation of needing a loan to buy a car?
3. Because Tiffany has just enough savings to pay for the Dodge Avenger, should she buy that car rather than borrow to buy a more expensive car? Explain your answer.

[End Case Study Part 2]

DEPRECIATION OF POSSESSIONS

In Chapter 2, you learned that the value of money is always changing: Depending on what you do with it, it may lose value due to inflation or the risk associated with some investments, or it may gain value through compounding interest via a variety of possible investments. Compared with money, the intrinsic value of consumer goods such as cars is much easier to predict. For the most part, consumer goods lose value, or **depreciate**, over time, and they do so in predictable ways.

The Future Value of a Purchase

Nearly all consumer durables that you buy depreciate with time. This mostly has to do with usage, wear and tear, and innovation. For example, new computers work faster and better than older computers, thus the value of an old computer goes down when new ones come to the market.

Let's look at the changing value of a car. The future value of the car you buy today will be less every year, as time passes. On average, cars depreciate about 15% per year, predictably losing market value over time. Depreciation works the opposite way compounding interest does—instead of increasing value proportionately, it decreases it proportionally. By this rough estimate, an average car that costs $20,000 new will be worth about $17,000 when it is one year old. The opposite of exponential growth (as the value of an investment increases proportionally, for example) is exponential decay, which is what happens to the future value of cars.

Even though you may need a car for work or child care, or may want a car for pleasure,

your car is not an investment in the financial sense. Although the current value of the car may count as an asset on your balance sheet, it costs money to buy, depreciates over time, and removes money from your pocket on a daily basis (see Do the Math 7.3). You can take advantage of depreciation by buying older cars in good condition, but you can never stop them from depreciating further with the passage of time.

[Insert Do the Math 7.3: Calculating Depreciation here]

For the most part, cars always depreciate. However, there are exceptions: cars that are collectors' items can grow in value over time. These cars are not usually driven regularly, but used only on special occasions and preserved in a sheltered location the rest of the time. A car that lives long enough begins to grow in value as an antique, because of its rarity. These cars do not *depreciate*, they *appreciate* in value. Such cars still cost their owners in maintenance, registration, insurance, and storage.

Risks Associated with Depreciation

It's always a good idea to know your exit strategy before you make a purchase. Having an exit strategy for a purchase means knowing how to recoup the money you have spent or borrowed. That way, if your financial circumstances change or if you decide for any reason that you no longer need or want the item, you will know your options.

Depreciation makes an exit strategy more difficult. If you need to sell a car, or any other high-value item, depreciation may make it impossible to cover the cost required to pay off an existing loan. In this situation, the value of the item is less than the amount you owe. Even after you sell the item, you will still owe the lender money. Such a loan is said to be **upside down**.

You are upside down on a loan when the amount you owe on a vehicle is higher than the

value of the vehicle. However, if you hadn't done your homework and had gotten a bad deal, the value of a car, for example, could be less than what you paid for it. Suppose you paid $8,000 for a car whose market value was only $6,000. Let's say you put $1,000 down and took out a four-year loan for $7,000 at 4% interest annually. Using an estimated depreciation of 15% per year, Table 7.5 compares the value of the car with what you owe at the end of each of the four years.

Table 7.5: Depreciation Over Four Years

Year	Value	Amount owned
0	$6,000	$7,000
1	.85 * 6,000 = $5,100	$5,353.39
2	$.85^2$ * 6,000= $4,335	$3,639.69
3	$.85^3$ * 6,000 = $3,684.05	$1,856.18
4	$.85^4$ * 6,000= $3,132.04	$0

In this situation, you would have started out upside down, owing more than the car is worth. If you sold the car the day after you bought it, you would lose $2,000 immediately because you paid $8,000, yet it is only worth $6,000. You remain upside down until sometime in year 2, when the value of the car becomes greater than what you owe. Selling the car before that time will require you to pay the difference between what you can get for it and what you owe on the loan out of your own pocket.

Exit Strategies and Credit Risks

Exit strategies to recoup money that has been spent or borrowed entail selling what you've

bought outright or refinancing the loan used to make the purchase (usually in the case of a car). The potential financial trouble in selling a major consumer item comes from three situations:

1. You are desperate to get rid of an item because you cannot make the loan payments.
2. The value of the item you want or need to sell is less than the amount you still owe on the loan you took out to make the initial purchase (you are upside down).
3. The object has no resale value whatsoever, but you still owe money for it.

The biggest financial risk with loans is that you cannot make your payments. Perhaps you have lost your job, had some other large, unavoidable expense, or just managed your money poorly. The lender is likely to be just as motivated as you are to fix the situation. Up to a point, the lender is your ally when this happens. The first step is to go to them and explain the situation. Find out what you owe and make arrangements to sell the item in question, if possible.

This is the point at which the value of a car (as determined by the blue book), or other major purchase, is compared to the outstanding balance of your loan (your liability). If the item purchased is worth more than the loan amount, you can sell it and pay off the loan. The lender may help you do this or offer advice on how to do it. They may grant you a slight deferment of payment while you take care of business. They could even buy it from you, if the lender is also a car or appliance dealer.

However, if you owe more than the item is worth, the lender may be willing to refinance the loan, spreading it out over a longer period and, depending on the fluctuation of interest rates, possibly reduce your interest rate. Of course, the undeniable result is that, in the end, you will pay even more because you have postponed paying principal for longer and there may be additional costs for refinancing.

What happens if you just don't pay? If the loan is a **secured loan**, your **creditor** has

important rights that end once you've paid off your loan obligation. These rights are established by the contract you sign and the laws of your state. For example, if you become **delinquent** on your loan—meaning you don't make timely payments—your creditor may have the right to **repossess**—or take back your purchase. In many states, your creditor can seize a vehicle as soon as you **default** on your loan or lease. Failure to repay has consequences for your credit rating, as we saw in Chapter 5.

Credit card purchases are a case where it's easy to postpone paying for a major purchase until that purchase no longer has any resale value. In this case, there's no exit strategy, and this is the risk inherent in not planning.

[Begin Case Study Part 3]

Case Study Part 3: Tiffany Considers Her Exit Strategy

As Tiffany and Aunt Tilda drive home from the dealership after negotiating sales prices for the two vehicles Tiffany is considering, Tiffany realizes that something is bothering her. They are looking at estimated costs and financing over a five-year period, but Tiffany is pretty sure that she will be leaving Denver and starting school somewhere within the next five years. What if she goes somewhere where she doesn't need a car? She also realizes the car could end up costing more than she expects it will and hinder her ability to save for school. She assumes she could just sell the car if this was the case, but is that a good plan? She's not certain, but it's been an exhausting day and she decides this is something she needs to think about later.

Tiffany has read that vehicles depreciate at approximately 15% per year. That means that every year, a vehicle will be worth 85% of what it was the year before. Tiffany does the math to determine the estimated value of the Mustang after owning it for two years by starting with the

car value and taking 85% of it twice:

.85 * .85 * $15,000 = $10,837.50

She does the same calculation for the Dodge:

.85 * .85 * $7,000 = $5,057.50

At the two-year point, at which the Mustang is valued at $10,837, Tiffany will have made 24 monthly payments of $149.14 on the car, for a total of $3,579.36, meaning that she will still owe $4,420.64 (recall that Tiffany will be putting $7,000 down, so $8,000 – $3,579.36 = $4,420.64). This is a relief. Presumably, at this point, she could sell the Mustang for close to $11,000, pay off her remaining loan, and walk away with about $6,400 ($10,837 – $4,420.64 = $6,416.36).

Tiffany won't owe any money for the Dodge, but if she were to sell it, she would receive $5,057. Assuming all goes as expected, she would actually be able to sell the Mustang for more than the Dodge.

Discussion Questions

1. How would the resale prices of these two vehicles compare if Tiffany sells the car in three years?
2. Has Tiffany forgotten any cost considerations in this calculation? What else do you feel she should take into account?
3. What could go wrong with Tiffany's exit strategy to sell her car in two years?

[End Case Study Part 3]

COMPARING ALTERNATIVES

With nearly every purchase you make, you have options. Some psychologists argue that having fewer options is better because you will have less anxiety with a constrained set of choices. However, the goal of this chapter is to make you less anxious because your financial burden is smaller, not because you have easier decisions to make. The more options you consider, the more likely it is that you will find the best one for you. So let's think systematically about making a decision about a big purchase.

Creating a List of Options

The first question you should ask yourself is what exactly do you want or need from this purchase. Perhaps you live in an apartment building that doesn't have a common laundry room and your unit has no washer and dryer. You are thinking of buying one, but what you really want is a convenient way to have clean clothes. This clarification opens up a new set of options. You could go to a laundromat and do the wash there. You could use a service that launders your things for you, and you just drop them off and pick them up. You could visit your parents or a friend and use their machine if they will let you.

Alternatively, you could buy a washing machine. What size does it have to be to fit in your apartment? Is the plumbing set up for it? Is changing the plumbing (if necessary) okay with your landlord? Perhaps the landlord would be happy to pay for the machine, as it would increase the value of the apartment. If your landlord agrees, will he or she then raise the rent? If you move, will you sell it, leave it, or take it with you? All of these factors will influence the final cost of purchasing and owning a washing machine.

Say you decide to buy the machine yourself. What do you care about most: price, energy usage, a brand's durability? Which washers fit your criteria, what is the price range, and how do

they compare on these points? A spreadsheet could be very useful in tracking comparisons between possible purchases.

Are you going to have to buy a dryer also? Could it be gas or electric, or is only electric possible? Do you have the necessary outlet? If you don't have a dryer, is there a place to hang the clothes to dry?

It is no wonder that having too many options lead to a certain amount of decision anxiety. But if you initially consider as many as possible and clarify what is important to you, eventually you can narrow your options down a bit.

Should You Buy or Should You Lease?

For cars and other major purchases, it is sometimes possible to lease the item for a fixed amount of time, usually several years, rather than buy it. In theory, your lease is covering the depreciation of the item, but since many parts of the lease are negotiable, you will probably pay for more than that.

In the case of a car, if you lease a vehicle for four years and replace it with another leased vehicle every four years, you will almost surely be paying far more than if you just bought the original car and kept it until it got old. Here is why:

- The monthly payment is based on the estimated value of the car, also called the purchase price, or "gross capitalized cost," which dealers set quite high but which is negotiable. To get a good price you must negotiate this estimated value just as if you planned to purchase the car.
- Car leases often require a down payment in addition to monthly costs. A higher down payment results in lower monthly payments, just as with the purchase of a car. However,

if something happens to the car, the insurance company will reimburse the leasing company but they won't reimburse you.

- You will probably buy "gap insurance" which covers the opposite situation in which the insurance reimburses the leasing company for the market value of the car but you owe more than that, and a clause in your contract says you must make up the difference.
- There are many fees associated with leasing. For example, at the end of the lease if you decide to purchase the car, there may be a "purchase option fee." The very same contract may have a fee if you decide *not* to purchase the car, called the "disposition fee." Remember, leasing companies are trying to make money!

In spite of all of the above, there may be times when leasing a car (or other item) is the most reasonable option. In that case, be sure to look at a variety of lease offers, compare them, and negotiate hard for a good deal.

The Cost of Various Options

For every purchase option you consider, it is important to remember that the cost is not limited to the purchase price. Be sure to estimate maintenance and repairs, insurance and warranties, storage costs, and energy usage. For example, for the option of using the laundromat, you would include the cost of transportation to and from as well as the money you put into the machines. One of the causes of budget problems, which we never want you to have, is forgetting that anything you buy can have ownership and usage costs well beyond the purchase price.

[Begin Case Study Part 4]

Case Study Part 4: Tiffany Considers Other Options

Tiffany explains the advantage of selling the Mustang over selling the Dodge after two years of owning the car. Aunt Tilda is not impressed. She says that Tiffany has completely forgotten to consider what she will have to spend on the cars during the two years that she owns them.

What should she consider? She goes to the Edmunds website and finds the true cost to own chart for each car. She makes a spreadsheet that compares the information that she is interested in for each of the cars:

	Mustang Year 1	Mustang Year 2	Dodge Year 1	Dodge Year 2
Taxes and fees	$1,161	$212	$616	$122
Fuel	$1,453	$1,496	$1,331	$1,371
Insurance	$960	$989	$841	$866
Maintenance	$362	$1,706	$840	$184
Repairs	$288	$418	$457	$530
Monthly payment (x12)	$1,789.68	$1,789.68	$0	$0
Total	$6,013.68	$6,610.68	$4,085	$3,073

Over the course of two years, the costs associated with the Mustang amount to $12,624.36. The costs associated with owning the Dodge are only $7,158. Aunt Tilda is quick to point out the difference between these two numbers: $5,466.36. Even though Tiffany would make an extra $1,359.36 by selling the Mustang in two years instead of the Dodge, it's not enough to compensate for the extra costs of owning the Mustang for two years.

The thought of spending such large amounts of money has made Tiffany a little queasy. What if she hates her job? What if she loses her job? She thinks through some other, possibly

less expensive options. She could use a mix of public transit and car/taxi services. She calculates that it would cost her $100 per month if she only used public transit. But if she has to work the night shift for half of a month, she might also need to use a taxi service, which would add another $200, more or less, to her commuting costs. At $300 per month, the cost of not having a car would be $3,600 annually. She would also have $7,000 in the bank. But not having a car would add at least an hour to her commute every day. She would also use the car for other purposes besides going to work.

Tiffany thinks through her financial situation and constructs a budget. She plans to live at home, with few expenses, and take enough courses at the local community college to fulfill some of the distribution requirements for her nursing degree, thus saving on tuition costs when she does go to college. With all these considerations, Tiffany feels that at the end of two years, she can save $40,000 if she owns the Mustang and $45,000 if she owns the Dodge. She knows that she would save even more if she used public transportation, but she concludes that she prefers to cut costs in a different way. She decides to buy the Mustang. It occurs to her that depending on where she goes to school, it might make sense to have a car and maybe she could keep the Mustang while she's in college. She knew she would have no desire to keep the Dodge.

Discussion Questions

1. What do you think Aunt Tilda is going to say about Tiffany's decision?
2. Even Aunt Tilda has not taken into account the future value of the money Tiffany would save if she bought the Dodge. How much extra will Tiffany have to pay per month if she buys the Mustang instead of the Dodge? If she were to invest this money every month at 4% APR, how much would she have at the end of two years? Use a financial calculator.

3. Do you think that Tiffany made the right decision? Why or why not?

[End Case Study Part 4]

WORKING WITH THE THREE QUESTIONS

In this chapter, we have discussed the decision-making associated with large consumer purchases, with specific regard to cars. There are financial implications for such purchases, including considering hidden costs, such as taxes, maintenance costs, and so on. In addition to deciding among different options, you must do research to make sure to get the best price. You also have to consider the best ways to finance that purchase and comparison shop for the best terms. Working with the three questions for financial decision making can help you organize your thinking when making a large consumer purchase.

1. How will this decision affect my present finances?
2. How will this decision affect my future finances?
3. What risk will I be taking with this decision?

1. How will this decision affect my present finances?

If you have a good understanding of your cash flows and work with a budget, you will know whether you have the ability to make a down payment on a large consumer purchase or to buy it outright.

If you buy using a consumer loan (as you might for a car) or a credit card, you also know what will change in your monthly budget because of regular payments that will need to be made and new expenses that you will incur as a result of the purchase. It's possible that the purchase of a new product will eliminate the significant repair or fuel costs that can be associated with older

appliances or vehicles or will replace a service you have previously paid for.

For example, if you have been relying on public transit but now will make monthly car payments instead, you can eliminate the transit costs from your budget. Of course, you need to be sure to factor in the costs of fuel, insurance, repairs, and any other expenses associated with vehicle ownership.

If you don't have the money for a purchase or down payment now but have enough room in your budget to put aside a smaller amount each month for a period of time, you can plan for the amount of time it will take you to save the money you will need.

2. How will this decision affect my future finances?

As with many expenses, thinking about how a present day transaction will affect your future finances can be challenging. If you are borrowing using a credit card or a consumer loan, take the time to calculate the impact of your borrowing decision.

Mapping out a plan for payments, if you are purchasing something using a loan, including borrowing using a credit card, can be helpful. These payments are due in the future and you have to make sure you will be able to cover them. Many of the hidden costs of a purchase also impact future finances for a significant period of time.

Also, note that your future finances are impacted when you make a durable purchase because you could have invested that money instead. As such, you want to be sure to include this as part of the opportunity costs of your purchase.

3. What risk will I be taking with this decision?

Risks associated with large consumer purchases include unexpected expenses, such as repairs, a

loss in value that results in negative equity if you have a loan, and the inability to recoup your equity by selling the item if you need to do so. Risks exist because the effects of making purchases extend into the future: What if your income decreases and you can no longer make payments? What if you get married and have children and the car you have purchased no longer fits the needs of your larger household? You may need to relocate, for example to a city, where a car is less necessary, or is more expensive, due to different insurance or parking costs.

[Begin Case Study Part 5]

Case Study Part 5: Tiffany, Two Years Later

Tiffany's mother's health has improved dramatically, and Aunt Tilda has moved back to her home in Rifle, Colorado. She is absolutely delighted that Tiffany comes to visit her so often in her meticulously maintained, sleek black Mustang coupe.

Tiffany has been admitted to the nursing program at Samuel Merritt University in Oakland, California. They accepted her community college course credits, reducing the time needed to complete her degree by a full year. The University also offered her a generous financial aid package. Tiffany will still need $10,000 of her own money in each of the remaining three years to attend the university. Fortunately, she has managed to save $40,000. She accepts their offer and tells Aunt Tilda she is planning to move in a month.

Aunt Tilda points out that the Bay Area has excellent public transportation and offers to buy the Mustang for $12,000.

Discussion Questions

1. Why is Aunt Tilda's offer generous? Do you think Aunt Tilda has learned anything from

Tiffany?

2. Sometimes it is helpful to have someone with whom to talk through financial decisions. Do you have an Aunt Tilda in your life?
3. Should Tiffany keep the car or sell it to Aunt Tilda? Explain your decision.

[End Case Study Part 5]

CHAPTER SUMMARY

In this chapter, we have considered decisions about major consumer purchases. These are made infrequently but influence both the present and the future, carrying significant costs and risks. These decisions are important and make a difference in people's budgets and balance sheets. There are common features of these decisions that one should always consider in decision making and some specific features that are relevant for this context only.

- Researching information about prices and reviews of big ticket items is essential not just to making a good choice but to saving money as well. The cost of owning a major consumer item is not confined to its purchase price. Many ongoing costs should be taken into account before making the purchase.
- People often make large purchases using a loan and it's good to know how much extra cost will be added to the purchase price as a result of that loan. There are different sources for loans, and credit cards are particularly expensive ways to borrow money. It is important to make calculations to see how much an item costs, particularly when the payments are distributed over time.
- Most consumer products lose value over time. For many purchases, you can calculate what the future value of the item will be after depreciation.

- Spending money on a purchase means you do not have that money to use elsewhere.
- There is almost always a variety of alternatives to take into account when you are considering making a large consumer purchase. It's worth going to the trouble of making a spreadsheet or a list of the costs, advantages, and disadvantages associated with each alternative.
- Before you make a large purchase, consider carefully what will happen if you need the money you just spent for another purpose. While you may be able to sell or refinance your purchase, this is not always the case, and it is highly likely that money will be lost due to depreciation.

KEY TERMS

Amortization: The process of paying off a debt (often from a loan or mortgage) over time through regular payments. An amortization schedule details each periodic payment on a loan.

Balance: The unpaid, interest-bearing principal remaining on a loan.

Collateral: Property, or its equivalent, that a debtor deposits with, or promises to, a creditor to guarantee repayment of a debt.

Creditor: A person, bank, or other enterprise that has lent money or extended credit to another party.

Default: Failure to pay interest or principal on a loan when due.

Delinquent: Overdue, or late (as in a payment).

Depreciation: The reduction over time in the value of an asset due to wear and tear.

Insurance premium: The amount of money that an individual or business must pay for an insurance policy.

Kelley Blue Book: A resource used by consumers and the automobile industry to establish price guidelines.

Principal: The amount borrowed or the amount still owed on a loan, separate from interest.

Repossess: When an item is taken from a buyer because payments are not being made on the secured loan used to purchase it.

Secured loan: A loan in which the borrower pledges some asset (e.g., a car or property) as collateral for the loan, which then becomes a secured debt owed to the creditor who gives the loan.

Unsecured loan: A loan that is issued and supported only by the borrower's creditworthiness, rather than by any type of collateral.

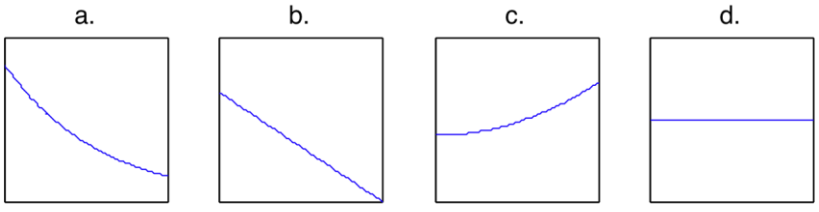
Upside down loan: A loan with a balance greater than the current value of the item.

Warranty: An agreement between the contract seller (dealer, manufacturer, or independent company) and the buyer of a product to provide repair or replacement for covered components of the product for some specified time period.

CHAPTER HOMEWORK

Check Your Understanding

1. Which of these graphs best represents the resale value of a car over ten years?



2. In which part of the graph you chose does the car depreciate the least?

a. When it is new

b. After 1 year

c. When it is 5 years old

d. When it 10 years old

3. If you buy a car for $20,000 at an interest rate of 7%, which car loan has the lowest monthly payment?

a. 3-year loan

b. 4-year loan

c. 5-year loan

d. 7-year loan

4. In the scenario above, in which case do you pay the least for the car?

a. 3-year loan

b. 4-year loan

c. 5-year loan

d. 7-year loan

5. If you are “upside down” on your car loan, this means

a. You slid off the road and the car is on its roof

b. You owe more than the car is worth

c. You traded your car for a larger model

d. You owe less than the car is worth

6. Opportunity cost represents

a. The opportunity lost when a purchase is not made

b. The benefits you could have received by taking an alternative action in time or money

c. The benefit lost when the salesperson does not complete a transaction

d. The cost of purchasing a vehicle on sale

7. Which of the following is **true** of the amortization of an installment loan with fixed monthly payments?

a. The principal portion of the monthly payment decreases over time.

b. The principal portion of the monthly payment increases over time.

c. The interest portion of the monthly payment increases over time.

d. The monthly payment increases over time.

8**.** What are some expenses associated with car ownership?

a. Maintenance and repairs.

b. Insurance.

c. Taxes and registration fees.

d. All of the above.

Do the Math

1. Sally just turned 16 and wants to buy a car worth $8,000. She doesn't have enough savings to purchase the full amount, but can make a $1,000 down payment. If she finances the remaining $7,000 with a 5-year loan charging a monthly APR of 7%, what will her monthly payment be? How much will she still owe for the car at the end of the first, second, third, and fourth years?
2. Sally decides to do some more research on the car, a used 2006 VW Jetta. Make a budget for her likely costs for the next five years. Go to www.edmunds.com and use the "True

Cost to Own" tool to project repair costs and use online estimators for insurance. Use your local town website or make a phone call to find out what registration fees are likely to be for Sally.

3. Suppose Sally buys this car and assume it will depreciate at roughly 15% per year. If she wants to sell it in five years, what should she be able to get for it? Compare your depreciation calculation with what Sally will owe at that point. Is her car loan ever "upside down"?
4. Three years ago, Max purchased a new car for $25,000 using a five-year loan with an APR of 8% and a 10% down payment. He has made all of his loan payments as scheduled. Today, he plans to trade in his car at a local dealer for a new model. He finds that the blue book trade-in value of his car is currently $11,500. Compare the trade-in value of his car to his current loan balance. If he trades in the car for this value, will he receive a credit toward his new purchase?
5. John is looking to buy a motorcycle and has the following three financing options: (a) pay $1,100 today in cash, (b) pay $100 a month for twelve months, or (c) pay $1,200 in one year. The interest rate is currently 10%. Which of the following statements do you agree with, and why?
    a. Option (a) is better than option (c) because in option (a) the payment is smaller.
    b. Option (b) is the best because it allows John to pay in twelve convenient installments.
    c. Option (c) is better than option (b) because payments are due earlier under option (b).
6. Which of the following is true about auto financing? Justify your answer, including a

calculation as part of your argument.

   a. Making a down payment on an auto loan will decrease the chance the loan will have negative equity if the vehicle is traded in before the loan is paid off.
   b. Leasing is always better than driving the same car for ten years because it is less expensive and allows the driver to always have a new car.
   c. It is best to trade in your car every year because loans amortize more rapidly than vehicles depreciate during the first few years.

7. Bobby wants to buy a new sofa set, but does not have enough cash to buy one outright. A local rent-to-own store gives Bobby the option to purchase the sofa set with 91 weekly installments of $21.99 per week (due at the end of the week). If Bobby were to buy the sofa set outright, it would cost $1,000.

   a. Given the cash price of $1,000, calculate the implicit APR on the rent-to-own option.
   b. A competing furniture store offers the same sofa set for $700. Given this price, calculate the implicit APR on 91 weekly payments of $21.99.
   c. Because the APR on his credit card is 24%, Bobby avoids making purchases with the card. Would it be better for Bobby to rent-to-own or borrow using his credit card to purchase the sofa set?

Thinking Hard

For each of the following statements, say whether you agree or disagree with it and explain why.

1. Interest rates are higher on shorter-term loans than longer-term loans.
2. A larger down payment usually decreases the monthly payment on a car loan.

3. The older the car gets, the faster it depreciates.
4. A car loan is always the best way to finance a car.
5. When buying your first car, it is best to buy a new car.
6. A car loan is safe because if you have been keeping up with the payments, you will always be able to sell your car for more than what is left on your loan.
7. A car loan is secured because the dealer will structure the loan payments to meet your individual needs.
8. Banks and credit unions make money when you take out a loan with them. A car dealership makes money through the price of the car and is just offering you the convenience of a car loan.

Working with the Three Questions

Question 1: How will this decision affect my present finances?

Shirley is buying a used car for $5,000 from a dealer who offers financing. While she has the loan, she must carry $300 per month in insurance (including collision) on the vehicle. She has a choice: she can take a four-year loan at 7% with monthly payments of $119.73 or a five-year loan at 6.75% with monthly payments of $98.42. After the loan ends she would drop the collision insurance required by the bank, and her insurance would then be only $100 per month.

- What are the long- and short-term impacts of each of these choices on Shirley's cash flow?
- How will each affect her monthly budget?
- In the long run, which will cost more, assuming she has no accidents?

Find an example of a used car currently for sale for approximately $5,000 and assume this is

Shirley's first choice. Use Internet resources to estimate the range of possible fair values of this car if it is in poor, fair, or good condition.

- Suppose Shirley takes the car to a mechanic who says it is in fair condition. Is she getting a good deal?

Shirley recognizes that an older car will require repairs and maintenance.

- Where can she go to find information that will allow her to estimate these costs?

Find an example of a car worth about $5,000 and research the "true cost to own" that vehicle for five years.

- Assuming Shirley is considering the same car as you, what are the hidden costs to own the vehicle?

Various other options occur to Shirley. She could save the $2,000 down payment and invest it. She could buy a slightly newer car worth $7,000 and still take out the $5,000 loan. She could buy a slightly older, but otherwise similar, car worth $4,000, use her down payment, and take out a two-year car loan for $2,000 at $89.55 per month.

- How do these options compare in terms of cash flow and total expenditure for the car (including hidden expenses)? You may pick representative example cars to make your case.

Question 2: How will this decision affect my future finances?

Shirley has $2,000 in cash that she could put toward a down payment on her $5,000 car. The remaining $3,000 she can borrow in the same two ways described above (she can take a four-year loan at 7% with monthly payments of $119.73 or a five-year loan at 6.75% with monthly payments of $98.42).

- For each option, how much would she save in the long run by using her $2,000 as a down payment?

If she puts the $2,000 into a convenient online investment vehicle, she would expect to earn about 6% per year on her money.

- Is it better for her to pay cash or to borrow? Why?

Suppose Shirley sells the car at fair value after three years.

- Which of the car and loan choices leave her in the best financial situation at that time? Which gives her the best result in long-term wealth?

Question 3: What risk will I be taking with this decision?

Shirley estimates the depreciation of this car over five years using the published average rate of 15% per year.

- What will be the approximate value of the car in each of the first five years she owns it? Graph the value of the car over time.
- What will happen to the value of this purchase over time?

Shirley is now considering eight options: cars worth $5,000 (4- or 5-year loan, with and without down payment), $4,000 (2-year loan, with and without down payment), and $7,000 (4- or 5-year loan with down payment).

- What are the basic risks associated with car ownership, and how do they vary with these different choices?

Suppose Shirley has to get rid of the car in 3 years, not because there is anything particularly wrong with her finances or the car, but because she is taking a job abroad.

- How do the eight car and loan choices affect her situation when she must sell the car?

- Which choice has the easiest or best exit strategy?

Case Study

Courtney left college after three years of study in order to get married. Her job helped put Sam through college and, along the way, they had two children. Now 25 and recently divorced, Courtney has no debt but she is responsible for two children ages two and four, and she has very little savings because they were unable to save while Sam was in school. She has decided that by working part time and going to college part time, she can finish her degree program in two years. She can do this because her mother has volunteered to help with childcare at no cost.

Courtney will make about $15,000 per year at her part-time job. School will cost about $10,000 per year, for which she is taking out a loan. Her ex-husband pays $900 in child support per month, which covers the apartment she rents and also her utility bills.

However, Courtney's car is old and unreliable and she will need another one for her commutes to work, school, and her parents' house. Public transportation in Courtney's town is inadequate for such a schedule. She is looking at a reliable used car that costs $8,000, which of course she doesn't have. She has only $3,000 in the bank and explains this to the dealer. The dealer tells her that if she can make a down payment of $3,000, the dealership will arrange a loan for the rest at a fairly high rate (depending on the length of the loan). Given her financial background, the dealer feels that loaning to Courtney is risky, hence the high interest rate.

Courtney plans to ask her parents for the $3,000 down payment, which she considers a loan, and also to cosign her car loan to reduce the interest rate. She is also thinking of taking a seven-year loan to reduce her monthly payments, as she believes the car will last that long. She does not want to tell her parents that when she graduates from college in two years, she plans to

enter a two-year nursing program, and will likely need to finance this expense, as well.

Part 1: Do Some Research

1. What options does Courtney have for purchasing and financing a used car? Do some Internet research to answer this question.
2. What will each of these options cost her on a monthly basis? In the long run total?
3. How much money will Courtney have to live on during this time and what are her likely expenses? What car options can she afford?
4. What issues should Courtney be addressing besides the cost of the car loan?
5. What are the pluses and minuses of borrowing money from her parents?

Part 2: Make a Plan

Based on your understanding of these issues and any other relevant considerations, what is Courtney's best strategy for purchasing a car at this point, in terms of her cash flow and balance sheet? Why? Prepare a written statement outlining your advice to Courtney, along with justification for it.

You Are Your Own CFO

For each of the three scenarios you created in Chapter 1, identify a major consumer purchase you are likely to consider. Calculate the costs of that purchase and explain how you will pay for it. What opportunity costs do you need to factor in to the decisions around the purchase?

Will one of those purchases be a car? If not, explain how you will avoid needing a car and outline any costs associated with getting around that need. If you will need a car in one or

more of your scenarios, think about the following questions: (1) During which periods will you need a car? (2) How many cars do you think you will own during that period? (3) Will you need a particular type of vehicle based on your work, geographical, or family situation? (4) At what periods might you need multiple vehicles?

For each year of each scenario, estimate the annual cost of owning cars. Use any resources that will help you make this estimate.

CHAPTER 7 FEATURES

Do the Math 7.1: True Cost to Own

Many related expenses need to be taken into account when you are budgeting for a purchase. Doing so will help you to know, before you buy, whether you can truly afford to own whatever it is you are considering purchasing. A more expensive car not only costs more, but it has higher insurance and taxes. Let's compare two examples. Suppose you have $1,000 for a down payment on a car loan and you are considering two cars. One costs (and is worth) $6,000 while the other costs (and is worth) $7,000. In both cases, you can get a loan for the remainder at 4% per year. You do your homework, calling the insurance agent and the city or town hall for information. You consult Edmunds or call dealers to get an idea of annual maintenance and repair costs. You estimate your monthly gas usage. You compute the costs of each on a monthly basis.

Car choice, price	$7,000	$6,000
Down payment	$1,000	$1,000
Loan payment, monthly	$135.47	$112.90
Registration and taxes	$40	$30
Insurance: liability	$75	$75

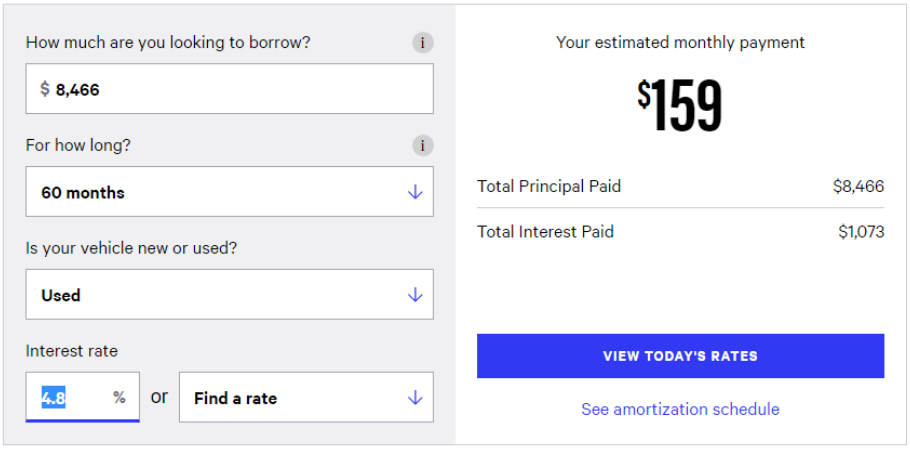
Insurance: collision	$150	$100
Gas expense per month	$160	$160
Maintenance and repairs	$100	$130
Parking	$40	$40
Total cost per month	$660.47	$607.90
Total cost for the year	$7,965.64	$7,334.80

In this case, the cheaper car is not only cheaper at the outset, but it saves money every year. This is not a rule of thumb. It does NOT always work out that way. You have to do your homework and the simple math of budgeting.

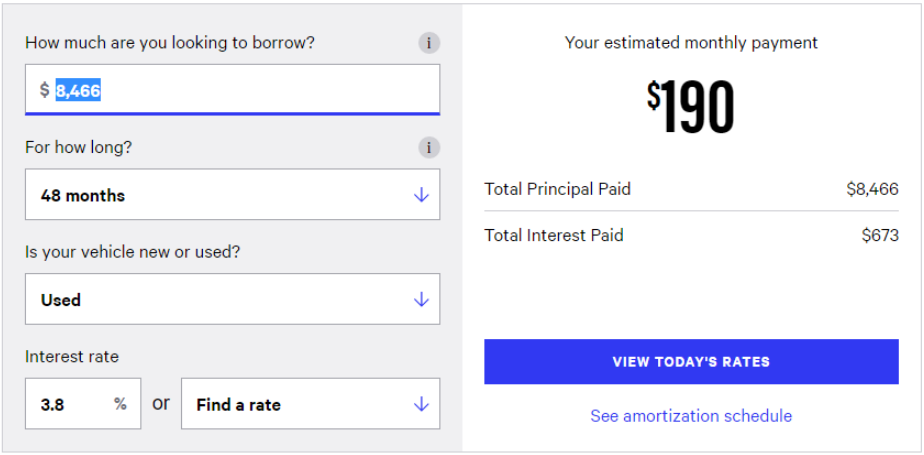
Do the Math 7.2: Calculating Car Payments Using a Financial Calculator

You can find online calculators or use a financial calculator to determine the monthly payments you will make on a variety of auto loans. Examples are shown below that compare the same loan for different periods of time and at different interest rates.

Online Auto Loan Calculation for Five-Year Dealer Loan at 4.8% Interest



Online Auto Loan Calculation for Four-Year Bank Loan at 3.8% Interest



Car loan calculators are a special type of the calculator you learned to use in Chapter 2, as demonstrated with the following inputs:

Name	Value	Compute
Present value	8,466	pv
Future value		fv
Number of periods	48	np
Payment amount	0	pmt

Interest rate per period	3.8	ir
Payment at:	☑ Beginning ☐ End	Clear

Do the Math 7.3: Calculating Depreciation

Say you buy a car that is worth $8,000 at the time of purchase. What will it be worth in the coming years? As we've discussed, cars lose approximately 15% of their value each year. Another way of saying this is that a car will only be worth 85% of its value next year. Using this percentage, here is how depreciation works out over five years:

Year	**Time elapsed**	**Worth**
0	Time of purchase	$8,000
1	1 year later	.85 * 8,000 = $6,800
2	2 years later	.85 * 6,800 = $5,780
3	3 years later	.85 * 5,780 = $4,913
4	4 years later	.85 * 4,913 = $4,176.05
5	5 years later	.85 * 4,176.05 = $3,549.65

If we look at depreciation in terms of a formula, after N years, the car's worth is $(.85)^N$ * $8,000. It should be noted that the 15% average is just that: an average. What the cash value of a car actually equates to is not quite so regular and also depends on the type of car.

What would happen if the car were only worth $6,000 when you bought it?

Year	**Time elapsed**	**Worth**
0	Time of purchase	$6,000
1	1 year later	.85 * 6,000 = $5,100
2	2 years later	$.85^2$ * 6,000= $4,335
3	3 years later	$.85^3$ * 6,000= $3,684.05
4	4 years later	$.85^4$ * 6,000= $3,132.04