So after 3 years the total cost of the loan would be as follows.

$$\$773.41 \cdot 36 = \$27,842.76$$

**c.** The difference between the overall cost of the loan for the two credit scores is found by subtracting the results found in parts a. and b.

Difference between Loan Costs over 3 Years:

$$\$28,951.92 - \$27,842.76 = \$1,109.16$$

This means that the better credit score would save the borrower $1,109.16 over the 3-year loan period.

***Skill Check Answers***
**1.** $875.11 **2.** $1,031.25 **3.** $109,405.33

# 6.3 Exercises

## ✔ CONCEPT CHECK

**1.** The cash payment made up front towards a total purchase price is called the _____.

**2.** We say that the amount of a purchase that is being borrowed with interest is the amount that needs to be _____.

**3.** A mortgage is an installment loan used to buy real estate where the property is used as _____.

**4.** A loan _____ schedule shows how much of each payment is going toward the principal versus how much is going toward interest.

**5.** Credit cards are common forms of _____ loans.

## PRACTICE

Consider a credit card with a balance of $7000. You wish to pay off the credit card in each scenario. Calculate the following. Round your answer to the nearest cent, if necessary.

a. The amount of a monthly payment within the time frame given

b. The total amount paid over the time period

**6.** APR of 17.99% paid off within 1 year

**7.** APR of 12.5% paid off within 2 years

**8.** APR of 24% paid off within 3 years

Consider a credit card with a balance of $5560. You wish to pay off the credit card in each scenario. Calculate the following. Round your answer to the nearest cent, if necessary.

a. The amount of a monthly payment within the time frame given

b. The total amount paid over the time period

**9.** APR of 14.99% paid off within 1 year

**10.** APR of 11.99% paid off within 2 years

**11.** APR of 5.9% paid off within 3 years

**12.** Consider a 30-year fixed-rate mortgage for $250,000 with a 4.22% APR.

**a.** Prepare a loan amortization schedule for the mortgage.

**b.** What is the balance of the loan after 7 years of payments?

**c.** How many installments (payments) must be made before more than half of the payment is applied to the principal?

**13.** Consider a 15-year fixed-rate mortgage for $325,000 with a 3.19% APR.

**a.** Prepare a loan amortization schedule for the mortgage.

**b.** What is the balance of the loan after 7 years of payments?

**c.** How many installments (payments) must be made before more than half of the payment is applied to the principal?

## APPLICATIONS

**14.** Suppose you are interested in buying a new condo. You decide to take out a $200,000 mortgage for 20 years. If the APR is 2.7%, calculate the monthly payment amount you will be responsible for.

**15.** You want to open your own restaurant, but you don't have enough funds. You take out a small business loan of $75,000 and commit to repaying the loan within 7 years. The APR you were provided is 8%. Calculate the monthly payment amount you will need to pay to the lender.

**16.** Ben wants to make repairs in his old house. He's decided to try to do all the work at once instead of gradually, so he takes out a consumer loan of $25,000. He believes that he will be able to repay the loan in 3 years. If the APR is 4.7%, what will Ben's monthly payment amount be?

**17.** Samantha needs surgery. To cover the cost, she takes out a loan of $38,000. The loan was provided for a period of 4 years with an APR of 5.3%. How much does Samantha need to pay monthly for this loan?

**18.** You need a new laptop and decide to buy it on credit. The price of the laptop is $2300. You are offered a one-year loan with an interest rate of 6.2%.

**a.** What will be your monthly payment amount?

**b.** At the end of the loan period, how much will you have paid for the laptop?

**19.** Sheila is buying a new house. The final price of the house after down payment and fees is $140,000. She gets a mortgage for 15 years with an interest rate of 2.9%.

**a.** What is her monthly payment amount?

**b.** At the end of the loan period, how much will she have paid for the house?

**20.** Mike bought a new car and financed $25,000 to make the purchase. He financed the car for 60 months with an APR of 6.5%. Determine each of the following.

**a.** Mike's monthly payment

**b.** Total cost of Mike's car

**c.** Total interest Mike pays over the life of the loan

**21.** Omar wants to purchase three vans for his delivery business. Each van costs $38,000. He wishes to finance the purchase for 48 months and has acquired an APR of 4.5%. Determine each of the following.

**a.** Omar's monthly payment

**b.** Total cost of Omar's vans

**c.** Total interest paid by Omar over the life of the loan

**22.** Jamal bought a new car for $32,000. He paid a 10% down payment and financed the remaining balance for 36 months with an APR of 4.5%. Determine each of the following.

**a.** Jamal's monthly payment

**b.** Total cost of Jamal's car

**c.** Total interest Jamal pays over the life of the loan

**23.** Susan wants to buy a new computer from Banana Computers. The company sells a laptop model for $2650. Susan decides to finance the computer for 24 months at an APR of 12.5%. Determine each of the following.

**a.** Susan's monthly payment

**b.** Total cost of the computer

**c.** Total interest paid over the 24 months

**24.** Calculate the monthly payment for a student loan of $32,000 if the loan is to be repaid over 10 years and the interest rate is 4.2%.

**25.** Omar borrowed $26,000 in order to complete his higher education. The term of the student loan is 5 years, and the APR is 6.33%. Calculate Omar's monthly payment amount.

**26.** After getting a bachelor's degree, Lyna decides to continue her education and get a master's degree. She takes out a student loan of $25,000. Calculate the monthly payment Lyna will be responsible for if the term of the loan is 7 years with an APR of 8.14%.

**27.** A pamphlet handed out during student orientation explains that student loans usually have fixed interest rates and don't have to be repaid until a few months after graduation. The pamphlet gives and example of a student loan of $50,000 that is taken and has to be paid off in 15 years. If the interest rate is 3.67%, what is the monthly payment amount?

**28.** Tommy gets to choose from one of the new car incentives when he purchases his car next week. He can either choose 0.9% APR financing for 48 months or $1000 cash back with a 4.75% APR over 48 months. Compare the two incentives that Tommy has to choose from if the new car he wishes to buy is $32,457 and he has saved a down payment of $3500.

**29.** You want to buy a car and finance $20,000 to do so. You can afford a payment of up to $450 per month. The bank offers three choices for the loan: a four-year loan with an APR of 7%, a five-year loan with an APR of 7.5%, and a six-year loan with an APR of 8%. Which option best meets your needs, assuming you want to pay the least amount of interest?

**30.** Suppose you decide to buy a new house for $270,000. You have saved $30,000 for a down payment, and want to take out a mortgage for the remaining amount. The lender offers you two possible options.

**Option A:** 2.9% APR financing for 240 months

**Option B:** 3.4% APR financing for 180 months

Compare the offers by determining the monthly payment and the total cost of the house for each option.

**31.** You want to upgrade your home appliances. You need $9300 and have saved $2000 so far. For the rest of the amount, you can take out a consumer loan using one of the following options.

**Option A:** 4.8% APR financing for 24 months

**Option B:** 5.9% APR financing for 18 months

Compare the offers by determining the monthly payment and the total cost for each option.

**32.** Linda's parents want to gift her a violin as a birthday present. They choose a model that costs $6250 and make a down payment of $1000. They are offered two loan options for the remaining amount.

**Option A:** 7.2% APR financing for 18 months

**Option B:** 8.6% APR financing for 12 months

Compare the offers by determining the monthly payment and the total cost of the violin for each option.

**33.** Mateo is planning to launch a business and needs an initial capital of $33,000 for his project. He has $8000 saved and plans to take out a loan for the rest of the amount. Assume that he is offered two options for the loan.

**Option A:** 5.6% APR financing for 84 months

**Option B:** 7.1% APR financing for 60 months

Compare the offers by determining the monthly payment and the total amount Mateo will pay to the lender for each option.

**34.** A family is going to buy a new house that costs $195,000. They take out a 30-year fixed-rate mortgage with an APR of 2.857%. The loan requires a down payment of 20% and 1.125 points paid directly to the lender. Additional fees of $1830 will need to be paid at the time of purchase.

**a.** Calculate the required down payment.

**b** Calculate the loan amount.

**35.** Joseph plans to purchase a house for $230,000. He is offered a 30-year fixed-rate mortgage with an APR of 3.169% and a down payment of 14%. He will also need to pay 0.915 points to the lender and $2185 in additional fees.

**a.** Calculate the required down payment.

**b.** Calculate the loan amount.

**36.** Amir's parents take out a 30-year fixed-rate mortgage with an APR of 2.934% to purchase a new house. The house costs $275,000, and the lender requires a down payment of 12%, 1.275 points, and $2350 in additional fees. Determine the amount Amir's parents can expect to pay at closing.

**37.** Martha is purchasing a house for $245,000. She takes out a 30-year fixed-rate mortgage with an APR of 2.968% and a down payment of 16%. The additional fees for the loan are $3015 and the lender requires 0.995 points. Determine the amount Martha can expect to pay at closing.

**38.** Luka wants to buy a new house for $210,000. He plans to take out a 30-year fixed-rate mortgage with an APR of 2.835%. The lender asks him to prepare a down payment of 15% and to pay 1.035 points and $2080 in additional fees.

**a.** Calculate the monthly payments for the loan, not including taxes and insurance.

**b.** Calculate Luka's monthly cost, which will include the loan payment, $180 in property taxes, and $95.55 in home insurance.

**39.** Talia is going to purchase a house for $235,000. She is offered a 30-year fixed-rate mortgage with an APR of 2.916%. A down payment of 16% is required and 0.975 points should be paid directly to the lender. Also, she needs to pay $2215 in additional fees at closing.

**a.** Calculate the monthly payments for the loan, not including taxes and insurance.

**b.** Calculate Talia's monthly cost, which will include the loan payment, $220 in property taxes, and $81.25 in home insurance.

**40.** Thomas and Ashley are purchasing a house for $215,000. They take out a 30-year fixed rate mortgage with an APR of 2.793%. The lender requires a down payment of 18%, 1.125 points paid directly, and $2350 in additional fees. Determine the total cost of the house at the end of the loan period. Include any closing cost required.

**41.** Antonio plans to purchase a house that costs $225,000. He is offered a 30-year fixed-rate mortgage with an APR of 2.896%. A down payment of 15% is required, and 0.975 points should be paid directly to the lender. In addition, Antonio needs to pay $2735 in closing fees. Determine the total cost of the house at the end of the loan period. Include any closing cost required.

**42.** Rachel is purchasing a new camera that costs $3800 for her photography business. Rachel uses a credit card that has an APR of 16.99%.

**a.** How long will it take her to pay off the camera if she makes monthly payments of $75?

**b.** How much will she pay in the long run for the camera if she makes monthly payments of $75?

**c.** How long will it take her to pay off the camera if she makes monthly payments of $150?

**d.** How much will she pay in the long run for the camera if she makes monthly payments of $150?

**43.** Trey is going to buy a new couch for his living room. It costs $1820, and Trey will use a credit card that has an APR of 14.99%.

**a.** Determine how long it will take Trey to pay off the debt if he makes regular monthly payments of $30.

**b.** Determine how long it will take Trey to pay off the debt if he makes regular monthly payments of $80.

**c.** How much can be saved by making monthly payments at the higher amount?

**44.** In order to purchase a new TV that costs $635, Jessica uses a credit card with an APR of 17.33%.

**a.** Determine how long it will take her to pay off the debt if she makes regular monthly payments of $25.

**b.** Determine how long it will take her to pay off the debt if she makes regular monthly payments of $55.

**c.** How much can be saved by making monthly payments at the higher amount?

**45.** Assume that Peter needs to borrow $500 for four weeks in the form of a payday loan. He must pay $20 per $100 borrowed as interest. Calculate the APR on the payday loan.

**46.** Ava is out of money and decides to borrow $400 for two weeks in the form of a payday loan. The amount of interest she will pay is $30 per $100 borrowed. What is the APR on this payday loan?

**47.** Due to unforeseen circumstances, Mike is going to run out of money before his next paycheck. So, he decides to take out a payday loan of $600 for two weeks. If he pays $35 per $100 borrowed, what is the APR on this loan?

**48.** Suppose you urgently need money, so you take out a payday loan of $700 for four weeks. The lender says that the amount of interest you will have to pay is $40 per $100 borrowed. Calculate the APR on this payday loan.

**49.** The following table displays the interest rates for an $8000 monthly installment loan that should be paid off in 2 years based on a borrower's credit score.

| Credit Score | APR |
|---|---|
| 780–850 | 6.1% |
| 740–779 | 8.4% |
| 720–739 | 10.0% |
| 680–719 | 13.2% |
| 620–679 | 15.9% |
| 520–619 | 20.0% |

**a.** Determine the overall cost for a borrower with a credit score of 750.

**b.** Determine the overall cost for a borrower with a credit score of 710.

**c.** Compare the costs of the loan for these two borrowers.

**50.** Suppose you want to borrow $20,000 for 5 years. The following table displays the interest rates based on a borrower's credit score.

| Credit Score | APR |
|---|---|
| 790–850 | 6.1% |
| 750–789 | 8.4% |
| 710–749 | 10.0% |
| 670–709 | 13.2% |
| 600–699 | 15.9% |
| 510–599 | 20.0% |

**a.** Determine the overall cost if your credit score is 700.

**b.** Determine the overall cost if your credit score is 760.

**c.** Compare the costs of the loan for these two credit scores.

### WRITING & THINKING

**51.** What if you won the Powerball Lottery with a jackpot of $150 million? Calculate the amount of money you would receive over a 25 year period with each of the following two options. Which option gives you the most money over the 25 years?

**Option 1:** Taking all the money at once with a 40% penalty, and pay the income tax of 38% on the lump sum, and investing the remaining amount into an account earning 6% interest for 25 years.

**Option 2:** Acquire the money as part of an annuity to be paid out in 25 equal payments over a 25-year period, paying the income tax of 38% on the income from the winnings each year.

**52.** Think about a situation when it is better to take out a personal loan than to pay with a credit card.

**53.** Think about a situation when paying off a loan early may be less profitable than repaying it over time.

## 6.3 PROJECT

## CAR LOANS: BRAND NEW OR PRE-OWNED?

According to the Brookings Institution, approximately 76% of working adults in the United States drive to work alone every day. Since owning a car is a big part of our lives, it is important to understand the true cost involved in a car loan. Brand new cars are more expensive but often can be financed at lower interest rates, while pre-owned vehicles cost less but often require a loan at a higher rate. In this activity, you will explore the difference in cost between financing a new vehicle and a pre-owned one.

Consider two options for purchasing a Honda Fit LX in 2020: one was a brand new 2020 model with a manufacturer's suggested retail price (MSRP) of $17,945,