

Deciding which car and car loan you can afford

In this simulation activity, students calculate monthly installment loan payments and total costs for three different cars to apply a common strategy for purchasing big-ticket items.

Learning goals

Big idea

Installment loans help people purchase big-ticket items by allowing them to make payments over an extended period of time.

Essential questions

- How do installment loans help consumers purchase big-ticket items?
- How does an interest rate affect my monthly payment?

Objectives



- Understand how the purchase price, the annual percentage rate of the loan (APR), and the length of the loan affect monthly payment amounts
- Calculate and compare the monthly costs and total amount paid of three cars that would be purchased using an installment loan

What students will do

- Calculate the monthly payments on an installment loan using varying principals, interest rates, and lengths of time.

KEY INFORMATION

Building block:

-  Executive function
-  Financial knowledge and decision-making skills

Grade level: High school (9-12)

Age range: 13-19

Topic: Borrow (Getting loans)

School subject: CTE (Career and technical education), Math

Teaching strategy: Simulation, Project-based learning

Bloom's Taxonomy level: Apply, Analyze

Activity duration: 75-90 minutes

STANDARDS

Council for Economic Education
Standard IV. Using credit

Jump\$tart Coalition
Credit and debt - Standard 2

- Compare car purchase possibilities and make a reasonable decision given the information provided.
- Reflect on ways to establish responsible loan practices.

Preparing for this activity

- Print copies of all student materials for each student or prepare for students to access them electronically.
- Students should have access to calculators.

What you'll need

THIS TEACHER GUIDE

- Deciding which car and car loan you can afford (guide)
[cfpb_building_block_activities_deciding-which-car-loan-afford_guide.pdf](#)

STUDENT MATERIALS

- Deciding which car and car loan you can afford (worksheet)
[cfpb_building_block_activities_deciding-which-car-loan-afford_worksheet.pdf](#)
- Calculators

Exploring key financial concepts

Most people don't make enough money or have enough in savings to purchase a big-ticket item (like a house or car) with cash. Instead, people often take out installment loans. These loans allow them to make payments, usually each month, until the item is paid off.

The amount due each month depends on several factors, including the cost of the item, the size of the down payment at the time of purchase, the interest rate of the loan, and the length of the payback period. To help reduce the monthly payment amount of a loan, you can choose the lowest purchase price, lengthen the term of the loan, increase the down payment, skip loan add-ons and vehicle options (such as extended warranties or window tinting), or shop for a lower interest rate. But remember, the total cost of your car loan depends on how long you must make payments, not just on your monthly payment. A lower monthly payment may result in a longer payback period, which could increase the total cost of the loan.

You may want to examine your net income and monthly cash flow to determine the monthly payment you can afford. You'll also want to be sure there is room in your budget for both the car loan and the other costs of car ownership, such as taxes and other fees at the time of purchase, and ongoing costs like insurance, gas, annual registration fees, maintenance, and repairs. One rule to live by is to set aside 10-15 percent of your monthly net income to cover transportation costs, but each person should decide what's best for them. For more information about shopping for an auto loan, visit: <https://www.consumerfinance.gov/consumer-tools/getting-an-auto-loan/plan-to-shop-for-your-auto-loan/>.

TIP

Because financial products, terms, and laws change, students should be encouraged to always look for the most up-to-date information.

Teaching this activity

Whole-class introduction

- Distribute the “Deciding which car and car loan you can afford” worksheet.
- Be sure students understand key vocabulary:
 - **Interest rate:** A percentage of a sum borrowed that is charged by a lender or merchant for letting you use its money. It does not reflect fees or any other charges you may have to pay for the loan.
 - **Loan:** Money that needs to be repaid by the borrower, generally with interest.
 - **Net income:** The amount of money you bring home in your paycheck after taxes and other deductions are taken out; also called take-home pay.
 - **Principal:** In the lending context, principal is the amount of money that you originally received from the creditor and agreed to pay back on the loan with interest. In the investment context, it is the amount of money you contribute with the expectation of receiving income.
 - **Term:** A fixed or limited period of time for which something lasts or is intended to last (for example, a five-year loan, a three-year certificate of deposit, a one-year insurance policy, a 30-year mortgage).
- Introduce students to the simulation activity described on the worksheet. You can read the scenario together as a whole class, or have students read on their own.

TIP

Visit CFPB’s financial education glossary at consumerfinance.gov/financial-education-glossary/.

A tip for differentiating instruction

Acquiring key vocabulary is critical for both English language learner (ELL) students and students working below grade level. These students may benefit from engaging and interactive vocabulary strategies such as drawing icons to capture the meaning of key terms or acting out words.

Reading aloud and having students read along is an effective strategy for supporting ELL students and students working below grade level. It supports the growth of their literacy skills, while also building their content knowledge.

- Ask students to talk with another student about why it might be wise to designate 10–15 percent of net income to transportation costs. Bring students back together and ask several students to share their thinking.
 - Explain that in this activity scenario, they will calculate their transportation budget as 14 percent of their net income.
- Introduce the process of calculating monthly payments for an installment loan. Explain that students will use an oversimplified interest formula to estimate the total interest accrued in order to determine the total amount of their loan (which is interest + principal).
 - The simple interest formula is: Interest = Principal x Rate x Time ($I = P \times R \times T$), where time is equal to the term of the loan.
 - Demonstrate the steps by modeling the calculations for Car #1, with $T = 4$ years.
 - Formula: $I = P \times R \times T$
 - Price of the car (principal) = \$13,791
 - Rate = 5%
 - Time = 4-year loan
 - Total interest: $\$13,791 \times 0.05 \times 4 = \$2,758.02$

Please note: This is an oversimplified approach to determining interest. The actual math will likely be more complicated.

Individual or group work

- Students can work individually or with a partner to complete the “Deciding which car and car loan you can afford” worksheet.
- Ask students to first determine their monthly transportation budgets to see how much they can afford for a car payment.
 - As they’re working on their budgets, walk around the room to ensure students are on the right track.

- Once students have a clear sense of what they can spend, instruct them to complete the calculations to determine the monthly payments for all three cars and all three time periods.

A tip for differentiating instruction

Provide students with the answer guide and have them focus on analyzing these calculations to choose the car and the loan options they think best meet their needs and budgets.

Wrap-up

- Instruct students to answer the reflection questions.
- Ask students to discuss their answers. Specifically, ask students to share their comparisons of the total cost of each of the car loans.
- Optional: Ask students to share their choices so you can tally the number of students who chose each option and discuss the trade-offs of each option available.

Suggested next steps

Consider searching for [CFPB activities](#) that address topics of borrowing, including getting loans and managing credit.

Measuring student learning

Evidence of student learning can be measured as students calculate the estimated monthly payments and total cost for each of the three cars to identify which best fits their budget. Use the answer guide below to facilitate discussion and to help with your feedback. It is important to note that this is an oversimplified example and that calculating actual interest may be more complicated for a loan of multiple periods.

Answers to reflection questions can provide a picture of students' broader understanding of things to consider when making a big-ticket purchase, including the variables that affect monthly payments and the overall cost of a loan.

Keep in mind that students' answers on reflection questions may vary, as there may not be only one right answer. The important thing is for students to have reasonable justification for their answers.

Answer guide

The answers below represent the results of the suggested mathematical calculations for the oversimplified approach.

MONTHLY TRANSPORTATION BUDGET FOR \$4,000 PER MONTH NET INCOME

14% of net monthly income ($\$4,000 \times .14$)	\$560
Minus car insurance	- \$100
Minus gas	- \$150
Minus savings for future car expenses	- \$50
Amount remaining (monthly payment you can afford)	\$260.00

CAR #1 MONTHLY PAYMENT CALCULATIONS

Length of loan (term)	4 years (48 mos.)	5 years (60 mos.)	6 years (72 mos.)
Price of the car (principal)	\$13,791	\$13,791	\$13,791
Interest rate	5%	5%	5%
Amount of interest you'd pay ($I = P \times R \times T$)	\$2,758.20	\$3,447.75	\$4,137.30
Total cost for this car (price of car + loan interest)	\$16,549.20	\$17,238.75	\$17,928.30
Monthly estimated payment (total cost \div total # of months to pay off loan)	\$344.78	\$287.31	\$249.00

CAR #2 MONTHLY PAYMENT CALCULATIONS

Length of loan (term)	4 years (48 mos.)	5 years (60 mos.)	6 years (72 mos.)
Price of the car (principal)	\$14,712	\$14,712	\$14,712
Interest rate	5%	5%	5%
Amount of interest you'd pay ($I = P \times R \times T$)	\$2,942.40	\$3,678.00	\$4,413.60
Total cost for this car (price of car + loan interest)	\$17,654.40	\$18,390.00	\$19,125.60
Monthly estimated payment (total cost ÷ total # of months to pay off loan)	\$367.80	\$306.50	\$265.63

CAR #3 MONTHLY PAYMENT CALCULATIONS

Length of loan (term)	4 years (48 mos.)	5 years (60 mos.)	6 years (72 mos.)
Price of the car (principal)	\$14,712	\$14,712	\$14,712
Interest rate	4%	4%	4%
Amount of interest you'd pay ($I = P \times R \times T$)	\$2,353.92	\$2,942.40	\$3,530.88
Total cost for this car (price of car + loan interest)	\$17,065.92	\$17,654.40	\$18,242.88
Monthly estimated payment (total cost ÷ total # of months to pay off loan)	\$355.54	\$294.24	\$253.37