

# Determining how down payments affect loans

Students calculate how monthly payments for installment loans change based on the size of the down payment.

## Learning goals

### Big idea

Installment loans can 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 the down payment amount affect monthly payments and total costs for an installment loan?

### Objectives



- Understand how down payments affect total cost and monthly payment amounts
- Calculate how down payment amounts change the overall cost of an item as well as monthly payments

### What students will do

- Calculate the amount to be financed to buy a car after a down payment is made.
- Determine the monthly payment and total cost of a car based on three different down payments.

#### 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: 45-60 minute

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#### STANDARDS

Council for Economic Education  
Standard IV. Using credit

Jump\$tart Coalition  
Credit and debt - Standard 2

- Analyze costs or other factors to determine which down payment to make.
- Reflect on why they made that decision.

## Preparing for this activity

- While it's not essential, having students complete the "[Deciding which car and car loan you can afford](#)" activity before completing this one can make it a more meaningful experience.
- 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

- [Determining how down payments affect loans \(guide\)](#)  
[cfpb\\_building\\_block\\_activities\\_determining-how-down-payments-affect-loans\\_guide.pdf](#)

#### STUDENT MATERIALS

- [Determining how down payments affect loans \(worksheet\)](#)  
[cfpb\\_building\\_block\\_activities\\_determining-how-down-payments-affect-loans\\_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,

### TIP

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

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/>.

## Teaching this activity

### Whole-class introduction

- Distribute the “Determining how down payments affect loans” 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.
  - **Principal:** The money that you originally agreed to pay back on a loan.
  - **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

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Visit CFPB’s financial education glossary at [consumerfinance.gov/financial-education-glossary/](https://www.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.

- Before students complete the worksheet, introduce the process of calculating monthly loan installment payments. Show how they'll calculate the total accrued interest in order to determine the total amount of their loan (which is interest + principal).
  - The formula is:  $I = \text{Principal} \times \text{Rate} \times \text{Time}$  ( $I = P \times R \times T$ ), where time is equal to the term of the loan.
  - To determine the number of monthly payments, they should multiply 12 by the number of years.

Please note: This is an oversimplified approach to determining interest. Explain to students that the actual math will likely be more complicated, but this will help them understand the concept of interest.

- Demonstrate the steps involved by guiding students through the calculations for a \$400 down payment. This helps ensure students complete the steps in the correct order.

### Individual or group work

- Students can work individually or with a partner to complete the "Determining how down payments affect loans" worksheet.
- Ask students to complete the calculations to determine the monthly payments and total costs for the remaining down payment options.

### Wrap-up

- Instruct students to write a reflection paragraph discussing which down payment option they chose and what factors they considered when making this decision.
- Ask them to discuss the effect of the down payment on the total cost of the car loan and monthly payments.

- If time permits, wrap up the activity by having student identify their choices so you can tally the number of students who chose each one and discuss the trade-offs of each option available.

## Suggested next steps

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

## Measuring student learning

Evidence of student learning can be measured as students calculate the estimated monthly payments and the total cost for each of the three down payment options to identify which fits best into 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.

Student reflection can provide a picture of students' broader understanding of the trade-offs involved when making a big-ticket purchase, including providing a down payment (using saved money) and paying more overall to have lower monthly payments.

**Keep in mind that students' answers to reflections may vary.** 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.

	Option 1	Option 2	Option 3
Price of car	\$19,400	\$19,400	\$19,400
Down payment	\$400	\$2,000	\$5,000
Principal (price of the car minus down payment)	\$19,000	\$17,400	\$14,400
Interest rate	8%	8%	8%
Length of loan (term)	5 yrs (60 mos.)	5 yrs (60 mos.)	5 yrs (60 mos.)
Estimated interest you'd pay ( $I = P \times R \times T$ )	\$7,600	\$6,960	\$5,760
Total cost for this car (price of car + interest)	\$27,000	\$26,360	\$25,160
Estimated monthly payment ([principal + interest] ÷ # months of loan)	\$443.33	\$406.00	\$336.00

### Answer to Option 3 with a 5% interest rate and a four-year term:

Estimated interest = \$2,880

Total cost for this car = \$22,280

Monthly payment = \$360