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 a loan's total cost and monthly payment amounts

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

NOTE

Please remember to consider your students' accommodations and special needs to ensure that all students are able to participate in a meaningful way.

KEY INFORMATION

Building block:

⚙ Executive function

Ⓨ Financial knowledge and decision-making skills

Grade level: High school (9–12)

Age range: 13–19

Topic: Borrowing (Getting loans, Managing credit)

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

Teaching strategy: Project-based learning, Simulation

Bloom's Taxonomy level: Apply, Analyze

Activity duration: 45–60 minutes

National Standards for Personal Financial Education, 2021
Managing credit: 8-3, 12-2, 12-6, 12-10

These standards are cumulative, and topics are not repeated in each grade level. This activity may include information students need to understand before exploring this topic in more detail.

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.
- 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 necessary, completing the "Calculating loan payments" activity or the "Deciding which car and car loan you can afford" activity first may make this one more meaningful.

☐ Print copies of all student materials for each student, or prepare for students to access them electronically.

☐ Make sure students 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

TIP

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

the time of purchase, the interest rate of the loan, and the length of the repayment period. To help reduce the monthly payment amount of a loan – for example, for a car – 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), and 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 repayment 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/auto-loans/.

Teaching this activity

Whole-class introduction

- Ask students if they or someone they know has a car or home loan.
  - If they or someone they know does have that type of loan, ask them whether a down payment was made.

- Read the "Exploring key financial concepts" section to students.
- Be sure students understand key vocabulary:
  - **Credit:** Borrowing money, or having the right to borrow money, to buy something. Usually it means you're using a credit card, but it might also mean that you got a loan.

  - **Down payment:** Initial cash payment made when something is bought on credit, such as a home or vehicle. The down payment reduces the amount of money that is borrowed.

  - **Interest rate:** A percentage of a sum borrowed that is charged by a lender or merchant for letting you use its money.

  - **Loan:** Money that needs to be repaid by the borrower, generally with interest.

TIP

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

- **Net income:** Amount of money you receive 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 lender and agreed to pay back on the loan with interest.

- **Repayment:** Paying back money you borrowed.

- **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 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 simple interest formula is: Interest = Principal x Rate x Time (I = P x R x T), where time is equal to the term of the loan.

  - To determine the number of monthly payments, they should multiply the number of years by 12.

  - Please note: This is a simplified 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.

Individual or group work

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

Wrap-up

- Ask students to discuss how the down payment affects the total cost of the car loan and monthly payments.
- If time permits, ask students to share their reflection paragraphs.

BUILDING BLOCKS TEACHER GUIDE

Determining how down
payments affect loans   **4 of 5**
Summer 2022

Suggested next steps

Consider searching for CFPB activities that address the topic of borrowing, including getting loans and managing credit. Suggested activities include "Deciding which car and car loan you can afford" and "Role-playing borrowing and lending".

Measuring student learning

Students' answers on their worksheets and during discussion can give you a sense of their understanding.

This answer guide provides possible answers for the "Determining how down payments affect loans" worksheet. **Keep in mind that students' answers 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 using the simplified 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 x R x 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