

This is an exercise in computing the payment on a hypothetical loan and comparing it with the numbers that financial services websites give you. Do the following:

1. (2pts) Decide on an amount and purpose for a hypothetical loan (e.g. buying a car, house, starting a business, etc.) Choose over how many years it should be repaid. Standard choices for each category are suggested: 15, 20, 30 years for a home, 3, 4, 5 years for a car, etc.

*Buying a new car for \$18,000,
loan for 3 years*

2. (7pts) Find a financial services website that computes a monthly payment based on a loan amount. Many banks' or mortgage originators' websites have mortgage calculators, for example. Use their calculator and the actual interest rate that they offer to find the monthly payment on your hypothetical loan. Print out the webpage, showing loan amount, term, interest rate and payment and attach it to this one. Try to keep it to just one sheet.

(Attachment) (see last page)

3. (6pts) Using our loan formula from 3.5, compute (write the computation here) the monthly payment on your hypothetical loan. Use the interest rate that you found on the website. The frequency of compounding is typically monthly. Does your number agree with the information on the website you found?

$$18000 = R \frac{1 - \left(1 + \frac{0.0599}{12}\right)^{-12 \cdot 3}}{\frac{0.0599}{12}}$$

$$18000 = R \cdot 32.87\dots$$

$$R = \frac{18,000}{32.87\dots} = 547.51$$

4. (7pts) Find the balance of the hypothetical loan after half of all payments have been made.

Amount owed = present value of remaining payments

$$P = 547.51 \cdot \frac{1 - \left(1 + \frac{0.0599}{12}\right)^{-12 \cdot 1.5}}{\frac{0.0599}{12}}$$

$$P = 547.51 \cdot 17.174$$

$$= 9402.99$$

5. (8pts) Write an amortization schedule for the four payments after half of all payments have been made. (For example, if it's a 60-month loan, consider payments 31, 32, 33 and 34.)

	payment	toward interest	toward principal	balance
				9402.99
18				
→ 19	547.51	46.94	500.57	8902.42
20	547.51	44.44	503.07	8399.35
21	547.51	41.93	505.58	7893.77
22	547.51	39.40	508.11	7385.66

$$9402.42 \cdot \frac{0.0599}{12} = 46.94$$

$$547.51 - 46.94 = 500.57$$

$$9402.42 - 500.57 = 8902.42$$

[Capital One Home](#)[Find Products](#)[Account Access](#)[Customer Service](#)[Enter your five-digit ZIP](#)

auto finance

S

[Auto Loans Home](#) [New Car Loans](#) [Used Car Loans](#) [Auto Refinance](#) [Blank Check](#) [Auto Buying Program](#) [FAQs](#)

Help Center

[Overview](#)[Auto Buying Guide](#)[Selling Your Car](#)[FAQs](#)[Loan Calculators](#)[Glossary](#)

Auto Loans - Monthly Payment Calculator

APR* %Loan term monthsLoan amount \$ [Calculate](#)

Your Loan Results

Based on the values you entered, here is the monthly payment:

APR*	Loan Term	Loan Amount	Monthly Payment
5.99%	36 months	\$18,000.00	\$547.51

[Apply Now](#)

Lock in today's rate for 45 days.

The chart below shows our available loan types and terms and the Annual Percentage Rate (APR) for each.

Loan Type	30 – 36 mos APR as low as*	37 – 60 mos APR as low as*	61 – 72 mos APR as low as*
New and Used Auto Loans			
Dealer Purchase: New	5.99 %	6.35 %	6.99 %
Dealer Purchase: Used	6.65 %	6.95 %	7.59 %
Person-to-Person: Used	9.05 %	9.25 %	10.05 %
Refinancing	7.20 %	7.20 %	7.70 %
Lease Buyout	8.55 %	9.05 %	9.65 %
Motorcycle Loans			
Dealer Purchase: New	9.15 %	9.75 %	
Dealer Purchase: Used	9.95 %	10.75 %	
Person-to-Person: Used	10.75 %	11.49 %	

Auto loans online

Fill out the short online application and get a response within minutes.

[Apply Now](#)2008
Auto
Buying
GuideChoose the car for you
Learn useful car-buying tips
Get an auto loan before you shop[Download PDF](#)[Learn more](#)

Other Auto Financing Products

[Refinance your auto loan](#)[Motorcycle loans](#)[Person-to-Person loans](#)[Sell your car online](#)

Other loan calculators

[Monthly Payments](#)

Compute your monthly car payment.

[Loan Amount](#)

How much can you afford?