

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

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

$$547.51 - 46.94 = 500.57$$

$$9402.42 - 500.57 = 8902.42$$

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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

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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*
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New and Used Auto Loans

Dealer Purchase: New	5.99 %	6.35 %	6.99 %
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Dealer Purchase: Used	6.65 %	6.95 %	7.59 %
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Person-to-Person: Used	9.05 %	9.25 %	10.05 %
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Refinancing	7.20 %	7.20 %	7.70 %
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Lease Buyout	8.55 %	9.05 %	9.65 %
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Motorcycle Loans

Dealer Purchase: New	9.15 %	9.75 %
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Dealer Purchase: Used	9.95 %	10.75 %
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Person-to-Person: Used	10.75 %	11.49 %
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How much can you afford?