

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 house with a \$195,000 loan  
paid off over 20 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) *Interest rate 6.125%*

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?

$$195,000 = R \frac{1 - \left(1 + \frac{0.06125}{12}\right)^{-12 \cdot 20}}{\frac{0.06125}{12}}$$

$$195,000 = R \cdot \frac{1 - (1.005109\ldots)^{-240}}{0.005109\ldots}$$

$$195,000 = R \cdot 138.186\ldots$$

$$R = \frac{195,000}{138.186\ldots} = 1411.14 \quad \text{agrees with website}$$

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

$$P = R \cdot \frac{1 - \left(1 + \frac{0.06125}{12}\right)^{-12 \cdot 10}}{\frac{0.06125}{12}}$$

$$= 1411.14 \cdot \frac{1 - 1.005104^{-120}}{0.005104}$$

$$= 1411.14 \cdot 89.566 \dots$$

$$= 126,390.45$$

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.)

→ each one 1411.14

Payment	toward interest	toward principal	principal
120	$\left(126,390.45 \cdot \frac{0.06125}{12}\right)$ ↓	$(1411.14 - 645.18)$ etc. ↓	126,390.45
121	645.18	766.03	125,624.42
122	641.21	769.93	124,854.49
123	637.28	773.86	124,080.63
124	633.33	777.81	123,302.82



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February 22, 20

## Home Purchase - Express Rate Quote Results

Go Direct. Save Time and Money

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- Up-Front pricing delivering clarity and certainty before you commit to the loan process.
- No up-front fees, no-obligation application.
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Contact Us



Home Loan  
1-800-4



Learn about  
Up Front F

Fixed Rate

Adjustable Rate

Interest Only

Compare Selected

[30-Year Fixed](#) | [25-Year Fixed](#) | **[20-Year Fixed](#)** | [15-Year Fixed](#) |

February 22, 2007 11:24:59 AM EST [Points or Credit](#) + [Total Value Price](#) = [Total Lender Costs](#)

### 20-Year Fixed

Select Loans to Compare	Interest Rate	APR	Monthly Payment	Points or Credit	Total Value Price	Total Lender Costs	
<input type="checkbox"/>	5.500 %	5.924 %	\$ 1341.38	2.125	\$ 995	\$ 5,138.75	APPLY NOW
<input type="checkbox"/>	5.625 %	5.988 %	\$ 1355.19	1.625	\$ 995	\$ 4,163.75	APPLY NOW
<input type="checkbox"/>	5.750 %	6.020 %	\$ 1369.07	0.875	\$ 995	\$ 2,701.25	APPLY NOW
<input type="checkbox"/>	5.875 %	6.084 %	\$ 1383.03	0.375	\$ 995	\$ 1,726.25	APPLY NOW
<input type="checkbox"/>	6.000 %	6.180 %	\$ 1397.05	0.125	\$ 995	\$ 1,238.75	APPLY NOW
<input type="checkbox"/>	<b>6.125 %</b>	6.291 %	<b>\$ 1411.15</b>	0.000	\$ 995	\$ 995	APPLY NOW
<input type="checkbox"/>	6.250 %	6.339 %	\$ 1425.31	-0.625	\$ 995	\$ -223.75	APPLY NOW
<input type="checkbox"/>	6.375 %	6.418 %	\$ 1439.56	-1.000	\$ 995	\$ -955	APPLY NOW
<input type="checkbox"/>	6.500 %	6.481 %	\$ 1453.88	-1.500	\$ 995	\$ -1,930	APPLY NOW
<input type="checkbox"/>	6.625 %	6.560 %	\$ 1468.26	-1.875	\$ 995	\$ -2,651.25	APPLY NOW
<input type="checkbox"/>	6.750 %	6.654 %	\$ 1482.71	-2.125	\$ 995	\$ -3,148.75	APPLY NOW
<input type="checkbox"/>	6.875 %	6.748 %	\$ 1497.25	-2.375	\$ 995	\$ -3,636.25	APPLY NOW
<input type="checkbox"/>	7.000 %	6.874 %	\$ 1511.84	-2.375	\$ 995	\$ -3,636.25	APPLY NOW
<input type="checkbox"/>	7.125 %	7.000 %	\$ 1526.51	-2.375	\$ 995	\$ -3,636.25	APPLY NOW

Home Purchase

Loan Type

Fixed Rate

Loan Amount

195000

Home Value

250000

Use of Property

Primary home

Property Type

Single family

Expected Years

Holding Loan 10

Property Location

KY

County

-- Select One --

document income

Yes  No

GET RATES >

### COMPARE SELECTED LOANS

Customize your [rate protection](#) by selecting the number of days for lock.

Select a different number of days:

### Rate Quote Assumptions

- Rate quote is for a loan with impounds.
- These rates are for a lock period of 30 days.
- This is a rate quote for a Home Purchase (found a home) with a loan amount of \$ 195,000 and a property value of \$ 250,000.
- The property is a Single Family in KY being used as a Primary Residence.
- Mortgage Terms and ARM Disclosures, [View Information on Mortgage Terms and Arm Disclosures](#)
- The above rates are quotations only. This is not a credit decision or a commitment to lend; rates and terms