



# HOUSE PROJECT

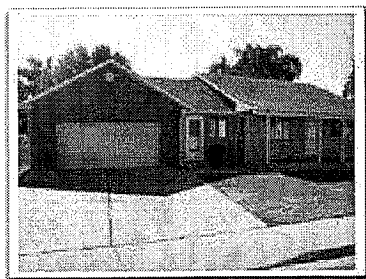
HEATHER JONES

NOVEMBER 1, 2010

MATH 1030 - 008

**KSL Homes**

Utah's Fastest Growing Real Estate Website



## Fantastic Orem Rambler - Price Just Reduced

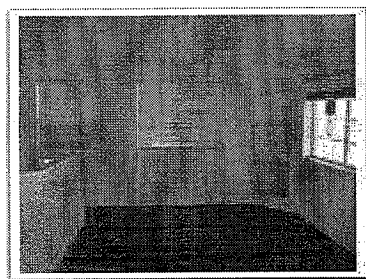
**\$20k!**

334 S. 800 E.  
Orem, UT 84097

**\$185,000**

### Property Details:

**Prop Type:** Not Specified  
**Sq. Feet:** 2820  
**Acres:** 0.21  
**Year Built:** 1989  
**Bedrooms:** 4  
**Bathrooms:** 2  
**Cooling:** Central Air  
**Heating:** Forced Air  
**Garage:** 2

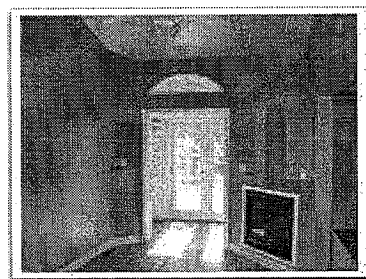


### Seller Contact info:

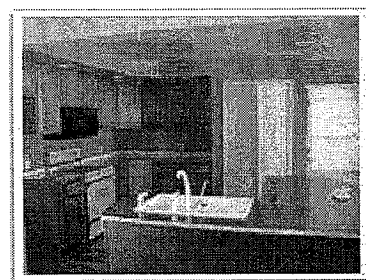
Name: Chris  
Home Phone: 801-885-4487

### Description:

This wonderful Orem home has new carpet, new paint and new appliances!!! 4 bedrooms, 2 bathrooms and 2820 total sq ft. Situated on a nice-sized .21 acre lot. Sellers willing to pay an equivalent of 3.5% of purchase price towards buyer's closing costs on deals that close before December 21, 2010! Eligible for HomePath Financing for as little as 3% down! This home is Bank Owned (not a Short Sale). Contact me today for a showing to see for yourself!

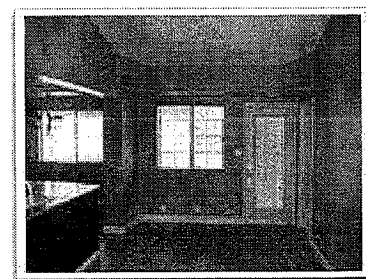


If this property does not appeal to you, then please visit my website at [www.yourUTrealtor.com](http://www.yourUTrealtor.com) to search all available properties in Utah for FREE with no obligation. You can also contact me and I will provide you with an extensive property search based on your search criteria for FREE!!



Chris Coates  
801-885-4487  
<http://www.yourUTrealtor.com>

Prudential Utah Elite Real Estate



## HOUSE PROJECT

This project started with contacting a mortgage lending institution and asking a number of questions about buying a home. I spoke with Mountain America Credit Union. I received information on the current interest rates for 15-year and 30-year mortgages as well as down payment requirements on various loans. I found a property in Orem, Utah with a listed price of \$185,000. With a 10% down payment of \$18,500 the loan amount I am writing about is \$166,500.

### 15-year Mortgage Analysis

The rate for a 15-year mortgage is 3.50%. The monthly payment is \$1190. The total amount paid for the 15-year \$166,500 mortgage will be \$214,200. This is \$47,700 more than the price of the house. This results in a relative difference of 27%. In other words, what is paid on the mortgage ends up being 27% more than what the house is valued at.

By dropping the interest rate to 3.25%, the total amount paid for a 15-year mortgage will be \$210,600. The monthly amount for principal and interest would be \$1170. This is \$44,100 more than the price of the house. This results in a relative difference of 26%. In other words, what is paid on the mortgage ends up being 26% of the value of the house. If I could get a mortgage rate that is one-quarter of one percent lower it would save me \$3600. That would definitely be worth it.

The biggest advantage of the 15-year mortgage is that you pay off the obligation sooner so you will free up money that can be used for other purposes. The issue of a larger payment makes it hard for some people to choose a shorter term mortgage, but if you can afford it you are actually being forced to save money by paying the larger amount. Another advantage is that a 15-year mortgage usually is a lower interest rate. Speaking with the Mountain America loan officer I found out that you should spend no

more than about 30% of your monthly income on a mortgage payment. This is important information when deciding what type of mortgage to apply for.

### 30-year mortgage Analysis

The interest rate for a 30-year mortgage is currently 4.125%. The monthly payment for the 30-year mortgage is \$807. The total amount paid for the 30-year \$166,500 mortgage is \$290,520. This is \$124,020 more than the price of the house. This results in a relative difference of 74%! In other words, what is paid on the mortgage ends up being 74% of the value of the house. (Both the 15-year and 30-year relative differences reflect the profit the mortgage company makes!) If \$50 is added toward the principal each month the mortgage could be paid off three years earlier. If the first payment is in October 2010, the last payment would be August 2037 instead of October 2040. The table shows how the principal decreases faster with an extra \$50/month:

---

	<u>Payment</u>	<u>Interest</u>	<u>Principal paid</u>	<u>New Balance</u>
Payment 1	857(807)	572	285(235)	166,215(166,265)
Payment 2	857(807)	571(572)	286(235)	165,929(166,030)
Payment 3	857(807)	570(571)	287(236)	165,645(165,744)

### Yellow =WITHOUT \$50 EXTRA

If you took the whole 30 years to pay off the mortgage you would pay \$290,520. By adding \$50 a month and paying off the loan 3 years and two months early you pay a total of \$276,092. That is a savings of \$14,582! This is a good return on the \$50 a month investment. Also, there is a potential for increase in the value of the property which would also be an increased return on the investment.

The most obvious advantage of the 30-year mortgage is a lower payment which could allow you to buy a more expensive home. That could be offset by higher taxes and home owner's insurance premiums so it may not be an advantage. There is the possibility of paying more on the principal and paying the loan off sooner while not being required to make that extra payment which is a nice flexibility to a 30-year loan.

### **Renting vs. Buying**

Renting an apartment allows you to be free of the worry of home repairs since the landlord is responsible for maintenance, inside and out. Shovelng walks and drive areas when it snows and watering flower beds and lawn areas are usually done by the apartment management. Large ticket items like stoves and refrigerators are not your problem if they need to be replaced, but you have to settle for what the apartment management is willing to provide.

Renting a home, rather than an apartment, may come with some maintenance requirements. Renting a home can give you some of the advantages of home ownership like more space for a family and a yard. Not being tied to a home that you have to sell if you need to relocate is also a plus of renting. Whether renting an apartment or a home, the rent you pay does not provide you any investment opportunity that buying may give you.

### **Tax Benefits**

The tax benefit of buying a home is the fact that if you itemize your tax your return you can take the interest payments off your adjusted gross income lowering your taxable income. You can also take the property taxes as a deduction which you cannot do when you rent.

House Project  
Heather Jones  
1 November 2010

The real estate market today can be a risky investment unless you research carefully the property you are interested in. You must be able to cover the monthly payment plus property taxes and home owners insurance, which is required by all mortgage companies to cover their investment (your home) from damage. The current amount of real estate foreclosures show that taking too big a risk can result in losing your home.

### **Wrap-up**

This project gave me insight into the differences between buying a home and renting an apartment. Having the money for a down payment is a stumbling block that may prevent many people from being able to obtain a mortgage. My situation currently is best suited by renting. I do not have money for a down payment and my income would not support a mortgage payment plus insurance, taxes and upkeep.

# Math 1030

## Group Project: Buying a House

(Work in groups of two or three.)

Select a house from a real estate booklet, newspaper, or website. Cut out the picture and/or description of this house and attach it to this lab. **Assume you are paying the asking price for the house.** (Pick something reasonable, between \$80,000 and \$200,000.)

Its listed selling price is 185,000

**Down Payment:** Assume that you are going to make a 10% down payment on the house. Determine the amount of your down payment and the balance to finance.

Down Payment 18,500 ✓

Mortgage Amount \$166,500.00 ✓

**Interest Rates:** Consult a lending institution and ask for its interest rates for both a 15\_year and a 30\_year fixed rate mortgages with no "points" or other charges for the loan.

Name of lending institution Mountain American Credit Union

Rate for a 15-yr mortgage 3.50% ✓

Rate for a 30-yr mortgage 4.125% ✓

**Monthly Payment:** Calculate the monthly payment for both loans (rounding up to the nearest cent) by using the following formula from pg. 244 of your text. Show your work.

$$PMT = \frac{P \times \left(\frac{APR}{n}\right)}{\left(1 + \frac{APR}{n}\right)^{-ny}}$$

$$166500 \quad 0.035 \quad 15$$

$$1 + 0.035 \div 12 = 1.002916667$$

$$xy(-12 \times 15) = 0.592667568$$

$$1 - 0.592667568 = 0.407332432$$

$$166500 \times 0.035 \div 12 \div 0.407332432 = 806.94$$

$$= 1190.27$$

15-yr Monthly Payment \$1190.28 ✓

30-yr Monthly Payment \$807 ✓

\$806.94

This monthly payment covers only the interest and the principal on the loan. It **does not cover** insurance or taxes on the property.

**Amortization Schedule:** In order to summarize all the information regarding the amortization of a loan, construct a schedule that keeps track of the period (month), the principle paid, the interest, and the unpaid balance. A spreadsheet program is an excellent tool to develop an amortization schedule. We can use a free amortization spreadsheet on the web.

30\_Year Mortgage

Period Payment #	\$Payment	\$Interest	Principle Paid	New Balance
1	807	572	235	166,265
2	807	572	235	166,030
90	807	489	318	141,805
150	807	416	391	120,556
250	807	256	551	73,807
300	807	152	655	43,682
360	807	3	804	\$0.00
Total	290,520 ✓	124,020 ✓	166,500	-----

Find the number of the first payment when more of the payment goes toward principal than interest. 403150

Payment number 160 ✓

How does the amount of total interest paid compare with the amount of the mortgage? Use sentences to give both the absolute comparison and the relative comparison.

The total amount paid principal and interest with a monthly payment of \$807 is \$290,520. This is \$124,020 more than the selling price of \$166,500 minus the 20% down (\$133,200). Relatively speaking, that is a 74% difference in what is paid vs. the loan amount.

Suppose you paid an additional \$50 towards the principal each month. How does this change the length of time needed to pay off the 30 yr loan and the total amount paid? Be specific!

By adding \$50 a month to the \$807 payment the principal will be lowered by \$50 more month than if I paid the calculated amount. This mean that the amount that the interest is figured on will be lower saving me money. If the first payment is in october 2010 the last payment would be august 2037 which will be three years earlier. (see paper for detailed example)

Work with your information. Experiment, have fun, and learn!

**Observations and Conclusions:**

Use a word processor to write a <sup>two</sup> ~~one~~-page paper summarizing your observations about buying a house.

The web address is: <http://list.realestate.yahoo.com/re/calculators/amortization.html>  
 Enter the amount of the loan, i.e. the selling price minus the down payment, the interest rate you've found, and the appropriate number of years. You should also view the results as "full."

Copy the appropriate information to your own amortization schedules below for each of your proposed loans and answer the questions. Of course you will know which month corresponds to the first and second pay periods, but you will need to think a bit to find the corresponding months for the other periods.

15 Year Mortgage

Period Payment #	\$ Payment	\$ Interest	Principle Paid	New Balance
1	1190	486	704	165795
2	1190	484	706	165089
50	1190	378	812	128628
90	1190	277	913	94099
130	1190	164	1026	55303
150	1190	103	1087	34143
180	1190.28	3	1187	\$0.00
Total	214250.8	47700	166500	-----

Think about those totals.

The total principle paid is the same as the amount of the loan.

The total amount paid is the number of payments multiplied times the amount of each payment.

The total interest paid is the total amount paid minus the total principle paid.

Find the number of the first payment when more of the payment goes toward principal than interest.

Payment number 1 ✓

How does the total amount of interest paid compare with the amount of the mortgage?

Use sentences to give both the absolute comparison and the relative comparison.

The 15-year mortgage total amount paid is \$217,200 which \$47,000 more than the principal owed. The amount paid is 27% more with interest than if you only paid back the principal.

Suppose you could get an interest rate that is one-quarter of a percent less than the one you have.

By how much would this lower the monthly payment on the 15 yr loan, and how much would it save on the total cost of the loan?

If I got a lower rate of 3.25% it would lower the monthly payment to \$170. The total cost of the loan would be \$210,600 which would save me \$3600!