Chapter 8.7: The Cost Of Home Ownership

§1 The Mortgage

The word mortgage literally means ‘death note’ in Latin. Some people may think a mortgage is just that – the thought of having that much debt seems overly burdensome to them. A mortgage is simply a long-term installment loan for the purpose of buying a home. If payments are not made on the loan, then the lender will take possession of the property.

The down payment is the portion of the sale price of the mortgage that the buyer initially pays to the seller. This is usually a percentage of the sale price. The amount of the mortgage then is the amount financed – the difference between the selling price and the down payment. A point is a one-time charge that is equal to 1% of the loan amount. This is pretty much a fee that must be paid. Hence to calculate the monthly payment for this installment loan, we must first calculate how much the down payment will be. Next we calculate how much will be financed. Then find the value of the points that must be paid. Finally we can use the formula for installment loans to calculate the monthly payment.

The formula was
\[
PMT = \frac{P \left( \frac{r}{n} \right)}{1 - \left(1 + \frac{r}{n}\right)^{-nt}}
\]

Let’s say a home is listed at $250,000. The down payment is 10% and the bank requires 2 points at closing. Find the monthly payment for a 30-year loan at 5%.

First calculate the down payment. 10% of $250,000 is $25,000. This is the amount that must be paid up front. Hence the amount financed is $250,000 - $25,000 = $225,000. This is the amount of the mortgage.

Next calculate the points. Remember, each point is simply the percentage of the amount financed. Hence 2 points means 2% of the amount of the mortgage. 2% of $225,000 is $4500 – you can think of this as the fee that is being paid to the bank.

Next use the PMT formula to calculate the monthly payment. Here, \( t = 30, n = 12, r = 0.05, \) and \( P = $225,000. \) You should get an answer of $1207.85. Let’s round this to the nearest dollar to get $1208.

Note that there are 360 equal payments of $1208 to be made. How much was really paid for the home? $1208 times 360 is $434,880. This means that the interest was $209880!

PRACTICE

1) Clara sees a home listed for $160,000. She can afford a 5% down payment and must pay 2 points at closing. If she can get an interest rate of 6% for 30 years, find the monthly payment and the total amount of interest paid.

2) In terms of paying less interest, which is more economical for a $200,000 mortgage – a 30 year mortgage at a rate of 6% or a 15 year mortgage at a rate of 7%?
§2 Affordability Guidelines

There are two guidelines lenders should follow to determine how much of a home a buyer can afford –

i) spend no more than 28% of gross monthly income for the mortgage payment,

ii) Spend no more than 36% of your gross monthly income for total monthly debt (car loans, credit cards, student loan, etc....)

These values represent the MAXIMUM that he can afford. For example, let’s say Eric makes $54,000 per year but has credit obligations of $600. Using the first guideline, we can see that his monthly mortgage payment should not be greater than 28% of his gross monthly income. Since Eric makes $54,000 per year, he makes $4500 per month. Hence his monthly mortgage payment should not be greater than $1260.

Under the second guideline, his overall monthly debt payments should not be greater than 36% of his gross monthly income. Since he makes $4500 per month, his total debt obligation should not be greater than $1620.

Let’s say Eric thinks that the monthly mortgage payment is 70% of the maximum he can afford. Since he can afford up to $1260, we take 70% of this to get $882. Based on the second guideline, his total credit obligation should not exceed $1620. Hence subtracting out the maximum mortgage payment, his other debt should not exceed $738. Eric should be fine, because his other debt is $600 per month!

PRACTICE

2) If George makes $48,000 per year, what is the maximum amount of a monthly mortgage payment he can afford? What is the maximum amount George should spend for all his credit obligations? If George thinks that the mortgage payment is 80% of the maximum he can afford, what is the maximum amount he can spend each month for his other debt?