Chapter 11 - Residential Real Estate as an Investment and a Place to Live

written for Economics 104 Financial Economics by Prof Gary R. Evans
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At the time the first edition of this chapter was written, in the troubled fall of 2011, residential real estate was getting a lot of bad press. According to news accounts of the day, this troubled market was the root cause of one of the worst global economic meltdowns in modern history. It all began with speculation in residential real estate markets in the United States, many European countries and even China. Bad loans to unqualified investors were made in the trillions of dollars (no exaggeration). When it became apparent that default rates would be high on most of those loans, a rolling panic set in that impacted one major bank after another, threatening many of the largest banks in the world with bankruptcy. Some banks and brokerage houses with famous names, like Lehman Brothers, Bear Stearns, Merrill-Lynch, Washington Mutual, and many more, did fail, and the others were saved only when the Federal Reserve System purchased nearly $2 trillion of bad mortgages from them.

One might think that after this experience a chapter about real estate directed at college students would simply warn these young investors to stay away from real estate - don't make the same mistakes made by your parents!

But that isn't the case. In fact, the theme of this chapter is to encourage young men and women just entering the labor market to get deeply involved in real estate - to make it a *significant* part of your long-term investment strategy. The case to be made here is that the damage has already been done, and although those who were in this market at the wrong time may have been financially ruined, the collapse had the very beneficial effect of rolling prices and interest rates back to levels seen decades ago. Although prices have largely recovered since the trough the market still seems healthy going into 2020.

The view from outside the window from where this chapter was written a few years back after a night of snow.

Real estate markets are cyclical and can be hazardous, if for no other reason that your investment is typically leveraged more than five to one. That reality simply requires that you employ *smart* screening and investing techniques, that you use your brain and that you are not caught up in fads and manias and the nonsense of greed - that you are an aloof and independent investor who does his or her research and strategically thinks through major investment decisions.

This chapter concerns itself with treating the home in which you *live* as a real estate investment, or to look at it another way, to look at your home *purchase* momentarily from the perspective of an *investment* rather than simply the home where you

live with your family or friends. That is what is nice about a home. It can have all of the wonderful benefits of being your special place where you raise your family without the interference of a landlord, where you can plant your own garden and chose whatever color you want for the wall in the den, while at the same time being a significant and productive high-yield component of your investment portfolio.

This chapter does not discuss buying and operating rental real estate or any form of commercial real estate, because both of those are businesses in and of themselves and require dedicated treatment that is far beyond the scope of this chapter and this class. We do briefly discuss the benefits of buying a vacation home as a second home.

You can grow your own garden ... samples from mine.

The next section justifies why the typical young employed college graduate should buy a home, looking at the issue from the perspective of regarding it as an *investment*, and that is followed by the essentials of shopping for and considering homes for sale in the real estate market, including what steps one goes through when buying a home for the first time.

The third section concerns itself with the all-important issue of financing the home with a mortgage, identifying the types of mortgages that are out there, their relative pros and cons, and includes warnings about what to avoid in these murky and occasionally dangerous markets.

Finally, in the lecture (alas, not this text) we conclude where we started, with a discussion of the terrible real estate crash that began in 2007 and continues until the present. Certain lessons emerge from that catastrophe that might provide guidance in future years.

Real estate is a visceral category of investment if there ever was one. For that reason, images that are not identified as **Figure X** are scattered throughout this chapter to remind us of the emotional side of the real estate investment. After all, it is the *hearth* as much as the *yield* that gives a home a special place in our sense of what is right or wrong with this world.

Before we begin the discussion of the financial reasons for investing in real estate, it is worthwhile to remember the non-financial reasons.

First and foremost, if you buy a single-family home with a yard, you will be living in your house on your land and you can generally do as you please, which is to say paint your rooms the color that you want, put in the floors that you like, fix it up or not fix it up, and grow your own garden. Sure there are covenants on what even homeowners are allowed to do in high-density residential areas, but even those are not all that restrictive, at least compared to the rules of apartment living. It's your house. You can raise your kids there. You build trains in the attic, hot rods in the garage, specialize in yellow irises or Palm Trees from Madagascar, and junior can practice the tuba in the living room.

If you own a condo there are more restrictions, but typically fewer than you would find in an apartment.

In a few words, you don't have a landlord.

Sure, there are more obligations to owning a home. You are indeed responsible for your own yard and you, not your landlord, pay for your maintenance. And it is possible to lose money on a house, as millions of Americans who paid too much because they bought at the wrong time (2004-2006) discovered in the terrible real estate downturn that began in 2007. But even they mostly left their homes reluctantly, not because they didn't enjoy living in their homes, instead because they couldn't afford to pay for the dream.

It was still a dream and always will be for most Americans.

1. Financial Reasons for Investing in Real Estate

The financial reasons for investing in your own home (remember, this does not discuss the rental business) can be summarized with these three points:

1. If you buy a home at the right time for the right price, because your home purchase will be a leveraged investment (explained below), then over a long period of time - over most of the span of your life - the home will rise in value and will turn out to be a very good investment, possibly the best investment in terms of return that you will ever make in your life.

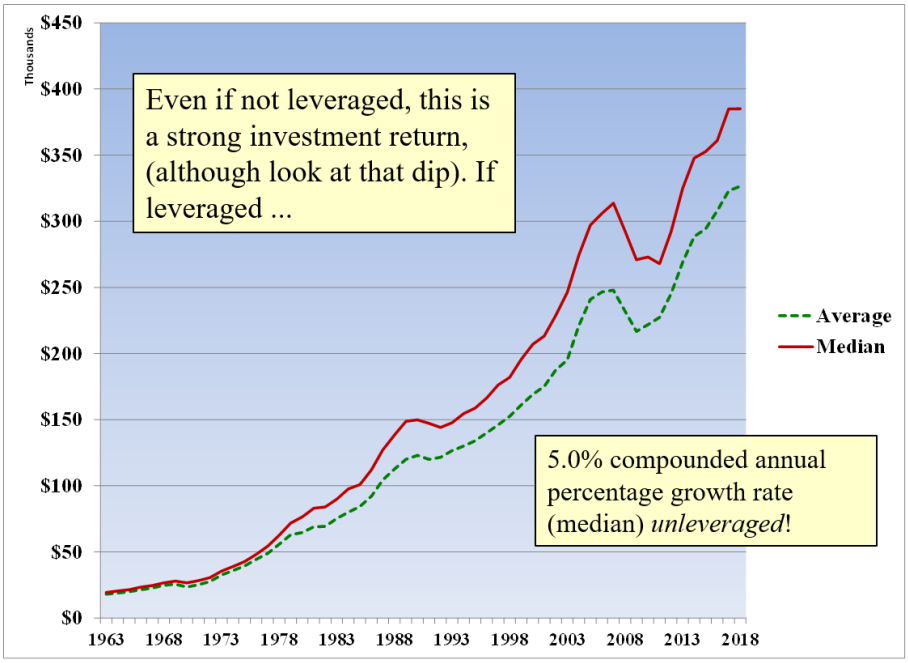
2. Under current tax laws, owning a home offers a tremendous tax advantage that is not enjoyed by renters - in fact a tax advantage that is so huge that it discriminates against renters.

3. If you plan ahead properly, owning your own home can and should be a significant part of retirement planning. Generally speaking, if you live in a home that you have paid for, your cost of living during retirement years will be a fraction of the cost absorbed by those paying rent.

1.1 Real estate as an investment

The real estate investment is a leveraged investment because at least 80% of the purchase price (typically) and sometimes more is financed with debt. For example, if the purchase of a home requires a 20% cash down-payment, then a full 80% of the purchased price is financed with borrowed money. The degree of leverage is equal to the inverse of the percentage of the down-payment, or in this example, 1/0.20, which is equal to 5.

Figure 1 - The Median and Average Prices for New Homes, U.S. all regions, 1963-2018



Source: U.S. Census Bureau, 2019 Historical Times Series Data.

Here is why. Once the property has been purchased, then all capital gains that arise from an increase in the value of the property accrue to the owner.

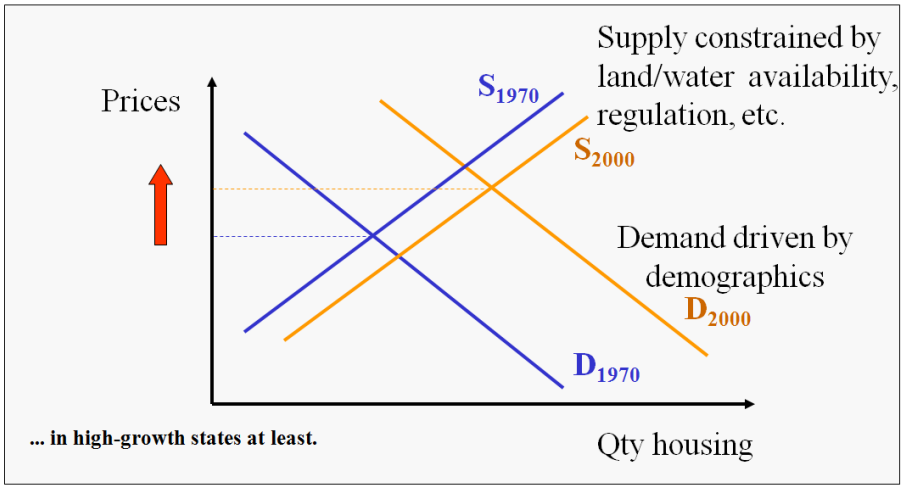
Consider an example. Suppose you make a 20% down-payment of $80,000 to purchase a $400,000 home, which implies that you borrowed the remaining $320,000. Suppose five years later the house has risen in value 10% to $440,000. Because you are the owner of the house, all of this capital gain accrues to you - it represents a rise in your net worth. This is called the ***equity*** in your home. But even though the rate of price appreciation was only 10% over the five years, the rate of return to your equity investment, which was $80,000, is a full 50%, five times as much. In this example, the degree of leverage is 5, as described above.

Obviously, this leverage works both ways, as was discovered by hapless real estate investors in the terrible markets of 2004-2006 (and earlier in some cases). Clearly if you buy a house that is overpriced in a heated market, and you put so little down that your leverage is, say, 10 to 1 rather than 5 to 1 (because the down payment was 10%), then a decline in home prices is an open invitation to foreclosure (the formal loss of the home) and possibly bankruptcy. Remember, the stated condition for treating real estate as a winning investment was to *buy a home at the right time at the right price*. Given the torrid real estate speculation that began before 2004 and continued to the inevitable bust, millions of new homeowners, many of them chasing the elusive huge gains on leverage, forgot that and paid the price.

Figure 1, showing national data for the median and average prices of new homes (not resales) built in the United States makes it clear that, despite the clear and depressing dip near the end (and a flattening and a shallow dip beginning in 1990), housing prices have marched relentlessly upward in the last 55 years (or for at least 50 of them). In fact, even taking the recent slump into account, the compounded annualized rate of continuous return for the median price shown over this chart is 5.1%. Any investment that was leveraged over *most* of this period of time would have had a much higher yield.

Of course none of this matters unless the trend resumes at some point. But since the market bottomed out in 2009, it has. In fact, between 2009 and 2013, the compounded annualized rate of price increase equaled 5.3%, a little higher than the long-run average.

Figure 2 - The general tendency for real estate prices to rise explained by demographics



In my lectures I will advise financing the purchase of a new home with a 30-year fixed rate mortgage. I will advise that because that choice will fix your monthly payment at a constant over a time when you can expect prices across the board, including the value of real estate, to creep up at a minimum, or substantially more under certain economic or political conditions.[1]

Population growth relative to availability of suitable land, especially in prospering regions of the United States, has been partly responsible for the torrid growth of prices. **Figure 2**, from a lecture, suggests that this was largely responsible for the real estate price surge in high growth states with a general shortage of arable land, like California and Hawaii. The demographic surge seen in the so-called baby-boom era (part of which was due to immigration) is not likely to continue, so this could mitigate demographic-fueled booms in the future, which requires the prospective homebuyer to use careful judgment in selecting a home in a new area.

Generally, if the area is prosperous and there is good reason to believe that it will remain that way, and if high-quality land is limited or most ambient land is already taken (such as in coastal areas) then no population push is needed - such high quality property will always be the best candidate for value *so long as it is not already in a pricing bubble*. And that, of course, is a judgment call.

Although population growth won't likely contribute the boost in the future that it has over the last 50 years, America's housing stock is aging and will require replacement. According to a 2013 Census Study[2], of the 132.8 million total housing units in the United States, nearly 56 million, 42%, had been built prior to 1960! This is better news for home builders than it is for home buyers, but such decay creates an artificial shortage of adequate housing, which can push up the value of owner-occupied homes that are in good condition.

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[1] For example, one good way to devalue the $15 trillion plus of national debt accumulated by our U.S, government is through inflation, so that exists as a real political possibility if given a few decades for it to happen.

[2] U.S. Census Bureau 2013 American Housing Survey National Tables, Table C-OH-AH General Housing Data - All Housing Units

1.2. The tax considerations of investing in real estate

Because homeowners are faithful voters, they have been extended a tax boondoggle for decades that almost by itself makes home ownership worthwhile.

When you buy a home your monthly payment will consist of four components: (1) interest on the mortgage loan, (2) principal reduction on the mortgage loan, (3) property taxes, and (4) property insurance. Of these four components, two of them, interest on the mortgage loan and property taxes, are deductible from your taxable income for both national and state income taxes.

If you finance your real estate with a conventional 30-year fixed rate mortgage, in the early years of the loan about seven eighths of the payment goes to interest (this is shown later). In other words, for every $800 of your monthly payment, in the early years of the loan, about $700 of it is for interest and only $100 is used for principal reduction.

This implies that about seven eights of your entire mortgage payment is tax deductible! And so is the property tax that you pay to the state if you live in a state, like California, that collects property taxes (not all states do).

For example, if you were to buy a home in California and finance it with a 30-year fixed rate mortgage with a balance of $300,000 at an interest rate of 4.5%, your monthly payment for the mortgage alone would equal about **$1,520**. Of this amount, in your first payment, **$1,125** would be paid for interest, leaving only **$395** for principal reduction (obviously each month the interest portion goes down slightly such that on the 360th payment it goes to zero and the loan is paid off). On that same house in California you might pay annual property taxes of around **$3,000**. That will mean at the end of the year you will be able to deduct more than **$16,000** from your taxable income for *both* federal and state income taxes. The final tax savings will depend upon your marginal tax bracket. If for example if your marginal tax bracket is 24%, then your direct tax savings will amount to around **$4,000** just because you own a house and don't rent.[3]

From an investment point of view, this subsidy is paying for about 25% of your house. Although your gross mortgage payment equals **$1,520**, your *net cash payment* is only about **$1,180!**

This is why in states like California where property taxes *and* high income taxes are levied, once you take these tax deductions into account, for any equivalent house (given square footage or comparing one 3-bedroom, 2-bath house with another of similar quality) it is often *less expensive to buy a house than to rent a house*!

To drive this point home, in the Inland Empire of California, where the author lives, at the time this was written there were many, many nice homes that could be purchased for less than $450,000 - much less in some cases. At the same time there were almost no homes for rent in the same area for less than $2,000 per month.

Even if home values don't rise much in value this advantage alone justifies home purchasing.

Under laws current when this was written it was also possible to deduct interest payments on a *second home*, like a vacation cabin, although there is always some discussion about eliminating this additional tax break in the future.[4]

Now and then, especially when flat tax proposals get floated, political pundits suggest that the Congress may finally do away with this favored and frankly unfair tax loophole. Such talk is utter nonsense. No politician would ever consider alienating such a large and powerful group of voters. The home interest tax deduction will never be touched.

You can take that to the bank. Literally.

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[3] In 2019, the current marginal tax brackets are 10%,12%,22%,24%, 32%, 35%, and 37%. As of 2018, under the provisions of the new Trump Tax Cuts and Jobs Act, which mostly corporate income taxes while raising some personal income taxes, the home interest deduction was capped on mortgages above $750,000 for married filing jointly, $375,000 for married filing a separate return.

[4] The $750,000 limit applies to the sum from both homes. For example, if the mortgage on your primary home is only $500,000, then interest paid on a $250,000 mortgage on a vacation home is fully deductible. If, however, the mortgage on your first home is $800,000, you are not only limited to deducting interest paid on only $750,000 of that amount, but you may take no interest deduction at all on a second home.

1.3. Planning for retirement

Fifteen or thirty years may seem like a long time to have to pay for a home before it is yours. But the last point made in the section above is that if you don't buy the home, you are going to have to rent one from a landlord, and for possibly for much more money. Because this is true, it is financially healthy to think of your monthly payment as a rent-equivalent. In fact, once you move into your new home, if you financed with a fixed rate mortgage and you stayed in the home, *your rent (equivalent) will never rise*. That would seldom be true of actual rent. You can count on rent rising by at least the inflation rate, and probably more.

Wouldn't it be nice to live in a home like this, fully paid, when retired?

Far more important, if you plan right, the rent equivalent will stop around the time you retire. You can live in your home with no mortgage as long as your health will allow and then possibly leave the home to heirs, to give them a grateful head start.

If planning for retirement, there is one golden rule that must be followed and was forgotten by legions of homeowners caught up in the speculative excess of 2004 to 2006: ***do not borrow against any equity that is building up in your home because of price appreciation!***

All of the investment advice in this chapter is thrown out the window if you make the huge mistake of succumbing to the temptation to take out a home equity loan just because your house has risen in value.

Of the homeowners who lost their homes through foreclosure after 2007, most bought their homes at the wrong time and at the wrong prices. But there was a second category of victims. Some homeowners bought their homes long before the bubble began to inflate, perhaps even in years before 2000. The initial purchase prices of their homes were still far below the depressed prices of 2007. *But* many of them borrowed against their rising home equity by using home equity loans (borrowing with a second mortgage or even a third mortgage secured by the house) or refinancing the home entirely with a new loan at a higher principal value. Sometimes these loans were used to finance improvements to the homes (which is actually justified from an investment point of view if done prudently) but also may have provided financing for new cars or vacations or college educations or even, worst of all outcomes, to finance speculation in real estate. Regardless of the reason, this had the effect of eliminating the investment value built up in the home.

More important, for millions of Americans, it eliminated the dream of fully owning a home upon retirement, possibly the most important objective discussed to this point.

1.4. Inheritance

If you have successfully paid off your home to reduce the cost of retirement, there is one more substantial benefit to this strategy. When you die (or when both you and your spouse have died if the house is jointly owned), if the house is sold when the estate is liquidated, your heirs will not have to pay a capital gains tax on the proceeds![5]

To be clear, suppose you had purchased a home 22 years ago for $550,000. Suppose at the time of your death the house has appreciated in value to $1,120,000 and is appraised and then sold for that amount. Although the house has experienced

[5] Heirs may have to pay an estate tax, which is another matter. But the estate tax is determined by the net value of the estate at the time of death and is independent of the types of assets in which the estate is represented. There is also a high value to estate tax exemptions. For 2019, the estate tax exemption for a single person was $5.7 million and was $11.4 million for a married couple.

capital gain of $570,000, there is no capital gains tax and your heirs will inherit the full amount of the home's sale price, $1,120,000!

This waiver of capital gains also applies if a mortgage balance remains on this house. For example, suppose the house purchased for $550,000 has a $100,000 mortgage balance at the time of death. The capital gain is still $570,000 and there is still not tax on the capital gain, but the inheritance distribution is only $1,020,000 because of the need to pay off the loan.

There is one strange wrinkle in the tax law. The house must be sold at or below its appraised value, as was the case in our example. If the house is sold above its appraised value, the estate must pay a capital gain on the difference.

2. The fundamental steps in buying a new home

2.1 Start looking at homes

Know generally what you are looking for in a home, although be flexible, and begin to shop around. Put some prior thought into this. Once you have made a decision, you will often be asked to pay an *earnest* fee of $1,000 or $2,000 or so.

Note: The next three steps can also be arranged by the home seller or real estate agent. It is smart to understand that they will be doing this, and smarter to understand that *you* have the right to do it instead (usually).

2.2 Start shopping for a mortgage

Find the right lender and loan at agreeable interest rates and terms. (Sometimes, of course, you have no choice on this - especially if you have chosen a house because it is offered with a first-time-home-buyer or FHA or VA loan package).

After this you must qualify for the loan and begin the tedious and involved process of providing paperwork for loan approval. This will often take more than a month and *can* be a frustrating experience. You can help yourself by keeping these records intact and available *long prior* to any time that you might buy a home; *keep good records and clean credit*.

Note: The next three steps can also be arranged by the home seller or real estate agent. It is smart to understand that they will be doing this, and smarter to understand that *you* have the right to do it instead (usually).

As described in the lecture, loan qualifications were so relaxed as to be essentially non-existent between 2004 and 2006, and this resulted in the real estate bubble that began in 2007. Because of that fiasco, loan qualifications are now stricter than ever!

Conservative qualifying conditions are discussed below. Here is what the paperwork involves (this varies some from lender to lender and as conditions change):

(a) IRS -1040 for last two or three years, to verify income.

(b) Some formal documentation of your employment, and your employer will probably be contacted by phone. Many lenders like to see at least two to three years at the same job.

(c) You have credit records maintained by three ***credit agencies***, **Equifax**, **Experian**, and **Transunion**. All of these credit records must be *impeccable*. *Every single blemish on that credit record* must be either cleaned of or explained *in writing*. If you have an unpaid medical bill from four years ago from a hospital, even if disputed, you

must pay it. If you were late on a credit card payment three years ago, you may have to write a letter explaining why. It is for this reason that you must commit to paying your bills on time years before you go into the market to buy a house. If you are a student reading this, *now* is the time to commit to maintaining good habits in paying bills.

(d) You must provide account numbers and balances for all financial accounts. In most cases, they will check independently to see if you have sufficient cash. They will question large movements of cash or mysterious deposits.

(e) They ask you to list all debts. Again they check.

(f) ... and all of this information and more is requested on a *long, detailed* loan application. If you have good records, it's easy to fill out. If you don't ...

2.3. Follow-up steps

Shop for home insurance. Find out if you are required to have flood or earthquake insurance. Rates are *highly variable* and *highly competitive*. Even when buying a new home if an insurance policy is assigned, immediately start shopping for a less expensive policy. You have the right as a homeowner to do that and all parties *must* honor you request to shift insurance policies.[6]

If you are controlling this process yourself, find an escrow agent (although normally the home-seller or even lender will do this - just understand that there *is* an escrow agent and there *is* such a thing as escrow).

The ***escrow agent*** pulls together all documentation, does a title search, arranges title insurance, and generally goes through the long checklist of insuring that absolutely everything required has been done - all fees are paid, the loan is arranged, all papers for transfer of title have been prepared, and so forth. Putting all of this together is called ***going through escrow***. The escrow agent will present you with a mountain of paperwork to sign. Right after that, you get the key.

Do you need an attorney?? Normally, you would never involve an attorney in a home purchase. (They can be rather expensive). They would be involved in a clear legal question of any kind arose, or if any of the paperwork was not standard (if you were signing a privately written contract under unusual loan terms, for example). Attorneys are seldom needed when buying a home, but don't forget they're there if serious problems arise.

3. Qualifying for a loan

Obviously you are not going to get very far with a home purchases unless you find a lender willing to offer you a mortgage loan. Fortunately for home-buyers this is a very competitive industry. Commit to shopping for mortgages. But you must determine whether you qualify for a mortgage before the shopping starts. Otherwise you may be wasting your time.

Here we go through the steps one should take to evaluate qualification. The steps don’t necessarily have to be taken in this order.

3.1 Cash required to start

Even before applying for a loan the prospective home-buyer must have a lot of cash on hand to pay various expenses, but most of all, for a down payment. Although there is such a thing as a mortgage with no down payment, the abuse of such conventions prior to the 2008 mortgage meltdown has made it nearly impossible to finance without at least 5% down on the value of the home being purchased, and 10% down or even 20% down are more likely to be expected by the mortgage lender.

A homebuyer should have at least $3,000 to $5,000 set aside anyway for earnest fees (the good-faith fee that some sellers require before they accept an offer on a home), inspection fees and moving expenses.

[6] Your teacher once had a home insurance policy for about six hours before shopping and switching (and saving hundreds of dollars).

This table below shows typical down-payment percentages and how they can be obtained if and when they are available. The percentage shown is percent of the purchase price of the home.

1% to 2%	First-time home-buyer loans (often sponsored by local or state government)
5%	Federal Housing Authority (FHA) / Veterans Administration (VA) loans
10%	Buy-down and qualifier mortgages through home sellers and some lenders (common), typically an **ARM** or **VRM** loan
20%	Conventional down payment

Explaining from the bottom up, the traditional down payment on a loan with a fixed rate mortgage (as opposed to a variable rate mortgage, explained below) is 20%. All bank lenders offer conventional fixed-rate mortgages and they are regarded as premium loans. Interest rates are often lowest on conventional fixed rate loans, although rates on non-conventional variable rate mortgages are sometimes lower. Because of the prohibitive down payment for first-time homebuyers, these rates are typically used by homebuyers who are moving up from an older home with a lot of equity to a more expensive new purchase.

Loans requiring only 10% down are common among lenders who offer adjustable-rate mortgages (**ARM**) or variable-rate mortgages (**VRM)**, synonymous terms which will be explained in more detail below. In a few words, the initial interest rates can be adjusted upward after the passage of time or under certain circumstances, like rising market rates.

Borrowers who are veterans can sometimes obtain mortgage loans requiring only 5% down. Likewise, some builders receive the sponsorship of a government agency called the Federal Housing Authority (FHA) and they likewise are able to offer loans with only 5% down for new homes only. The buyer must undertake local research to determine if such loans are available.

Finally, from time to time local and state governments offer incentive programs for first-time homebuyers for new homes only, allowing builders to offer mortgages requiring on 1% or 2% down. At the time of this writing this was *not* an option anywhere that your teacher knew of, but such programs have surfaced in the past and may be seen again in the future.

Additionally, the first three options (everything except the conventional mortgage) often require ***Private Mortgage Insurance*** (***PMI***), a rather costly monthly insurance premium paid by the borrower to insure against default, making a "low-down" loan nearly as expensive to service as a loan with a higher down. PMI is a strange insurance policy in that *you*, the homeowner, pay the premium, but you are not the party being insured. Instead the lender is being insured against your default. Your teacher believes that in California PMI insurance rates are exceptionally high and should be avoided whenever possible. On the other hand, it may be the only way a first-time homebuyer will be able to get anything except a conventional loan.

3.2 Income requirements

This varies from lender to lender and by the type of loan, and also seems to change over time as lenders get more or less cautious.

The *rough rule of thumb* is that your loan payment should not take more than **30%** to **35%** of your net income (income after taxes have been deducted), with net incomes combined if married. Other lending standards take debt into account, and in these cases, typically allow payments of no more than **40%** of net income *after* debt service (of credit cards, auto loans (and leases), student loans and other installment loans).

Therefore, as a rough estimate of the mortgage that you can afford, given this standard:

(a) divide your net paycheck (summed with your partner, if joint) by three, and that will be a rough estimate of the monthly payment you can afford,

(b) subtract about 20% from this for monthly contribution to property taxes and insurance,

(c) use a mortgage/loan amount calculator (see the next section) to calculate your maximum mortgage.

3.3 Mortgage Formulas and Max Loan Amounts

The formula for calculating a monthly payment on a mortgage, along with an example, is shown in this slide from the lecture:

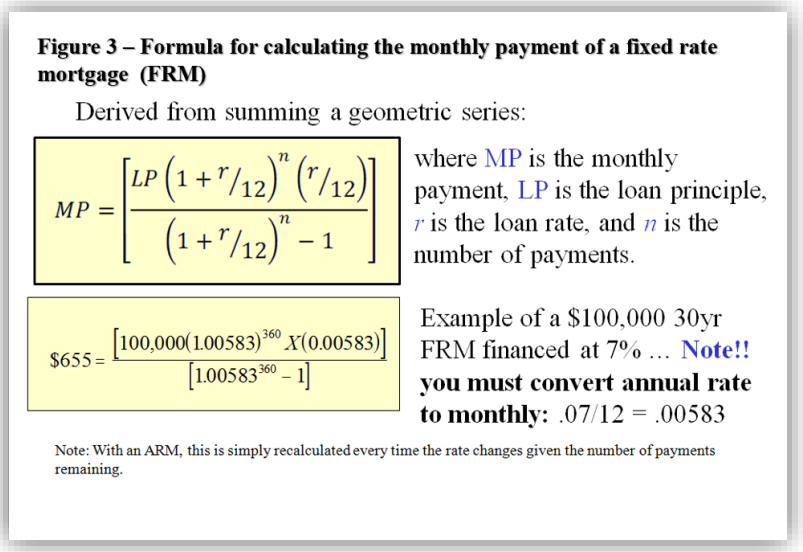


Figure 3 – Formula for calculating the monthly payment of a fixed rate mortgage (FRM)

Derived from summing a geometric series:

$$MP = \left[\frac{LP\left(1+{}^{r}/_{12}\right)^{n}\left({}^{r}/_{12}\right)}{\left(1+{}^{r}/_{12}\right)^{n}-1}\right]$$

where MP is the monthly payment, LP is the loan principle, r is the loan rate, and n is the number of payments.

$$\$655 = \frac{\left[100{,}000(1.00583)^{360}X(0.00583)\right]}{\left[1.00583^{360}-1\right]}$$

Example of a $100,000 30yr FRM financed at 7% … **Note!! you must convert annual rate to monthly:** .07/12 = .00583

Note: With an ARM, this is simply recalculated every time the rate changes given the number of payments remaining.

The formula for calculating the loan value that you can afford, along with example, is also shown in this slide.

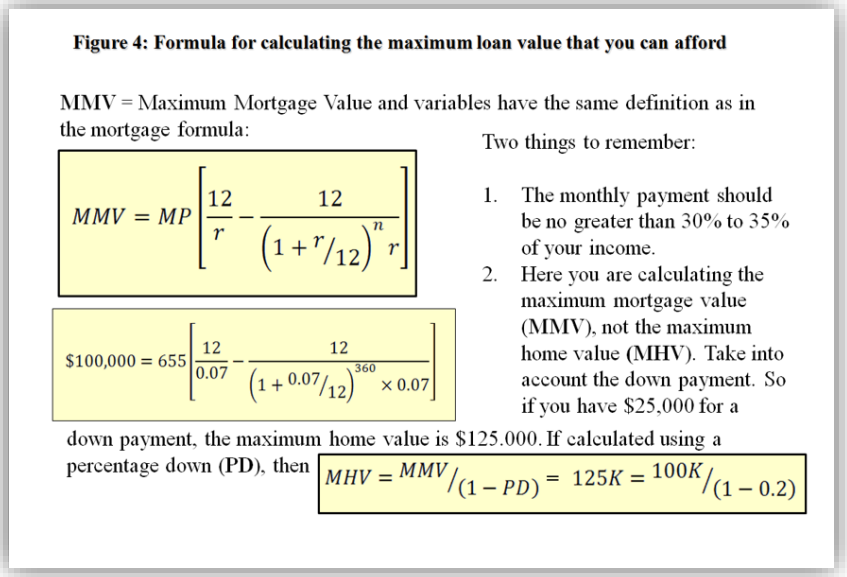


Figure 4: Formula for calculating the maximum loan value that you can afford

MMV = Maximum Mortgage Value and variables have the same definition as in the mortgage formula:

$$MMV = MP\left[\frac{12}{r}-\frac{12}{\left(1+{}^{r}/_{12}\right)^{n}r}\right]$$

$$\$100{,}000 = 655\left[\frac{12}{0.07}-\frac{12}{\left(1+{}^{0.07}/_{12}\right)^{360}\times 0.07}\right]$$

Two things to remember:

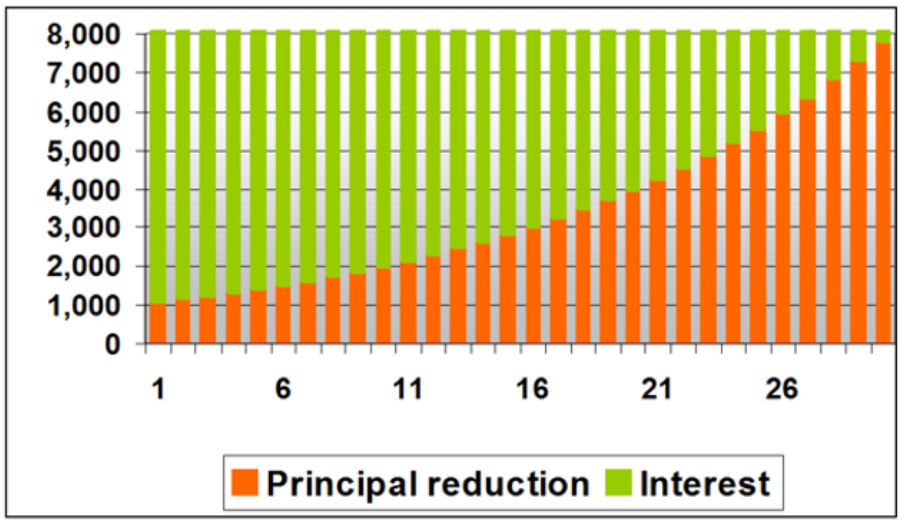
1. The monthly payment should be no greater than 30% to 35% of your income.
2. Here you are calculating the maximum mortgage value (MMV), not the maximum home value (MHV). Take into account the down payment. So if you have $25,000 for a down payment, the maximum home value is $125.000. If calculated using a percentage down (PD), then $MHV = {}^{MMV}/_{(1-PD)} = 125K = {}^{100K}/_{(1-0.2)}$

3.4 The Loan Payment Composition

As was stated above in the discussion about the tax features of mortgage loans, over the life of the loan the ratio of the interest paid to principal reduction starts at a very high level then gradually declines through the life of the loan. The relative composition of the two portions of the payment is shown in **Figure 5**, which represents the composition of the payment of

a 30-year fixed-rate mortgage with a monthly payment of $655, which was the monthly payment calculated above for a $100,000 30-year FRM financed at 7%.

Figure 5 – Composition of the annual payment of a $655 per-month 30-year FRM



As can be seen, interest at the beginning makes up about seven-eighths of the payment and gradually declines to zero.

This implies that the huge tax break received on a newly-purchased home recedes over time albeit very slowly.

On the other hand, few homes survive their 30-year mortgages because they are resold and hence refinanced after a period of, on average, about seven years. This will likely be your fate. You will sell your house either because you want to move up to a better home or a larger home for a larger family or must sell because you change work location.

Currently two issues favor holding onto a home longer than has been traditional: (1) current interest rates are very low and refinance rates will likely be higher, and (2) learning from the failure of so many Americans to use their homes for their own retirement, even if you buy your first home at age 25, wouldn't it be nice if it were paid for when you turn 55? Maybe this should be a goal. Talk it over with your spouse - or at least talk it over as soon as you get one.

Sure, according to **Figure 5** you would gradually lose your tax deduction. But that is an easy problem to solve - buy a second home, maybe a nice vacation home on the lake, where you, the spouse and the kids can go boating.

4. Mortgage Loans

The homeowner's monthly payment is determined by three primary variables, the size of the mortgage, the interest rate that must be paid on the mortgage, and the type of mortgage. The latter matters more than many buyers realize. The type of mortgage impacts not only the size of your monthly payment but also the risk associated with the loan. Therefore, in this section, we will break down and compare the primary types of mortgages available and discuss the primary advantages and disadvantages.

4.1 30-year fixed rate (FRM)

This is the traditional conventional loans ***amortized*** over 30 years (which means the payments are mathematically calculated such that the loan is paid off in exactly 360 months from the date of inception), still very popular and still very advisable, where the interest rate and the payment is fixed for thirty years. In the early years of the loan, over 95% of the payment goes to interest.

Advantage - There is no uncertainty associated with this kind of loan. The montly payment, aside from adjustments for rising property taxes (which is technically not part of the loan anyway, but part of the impounds), is fixed for three decades. This is equivalent to having your rent fixed for 30 years! These loans are the best hedge against inflation that investors can buy. Because all investors should have a strong hedge against inflation in your portfolio, your teacher recommends this kind of loan if you can qualify for it.

These loans also have a maximum tax advantage. Because so much of the payment is dedicated to the interest component of the loan in early years, and because only that part of the payment is deductible from taxable income, this loan offers sizeable tax advantages over, for example, the 15-year mortage discussed belwo.

Disadvantage - Usually interest rates are higher when compared to variable rate loans, at least at time of loan origin. Sometimes these loans are hard to get for first-time homebuyers because they often require 20% down. The fixed-rate advantage is diminshed somewhat if you must move frequently, which may require you to sell your home every few years. Data shows that most homeowners stay in their homes for an average of only 7 years. To some extent that puts the buyer at the mercy of interest rates whenever they move.

4.2 15-year fixed rate (FRM) (also 10, 12, 20 and other spans)

These very popular loans differ from the 30-year fixed rate mortgage only in their maturity. The 15-year fixed rate loan is amortized, for example, over 15 years instead of 30. This implies that the monthly payment will be considerably higher for the a mortgage of the same size.

For example, using our mortgage payment calculator from **Figure 3**, a $500,000 mortgage amortized over 30 years at 5% interest would require a monthly payment of $2,684.11. The same mortgage amortized over 15 years would require a monthly payment of $3,953.97! That is a significant difference!

Advantage - The loan is paid off in only fifteen years, so equity accumulates faster. The rates are usually lower than those on a 30-year FRM by at least 25 basis points and sometimes more. Therefor the comparison above should reflect that. If the 15-year mortgage is marketed at 4.50% when the 30-year mortgage charges 5%, the 15-year mortgage monthly payment would fall to $3,824.97.

These loans are especially suitable for families where the primary earner is within 10 to 20 years of retirement (because the house will be paid off about the time of retirement).

Disadvantage - As the example shows, monthly payments even at a lower interest rate are about 30% higher than 30-year FRM, and the loan offers *less* of a tax break because more of payment is going to principal reduction.

4.3 Adjustable Rate Mortgages (ARMs) also called Variable Rate Mortgages (VRMs)

There are many kinds of ARMs. Generally, after the initial rate is determined, the rate you pay on the loan is adjusted up and down as interest rates in general rise or fall. Loan interest rates are usually pegged to some interest rate measure, such as the "LIBOR 3-month rate plus 5%" or "the 11th District cost of funds." These ARMs often have ***caps***, which are upper limits on how high rates can go. These are often offered at ***teaser rates***, or ***buy downs***, where the rate offered for the first six months to two years is far below the rate you will ultimately pay. *Investigate the interest structure of an ARM very carefully - especially the advertised teaser*. These are often used to get people to qualify for the loans, and in the past have been promoted with campaigns that were *misleading* if not dishonest, and sometimes outright illegal.

Although 30-year ARMs are typical, ARMs can be of various maturities.

Section 5 below discusses *sub-prime* and *Alt-A* mortgages that were at the root of the collapse of the real estate market in 2007. Most of those mortgages were ARMs, and many had *teaser rates*, *negative amortization*, and ***pre-payment penalties*** that are discussed in the terms below in **Section 5**.[7]

However, *prime ARMs* of high quality are also available on the market. These are often available to first-time homebuyers and are offered at interest rates that are reasonable (and it is possible after the passage of a few years for the first-time homebuyer to refinance into a fixed-rate mortgage).

[7] This will be the subject of a lecture in Economics 104 that is not covered in this chapter.

Advantage - At time of loan origination rates are often very low - sometimes 1% or 2% or more below rates on a 30-year FRM. These loans are usually easier to get and typically require only 10% down or even less, which makes them very attractive to first-time homebuyers.

Disadvantage - The borrower obviously picks up a considerable part of interest rate and inflations risk. The monthly payment on an ARM will rise, and sometimes a lot, if interest rates rise. The payment may rise well above the level that would have been seen with a 30- or 15 year-FRM. This mortgage provides far less of an inflation hedge than does a fixed rate mortage. Equally important, and as was discovered by millions of homeowners during the mortgage crisis, monthly payments may rise to levels that are unaffordable. That is why, when shopping for ARMS, the homebuyer must read the mortgage contract very carefully and be aware of the frequency and circumstances in which rates can be raised.

The homebuyer should understand the level of the *cap* on the loan. It is worth the trouble to take a mortgage calculator to estimate the monthly payment if the cap is hit on the loan to see if there is a realistic expectation of paying a cap that high.

For example, on a 30-year ARM with an initial rate of 3.5%, the monthly payment on our $500,000 loan would be an agreeable $2,245, which explains the popularity of this loan. But if that ARM has a cap of 6%, and rates rise to that level, the monthly payment will rise to $2,997. That may put a strain on the monthly budget. It also produces the same unpleasant sensation of a landlord raising your rent!

4.4 80-10-10s, 80-15-5s and similar

Although these loans have fallen out of favor somewhat in recent years, they are still around and may grow in importance again in the future. These loans are designed for borrowers with good credit but inadequate cash for a down payment.

On an 80-10-10, the borrower puts 10% cash down (rather than the conventional 20%), takes out a conventional 80% 30-year or 15-year FRM at a low rate, and finances the remaining 10% with (typically) a 7-, 10- or 15-year second mortgage at a higher interest rate. For example, a typical arrangement for a $400,000 loan would have been to pay a $40,000 down payment, to finance $360,000 on a conventional 30-year first-trust-deed mortgage at 4%, and finance the remaining $40,000 on a 15-year second-trust-deed mortgage at 6%, all arranged by the same lender. The 80-15-5 allows 5% down and a second for 15% of the loan value, but at a higher interest rate for the second.

Advantage – This type of loan combination sometimes allows the borrower to avoid excessive PMI fees, which are normally assessed when less than 20% down-payment is made, and allows the borrower to get a good conventional loan at a very good rate.

Disadvantage - Until the second-trust-deed mortgage is paid off, the effective interest rate on the loan is the weighted sum of the two rates (in the example above, that would be)

[(0.80/0.90) X 4%] + [(0.10/0.90) X 6%] = 4.22%,

and the while the second mortgage is active, it will be more difficult to get a conventional home equity loan. Neither of these are serious disadvantages.

4.5 5/25s , 7/23s, 10/20s and similar (also sometimes designated as 5/30s, 7/30s, and 10/30s)

These are loans for five years (the 5/25), seven years (7/23s), and 10 years (10/20s) that are *amortized* over 30 years. In other words, on a 5/25 you make the same payment you would as though the loan was a 30 year FRM, but at the end of five years you must pay off the remaining balance of the loan, almost the entire principal, called a ***balloon payment***, or refinance. These loans are often used for second mortgages.

Advantage - These are typically offered at low rates (since they're short term loans). They are therefore useful if you *know* you'll be moving within five or seven years. Remember, that is the average time the typical homeowner stays in a single home. This also has all of the same tax advantages as a 30-year FRM because it is amortized in exactly the same way.

Disadvantage - The balloon payment requires that you refinance when the loan matures, and you are at the mercy of the markets at that time. If, for example, you have to refinance during an inflationary period, your refinance rate will be high and you will regret not using the safer long-term fixed rate mortgage.

4.5 Final advice about mortgages

When you are given a new loan contract, *read the entire loan document - every single page!* Sit down and do it. Pay special attention to prepayment charges, hidden fees, and any discussion of changing interest rates, especially on ARMs. Many of the homeowners who were destroyed financially after 2007 would have avoided this fate had they merely read their loan documents. For example, they may have noticed that they had a $70,000 prepayment penalty clause (this example based upon an actual case that your teacher heard about from a friend) which would have made refinancing impossible on risiing-rate ARMs.

Also remember that banks often *make much more profit* on non-FRM loans and their loan officers will sometimes pitch these loans instead of the FRM that you want. (Again, this has happened to your teacher). *Toughen up and ignore the sales cant.* Get the kind of loan you want. Remember that in banking and real estate, a friendly smile can be a prelude to robbery. Be business-like.

5. Terms and Glossary

Although few of the terms below are ***highlighted*** you are responsible for them on the exam. Loan components or conditions that have proven to be potentially hazardous are highlighted in red.

ARM - Adjustable rate mortgage where the interest rate which determines the monthly payment is adjusted over the life of the loan. These were described in loan types above. Also called a **VRM**, or variable rate mortgage.

LTV - The loan-to-value ratio, the size of the mortgage divided by the appraised value of the home. Conventional loans require this to be at least 80%. If this number is above 100%, as it is for many Americans in the real estate crisis, the loan is said to be "***upside down***," because the homeowner owes more than the home is worth.

Appraisal - Required when you initiate or refinance a mortgage, this is the act of evaluating what your home would be worth on the market. It is done by a licensed ***appraiser***, who will do "***comps***" (local comparisons of the prices of equivalent homes) and will visit your home to evaluate condition, upgrades and additions, verify square footage, and so forth,

APR - When you shop for a home loan the interest rate that will attract you is called the "advertised rate," which is the simple annual interest rate that you must pay on the balance of your loan. The U.S. Government also requires lenders to publish an **APR** (annual percentage rate), which is supposed to factor in all loan costs, including points and fees, in the interest rate calculation. This **APR** has proven to be more confusing than enlightening. Some web sources claim that the **APR** calculation turns the annual compounding into daily compounding (the continuous natural log rate) but that is erroneous. The U.S. Department of Commerce has a program that lenders can download to help in the calculation of the **APR**.

Prime loans - Mortgage loans of the highest quality, requiring full documentation of employment and income, high credit score for the borrower (above 700 or even 750), and **LTV** for the loan of a maximum of 80%.

Alt-A - Alternative-A mortgage loans are classified as less risky than **sub-prime loans** but much riskier than **prime loans**. **Alt-A** loans usually either lack some degree of documentation, such as income verification or employment verification, or are extended to borrowers with low credit scores, like 650 and below, or a high **LTV**, such as 90% or 95%. These loans were mostly **ARM** loans (see below) with **teaser** rates and negative amortization. This class of loans were a source of major credit failure during the real estate bubble that began in 2007.

Sub-prime - The worst quality mortgage loan and the origin of the first wave of the real estate bubble that began in 2007. Many of these loans were simply fraudulent. The application did not verify income or employment or neither, allowing the

borrower or an unscrupulous agent to inflate incomes. Applicant credit scores were often well below 650. All of these loans had high **LTV**, like 95%, and some required no down payment (effectively an **LTV** of 100%).

Negative amortization - Used commonly with **Alt-A** and **sub-prime** loans, **negative amortization** will be part of any **ARM** loan that offers (1) an interest rate below market rates in the first few months of the loan (for the purpose of reducing the monthly payment initially) and/or (2) a monthly payment of interest only for the first few months, generating a payment so small that it does not even allow principal reduction of the loan value. Consequently, the deficiency is added to the principal value of the loan, increasing the loan balance over the early months of the loan. This **negative amortization** obviously will insure that loan payments are very high after the subsidized months have ended, raising the prospect of default. Such loans always have a large **pre-payment penalty**, making it difficult or impossible to refinance the loan. The step-up in interest rates guaranteed by **negative amortization** is one of the reasons why such loans were a large part of the real estate bubble of 2007.

Teaser rate (also called "buy-downs") - A below-market interest rate that is offered for the first few months on a loan (typically an **ARM**) that is intended to make it easier for the homebuyer to qualify for a loan. Such a loan will always be a **staircase loan** and will typically have **negative amortization** and will always have a sizeable **pre-payment penalty** because obviously the lender must be eventually repaid on net at market rates.

Pre-payment penalty - Always a feature of **ARMs** with **teaser rates** and **negative amortization**, and some other loans as well, this loan contract clause prevents the borrower from refinancing the loan without first paying a monetary penalty, which is typically quite large (like $60,000 on a $300,000 loan, possibly with a declining balance over time). This is to protect the lender, otherwise a borrower who undertakes a **teaser loan** that charges, say, 2% for the first year, 4% below market rates, could refinance if home prices rose over the year before the rate on the **teaser loan** kicked up to an above-market rate. Law requires that this penalty ***be clearly identified in the loan document - and it is***, so always review the entire loan document to see if your loan has a pre-payment penalty. ***If your loan does not have a pre-payment penalty, it will explicitly state that it does not!*** This feature doomed many **Alt-A** and **sub-prime** loans generated between 2004 and 2007 and contributed greatly to the real estate bubble.

Staircase - Identifies the feature of a loan with a **teaser rate** or any other below-market rate that guarantees that at some point, after a few months or years, that the interest rate will be raised, possibly in multiple steps (hence the staircase) to market or above-market rates.

Association fees - When buying a home, you may be required to join a ***Homeowners' Association***, which is responsible for maintaining common areas, parks, sidewalks, and general building maintenance for condominiums- whatever is under their jurisdiction. They charge a monthly fee that must be paid and should be considered part of your monthly payment. Always ask about **Association fees** when buying a home and ask what the **Association** maintains. For condos or homes that are in **Associations** that offer many recreational amenities, these fees can be quite high, hundreds of dollars per month. The Governing Boards of these **Associations** are elected by the homeowners, but experience has shown that some are much more responsible than others. If talking to potential neighbors when considering a home purchase, you should ask about the local **Association**.

PMI - Private mortgage insurance, paid by borrower monthly, insures against default, usually levied on non-conventional loans where down payment was less than 20%. This fee is excessive and unfair for the homeowner, and should be avoided whenever possible. When inquiring about a loan, always ask if the loan requires PMI. Unless you have no other options, keep shopping. PMI becomes a problem if you have less than 20% down. But there are ways around PMI. See the discussion of the 80-10-10 loans below for an example.

First and second mortgage, or first and second trust deed - A first mortgage or first trust deed simply refers to the primary loan on your home. The lender has the first right of foreclosure and claims if you default on your loan. A second mortgage is a second loan taken out using the equity in your home as collateral. Home equity loans are usually second mortgages.

Equity - The present market value of your home minus all of the debt you owe that is secured by your home; generally, market value less all mortgage balances.

Escrow - A detailed and complicated process that you must complete as part of buying a home. **Escrow** is managed by a licensed ***escrow agent*****,** who does all of the work for you, then charges a fee (a few hundred dollars). Although time consuming, **escrow** is largely a painless process and works well, and actually serves to protect you as a home owner. The escrow agent insures that all documents, including loan documents, are properly prepared and signed, all government compliance is met, title insurance is established, deeds are properly prepared, and that there is a proper transfer of title. The escrow also holds all cash related to the transaction until title has been transferred to the new homeowner.

Home Equity Loan - A loan that you can take out later (after buying your home and building up equity) which uses the equity in your home as security (typically a second mortgage). You can usually borrow up to about 80% or 90% of equity (e.g. if your house has a present market value of $200,000, you still owe $120,000 on the loan, you have equity of $80,000, and you borrow up to about $64,000 with a home equity loan). Probably a lot of your educations are being paid for with these. Ask. If so, give your parents a big hug and say THANK YOU! It's a *major sacrifice* to give up equity. Note: In the late 1990s through the sub-prime crisis, some loans borrowing up to 125% of the value of homes were advertised as home equity loans. These are not the same class of loan, however, because interest paid on loans that, in total with other mortgages, ***exceed 100% of the market value of the home are not interest deductible***.

Refinance - This simply means that you are paying off an old loan on your house and taking out a new loan, presumably under better terms, such as lower interest rates. This is a great way to get rid of PMI after you have some equity in your house.

Points - When you get a home loan, whether for original finance, refinance, or even home equity, you will normally pay lending fees called points to the lender. One point is equal to 1% of the loan value. Therefore, if there are two points advertised on a $420,000 loan, these two points will cost you (will be assessed as fees) $8,400. These are *in addition* to other fees, such as appraisal. Points can either be paid in cash or rolled into the principal value of the mortgage. If points are paid in cash at loan origination, then in the year they were paid they are deducted from taxable income.

Fees - Other fees will be assessed when either a house is sold or a new loan is undertaken. They include appraisal (an estimate of the value of your house by an appraiser; around $600 or so), title search and title insurance (making sure that there is no conflict in legal title; around $300 each), escrow fees (only when the house is sold; around $800), and even such things as termite inspections, etc. As stated above, points are also fees.

Impounds - You are always required to pay property taxes and insurance on your home. The payments are made either annually (in the case of insurance) or semi-annually (property taxes). Many lenders require (and you often have this option, even if not required) that you make the payments through them, where your monthly payment for you loan reflects this assessment, the funds are accumulated by the lender, then paid when due. In other words, if property taxes and insurance equal $2400 per year, your lender will add $200 per month to your monthly payment. This amount is called an impounds.