Quicken Loans

HOME LOAN U

QUICKEN LOANS GUIDE

Understanding Mortgage Rates

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AMERICA'S HOME LOAN EXPERTS
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Home Loan U is a free educational series from Quicken Loans, created to help you make the most of your home, and home financing, at every stage of life.

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The Easiest Way to Get a Home Loan®

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Welcome to the Home Loan U Guide on Mortgage Rates from Quicken Loans. While interest (and mortgage) rates affect just about everyone, few people actually understand how they work, what amortization tables are, and what determines the current rates. Here, you can find all of that information and more to help you and your family achieve your financial goals. Here's what's inside:

UNDERSTANDING MORTGAGE RATES: FROM INTEREST TO EQUITY

Most people in the United States, at some point in their lives, make a decision to purchase a home with a mortgage. When they do so, they usually mortgage part of the cost of the home. With that mortgage comes a mortgage rate. Every mortgage has one, but few folks truly understand mortgage rates or how they're determined.

Let's get started with a well-known fact - mortgage rates are often confusing for new and existing homeowners. While it may seem simple to define mortgage rates as just "the interest rate for your mortgage," there's actually a lot more to mortgage rates that impacts home buyers.

For example, what determines mortgage rates? How do we know if a mortgage rate is going to go up or down? When is the best time to lock a mortgage rate? Also, just how much money do you save by getting a mortgage that's say 1% lower? This guide is aimed at helping you understand the basics about mortgage rates, and how to get the best rate possible.

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MORTGAGE RATES: HOW ARE THEY CALCULATED?

To figure out how much interest you're paying on your mortgage (which of course, is determined by a mortgage rate), there's a simple calculation to see how much of your monthly payments goes towards the principal (how much you borrowed) versus interest (the cost of borrowing).

First Let's Look at How Interest Works

Mortgage rates are like interest rates that banks pay for borrowing money. The difference is that you pay the interest, vs. earning the interest. To make this clear, let's look at a typical bank account that earns interest. For example, let's say you put $100,000 into a high interest savings account that yields 5% compounded annually (compounded is the number of times you multiply the principal and interest percentage, annually means once a year).

If you leave this money in the account for a total of ten years, then you'll end up with a total of $155,132.84, which is a $55,132.84 increase from your original amount. How does interest get to be so high? Well, if you began with $100,000, after one year, you'll make $5,000 in interest because 100,000 x 0.05 = 5,000. So, for year two, you're balance is starting out at 105,000, and so on. If you keep doing the math for 10 times you'll get a table that looks like this:

Year	Principal	Interest You Earned That Year
1	$100,000.00	$5,000.00
2	$105,000.00	$5,250.00
3	$110,250.00	$5,512.50
4	$115,762.50	$5,788.14
5	$121,550.64	$6077.53
6	$127,628.17	$6381.41
7	$134,009.58	$6700.48
8	$140,710.06	$7035.50
9	$147,745.56	$7387.28
10	$155,132.84	$7756.64

MORTGAGE RATES: HOW ARE THEY CALCULATED? {CONTINUED}

Now, Let's Reverse the Situation

Say instead of saving that $100,000 and earning interest on it, you are borrowing $100,000 and paying interest to the bank. How much would you have to pay at 5% interest rate?

Well, each year you would owe 5% of the principal, so at most $5,000. If you only paid $5,000 back to the bank a year, that would cancel out the interest charged, your remaining principal (the amount you borrowed) is left unpaid. So, you have to pay **more** than $5,000 to pay off part of the principal. For this example, and to keep things simple, let's say you can afford to pay $6,000 a year. That means each year you can afford to pay the 5% interest, plus a little more. The table for a $100,000 mortgage with a 5% mortgage rate would look something like this:

Year	Principal (Amount You Owe)	Interest Owed That Year	Your Payment Per Year
1	$100,000.00	$5,000.00	$6,000
2	$99,000.00	$4,950.00	$6,000
3	$97,950.00	$4,897.50	$6,000
4	$96847.50	$4,842.38	$6,000
5	$95,689.88	$4,784.49	$6,000
6	$94,474.37	$4,723.72	$6,000
7	$93,198.09	$4,659.90	$6,000
8	$91,857.99	$4,592.90	$6,000
9	$90,450.89	$4,522.54	$6,000
10	$88,973.43	$4,448.67	$6,000

So after 10 years, you still owe over $88k because even though you've paid $60,000, a majority has gone towards interest every year.

WHAT PAYMENT AMOUNT DOES IT TAKE TO PAY OFF THE LOAN IN 10 YEARS?

So here's a question for you math geniuses out there: **What payment amount does it take to pay off the loan in 10 years?** The answer is you don't have to be a genius. You just have to use a formula.

THE STANDARD MORTGAGE FORMULA IS:
$$M = P [i(1 + i)^n] / [(1 + i)^n - 1]$$

Seem like gibberish? Don't worry; we break it all down for you.

Here's what the letters mean:

M = monthly payment (makes sense right?)

i = r/12 (or interest rate percentage divided by 12 months of the year)

P = Principal

n = number of monthly payments

Okay, so the rest requires a little basic algebra to plug and chug.

M = 100,000 [0.05/12(1.05/12) ^10X12] / [(1.05/12) ^9X12]

M = **$1,060.67**

So to pay off a $100,000 loan with a 5% mortgage rate in 10 years, you would have to pay $1,060.67 per month in mortgage payments. If you put that monthly amount into a table like we've done for the past two examples, you'll get the amortization table to see how principal is paid back slowly at first (as a majority of your payment goes towards interest), then after the midway point, more of your payment goes towards the principal rather than the interest.

Of course for most fixed-rate mortgages, loans come in either 15 or 30 year time periods generally, so simply switch the number 10 for 15 or 30 years, and you'll get an idea of how much you're monthly payments will be. But remember, fixed-rate mortgages can be 10, 15, 20, 25, or 30 year loans. So enter any of those numbers and you'll see the difference in monthly payment and the difference in overall interest paid over the life of the loan.

WHAT ABOUT ADJUSTABLE-RATE MORTGAGES?

So far, we've only addressed fixed-rate mortgages, that is, mortgages with a fixed interest rate that never changes throughout the length of your loan. Another option is the adjustable-rate mortgage, or the ARM. In this type of loan, the interest rate (in our examples it was 5%) can fluctuate with the market changes. ARMs begin at a fixed rate, (i.e. a 5-year ARM remains at a fixed interest rate for the first 5 years), but after that period is over, the ARM adjusts with the market rates.

ARMs are generally based on the LIBOR (London Interbank Offer Rate), which is the rate at which banks pay on overnight deposits denominated in U.S. dollars in the United Kingdom. The LIBOR is a more global version of the Federal Reserve's Fed Funds Rate.

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WHAT DETERMINES MORTGAGE RATES?

Most people believe mortgage rates are set by the Fed, but this isn't entirely accurate. The Fed does influence mortgage rates, but markets actually set them.

Here's How It Works

It all starts with the Federal Reserve (the bank of the U.S. government). The Federal Reserve sets one main rate called the Federal Funds Rate. This rate influences a whole slew of other federal monetary interest rates, such as the discount rate and the prime rate. The discount rate is the rate at which businesses can borrow money from the Federal Reserve. It provides emergency liquidity for corporations when they lack credit or assets and are unable to get cash and securities elsewhere. The prime rate, on the other hand, is the absolute best rate available to consumers for short- and long-term debt ranging from credit cards to home mortgages.

The "Funds Rate" or "Fed Funds Rate" is the interest rate that banks and depository institutions charge each other. You might be wondering, "how does that work and when do banks borrow and loan to and from each other?" When banks have excess reserve funds, they charge one another for overnight loans of those funds. The Federal Reserve has the opportunity to adjust this rate eight times a year at the Federal Open Market Committee.

The Fed does influence mortgage rates, but markets actually set them.

Depending on whether Fed Chairman Bernake and the regional Federal Reserve governors decide to raise, lower, or hold the rate, the Fed buys and sells mass quantities of treasury bonds in a process called open market operations. Banks and other institutional buyers have permission to trade government treasury bonds in this market. Traders need cash denominated in U.S. dollars to participate in the Fed's bond market, and the addition and removal of that cash functionally increases or decreases the rate as liquidity becomes more or less scarce.

WHAT DETERMINES MORTGAGE RATES?
{CONTINUED}

Interest rates are also included by a variety of other factors, including consumer sales, inventories, imports and exports, and employment. The key idea is that since interest rates are technically the price of owning money, things that make more money available in the economy will increase interest rates. For instance, more employment means that households are spending more money in the economy. As more money becomes available, rates will increase.

But, What Do These Rates Have To Do With Mortgage Rates?

When the Federal Reserve raises or lowers its rates, mortgage rates usually fluctuate in a similar pattern. This is because we, as the main driver of the economy, tend to desire more money when the Fed lowers their rates. We increase our demand for money by taking out loans to invest in capital. We pull our money out of savings accounts because the interest rates are too low.

But when we spend more, this tends to lead to inflation. There is a surplus of dollars, diminishing their value in the marketplace. Inflation, then in turn leads to increased mortgage rates. So this must be monitored careful by the Fed, or inflation can become a major problem as it did in the 1970s. The Fed also buys treasuries or securities to lower interest rates, as they are backed by mortgages. This is often used to increase demand, as people borrow more when interest rates are lower.

When the Federal Reserve raises or lowers its rates, mortgage rates usually fluctuate in a similar pattern.

WHAT DETERMINES MY MORTGAGE RATES?

So here it is. You've learned what rates are, how they are affected by the Fed, the economy, etc. Here's the fun part: Do you know how the mortgage rate you are offered on any given day is determined? You might be surprised to learn that there is actually no one given rate at any time. In fact, there are many factors that make each individual's mortgage rate different. Here's a list that may impact the mortgage rate you get.

Your Credit Score

Even if you have a good credit score, an excellent one will save you more money from a better mortgage rate. To qualify for the best rates, you'll usually need a score of 740 or higher. To get a free credit score and free credit report, check out Quizzle.com. They even offer a credit improvement tool to help you reach your goals.

Points Purchased

Points? What's that? A point (also called discount point) is pre-paid interest on your mortgage. Each point shaves an average of about ¼ percent off your interest rate and cost 1% of the total loan amount. So, if you get a loan for $100,000, then 1 point is $1,000. Shaving off ¼ percent can save you thousands in the long run, depending on how long your loan period is and how long you keep your mortgage. Again, talk to your Home Loan Expert to find out where the break even point for buying points for you is. If it's 22 months, after 22 months of paying your mortgage, you'll have a lower payment for the life of your loan. Let's say that buying points lowered your payment $50 a month. If it takes two years to break even on your points, and you keep your mortgage for another 28 years, you'll enjoy 28 years paying $50 less a month than you would have if you didn't purchase points.

Down Payment Amount

The amount of your down payment and the type of loan you get also influences your mortgage rate. The larger of a down payment you have for your closing, the better mortgage rate you'll qualify for. Also, not all mortgages have the same mortgage rate. For example, ARMs often begin with a lower rate than conventional loans, but later fluctuates with the market conditions. FHA loans tend to have a slightly higher mortgage rate than a convention fixed-rate loan of the same term. For more information on which type of suits you and your family best, have your Home Loan Expert review your options and explain each type of loan available to you.

HOW MUCH DO I SAVE WITH JUST A 1% DECREASE IN MY MORTGAGE RATE?

Let's go back to the original example for this question. Say you borrowed $100,000 at 5% interest versus 6%. How much more money do you save with this 1% difference? Well, for a 30-year fixed (assuming you don't buy any points) compounded annually, the equation is:

$$M = P [i(1 + i)^n] / [(1 + i)^n - 1]$$

This shows you what your monthly payment will be. If you then multiple M by 360 (because 30 years X 12 months per year is 360 payments), you'll get how much you spent total over the course of the mortgage. Here's the math:

For a 30-year fixed at 5% interest rate:

M = 100,000 [5.36822]/1,000 = **536.822**

536.822 x 360 = **193,255.92**

193,255.92 – 100,000 = **93,255.92**

So for borrowing $100,000 for 30 years, you will pay $93,255.92 in interest at a 5% interest rate

For a 30-year fixed at 6% interest rate:

M = **599.55** (or 7,194.60 per year)

599.55 x 360 = **215,838.00**

215,838.00 – 100,000 = **115,838.17**

So for borrowing $100,000 for 30 years, you will pay $115,838.17 in interest at a 6% interest rate

HOW DO I KNOW WHEN THE RATES ARE GOING TO GO UP OR DOWN?

$115,838.17 – $93,255.92 = $22,582.25

The difference between 5% interest rate and 6% interest rate is **$22,582.25** over the course of a 30 year loan. This is why buying points to lower your mortgage rate by just half a percent makes such a huge difference over the life of the loan.

Because of the reasons listed above of how mortgage rates work, **it is close to impossible to know exactly how the economy and market is going to act from day to day.**

One thing is for sure though, when interest rates reach are at or near their lowest in 40+ years, definitely take advantage and lock in at that rate. Waiting can be costly. If rates suddenly rise and you haven't locked, that low mortgage rate you were planning on might be gone forever. Talk to your Home Loan Expert today to find out when you should lock in your low rate and payment from Quicken Loans.

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CONTACTS AT A GLANCE

For more information on mortgage rates, check out the following list of resources offered by Quicken Loans and related sources.

Find Out Your Mortgage Rate Today!
https://www.quickenloans.com/mortgage-rates

Call Us and Get a Quote in Seconds!
(800) 251-9080

Sign up for Mortgage Rate Alerts!
https://www.quickenloans.com/about/mortgage-rate-alerts

ADDITIONAL ARTICLES

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https://www.quickenloans.com/home-buying/learn/finance/mortgage-interest-rates

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What Determines Mortgage Rates?
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