**Mortgage Calculations V1.0nb**

Your maximum mortgage amount is usually determined by:

* Size of your down payment
* Your household income and expenses
* Current debt obligations
* Your credit rating
* Mortgage rate that you qualify for (according to the latest federal stress-test regulations)
* All borrowers are subject to the mortgage stress test, whether they are buying a home, refinancing or transferring a home. It applies to both new loans and renewing loans. This means that any time you borrow money against your home, you will need to qualify for the mortgage stress test.

**Determining how much mortgage you qualify for:**

**Gross Debt Service ratio (GDS)** — total monthly housing costs shouldn't be more than 39% of your gross household income

The Gross Debt Service (GDS) ratio is a financial metric used by lenders to assess a borrower's ability to manage housing-related expenses. It calculates the percentage of a borrower's gross monthly income that is required to cover housing expenses, including mortgage principal and interest, property taxes, heating costs, and sometimes other debts associated with the property. The formula to calculate the GDS ratio is as follows:

GDS Ratio = (Total Monthly Housing Expenses / Gross Monthly Income) \* 100

To calculate the GDS ratio, follow these steps:

1. Determine the total monthly housing expenses: Add up all housing-related expenses that will be incurred with the property, including:
   * Monthly mortgage payment (principal and interest)
   * Property taxes
   * Heating costs
   * Homeowners insurance
   * Condominium fees (if applicable)
   * Other debts specifically related to the property (such as a second mortgage or home equity loan)
2. Calculate the gross monthly income: This is the borrower's total income before any deductions or taxes. It includes sources such as employment income, self-employment income, rental income, and other regular income.
3. Apply the formula: Divide the total monthly housing expenses by the gross monthly income, and then multiply the result by 100 to express it as a percentage.

The resulting GDS ratio indicates the percentage of the borrower's gross income that will be allocated towards housing-related expenses. Lenders typically have maximum GDS ratio limits, and borrowers' GDS ratios must fall within these limits for loan approval. The specific maximum GDS ratio varies among lenders and loan programs, but it's commonly around 28-35%.

**Total Debt Service ratio (TDS)** — total debt load shouldn't be more than 44% of your gross household income

The Total Debt Service (TDS) ratio is a financial metric used by lenders to evaluate a borrower's ability to manage all debt obligations, including housing expenses and other recurring debts. It calculates the percentage of a borrower's gross monthly income that is required to cover all debts. The formula to calculate the TDS ratio is as follows:

TDS Ratio = (Total Monthly Debt Payments / Gross Monthly Income) \* 100

To calculate the TDS ratio, follow these steps:

1. Determine the total monthly debt payments: Add up all monthly debt payments, including:
   * Monthly housing expenses (mortgage principal and interest, property taxes, heating costs, homeowners insurance, etc.)
   * Credit card payments
   * Car loan payments
   * Personal loan payments
   * Student loan payments
   * Other monthly debt obligations
2. Calculate the gross monthly income: This is the borrower's total income before any deductions or taxes. It includes sources such as employment income, self-employment income, rental income, and other regular income.
3. Apply the formula: Divide the total monthly debt payments by the gross monthly income, and then multiply the result by 100 to express it as a percentage.

The resulting TDS ratio indicates the percentage of the borrower's gross income that will be allocated towards all debt obligations. Lenders typically have maximum TDS ratio limits, and borrowers' TDS ratios must fall within these limits for loan approval. The specific maximum TDS ratio varies among lenders and loan programs, but it's commonly around 36-42%.

**Debt-to-Income Ratio (DTI) Calculation**: The maximum loan amount is often determined by the borrower's DTI ratio, which compares their monthly debt payments to their gross monthly income. Lenders typically have a maximum DTI threshold (e.g., 43%) beyond which they may not approve a loan. The formula for DTI is:

DTI = (Total Monthly Debt Payments / Gross Monthly Income) \* 100

**Loan-to-Value Ratio (LTV) Calculation:** LTV compares the loan amount to the appraised value of the property being financed. Lenders typically have a maximum LTV limit (e.g., 80%) which affects the loan amount they will approve. The formula for LTV is:

LTV = (Loan Amount / Appraised Value of Property) \* 100

**CLTV (Combined Loan-to-Value):**

CLTV represents the combined loan amount (including multiple loans or liens) as a percentage of the appraised value or market value of the property.

CLTV = (Sum of All Loan Amounts / Appraised Value of Property) \* 100

In this formula, you add up the outstanding loan amounts for all loans or liens on the property (such as first mortgage, second mortgage, or home equity line of credit) and divide it by the appraised value of the property. The result is multiplied by 100 to express the ratio as a percentage.

**TLTV (Total Loan-to-Value):**

TLTV is similar to CLTV but focuses on the total loan amount relative to the value of the property. TLTV includes only the primary loan amount and excludes secondary loans or liens.

TLTV = (Loan Amount / Appraised Value of Property) \* 100

In this formula, you divide the loan amount (usually the primary mortgage) by the appraised value of the property and multiply it by 100 to express the ratio as a percentage.

Both CLTV and TLTV are important metrics used by lenders to assess risk and determine loan eligibility. They help lenders evaluate the level of leverage and equity in a property and set guidelines for loan-to-value limits.

The minimum and maximum values of Debt-to-Income (DTI) ratio, Combined Loan-to-Value (CLTV), and Total Loan-to-Value (TLTV):

**Debt-to-Income (DTI) Ratio:**

Maximum DTI Ratio: Most lenders typically have a maximum DTI ratio limit, which is the percentage of a borrower's gross monthly income that can be allocated towards debt payments. A common maximum DTI ratio is around 43%, but it can vary based on factors such as credit score, loan type, and compensating factors.

**Combined Loan-to-Value (CLTV):**

Maximum CLTV: The maximum CLTV ratio is the total loan amount (including all loans and liens) divided by the appraised value or purchase price of the property. Lenders often have specific maximum CLTV limits, but they can vary based on factors such as loan type, property type, and borrower qualifications. A common maximum CLTV ratio for conventional loans is around 80-95%.

**Total Loan-to-Value (TLTV):**

Maximum TLTV: The maximum TLTV ratio considers only the primary loan amount divided by the appraised value or purchase price of the property. The TLTV ratio excludes secondary loans or liens. Similar to CLTV, lenders may have specific maximum TLTV limits based on loan type, property type, and borrower qualifications. A common maximum TLTV ratio for conventional loans is typically around 80-95%.

The formula to determine the loan amount eligible for a borrower

Maximum Loan Amount = Gross Monthly Income \* (1 - DTI Ratio)

In this formula, the DTI ratio is expressed as a decimal. For example, if the DTI ratio is 0.45 (45%), the borrower's total debt obligations should not exceed 45% of their gross monthly income.

To calculate the maximum loan amount, multiply the borrower's gross monthly income by the difference between 1 and the DTI ratio. This formula assumes that the borrower's total debt obligations, including the proposed mortgage payment, should not exceed the specified DTI ratio.

**Sample amortization table for a loan amount of $1000 with a 2% interest rate over a 15-year term:**

Loan Amount: $1000

Interest Rate: 2%

Loan Term: 15 years (180 months)

To calculate the monthly payment amount, we can use the following formula:

Monthly Interest Rate = (Annual Interest Rate / 100) / 12

Loan Term in Months = Loan Term in Years \* 12

Monthly Payment = (Loan Amount \* Monthly Interest Rate) / (1 - (1 + Monthly Interest Rate)^(-Loan Term in Months))

Using these formulas, we can calculate the monthly payment amount:

Monthly Interest Rate = (2 / 100) / 12 = 0.00167

Loan Term in Months = 15 \* 12 = 180

Monthly Payment = (1000 \* 0.00167) / (1 - (1 + 0.00167)^(-180)) = $6.65

Now, let's update the amortization table using the correct monthly payment amount:

**Month | Payment | Principal | Interest | Remaining Balance**

1 | $6.65 | $4.38 | $2.27 | $995.62

2 | $6.65 | $4.42 | $2.23 | $991.20

3 | $6.65 | $4.45 | $2.20 | $986.75

4 | $6.65 | $4.49 | $2.16 | $982.26

5 | $6.65 | $4.53 | $2.12 | $977.73

6 | $6.65 | $4.56 | $2.09 | $973.17

7 | $6.65 | $4.60 | $2.05 | $968.57

8 | $6.65 | $4.63 | $2.02 | $963.94

9 | $6.65 | $4.67 | $1.98 | $959.27

10 | $6.65 | $4.71 | $1.94 | $954.57

...

179 | $6.65 | $6.56 | $0.09 | $6.36

180 | $6.65 | $6.60 | $0.05 | $0.00

In this updated Amortization table, the monthly payment amount is $6.65.

**Amortization Schedule**

Sample Start Date: January 1, 2023

**Month | Date | Payment | Principal | Interest | Remaining Balance**

1 | January 1 | $6.65 | $4.38 | $2.27 | $995.62

2 | February 1 | $6.65 | $4.42 | $2.23 | $991.20

3 | March 1 | $6.65 | $4.45 | $2.20 | $986.75

4 | April 1 | $6.65 | $4.49 | $2.16 | $982.26

5 | May 1 | $6.65 | $4.53 | $2.12 | $977.73

6 | June 1 | $6.65 | $4.56 | $2.09 | $973.17

7 | July 1 | $6.65 | $4.60 | $2.05 | $968.57

8 | August 1 | $6.65 | $4.63 | $2.02 | $963.94

9 | September 1| $6.65 | $4.67 | $1.98 | $959.27

10 | October 1 | $6.65 | $4.71 | $1.94 | $954.57

***few websites where you can find information and tools related to mortgage loan eligibility calculations:***

**Bankrate** (www.bankrate.com): Bankrate offers a variety of financial calculators, including mortgage calculators that can help you estimate loan eligibility based on factors like income, credit score, and debt-to-income ratio.

**NerdWallet** (www.nerdwallet.com): NerdWallet provides comprehensive resources on personal finance topics, including mortgage calculators and guides that can help you understand loan eligibility requirements and estimate your borrowing capacity.

**Zillow** (www.zillow.com): Zillow is a popular real estate website that provides mortgage calculators and affordability tools. These tools can help you estimate your loan eligibility and understand how different factors like income, down payment, and interest rates impact your affordability.

**Lending Tree** (www.lendingtree.com): LendingTree is an online loan marketplace that offers mortgage calculators and tools to estimate loan eligibility. They provide personalized loan offers from multiple lenders, making it easier to compare options and understand eligibility requirements.

**Freddie** **Mac** (www.freddiemac.com): Freddie Mac is a government-sponsored enterprise that provides resources and tools for homebuyers. Their website offers information on mortgage eligibility criteria and calculators to help estimate loan affordability.